

## 2024/2025 PRODUCT CATALOG

Bioprocessing, Lipids & Transfection

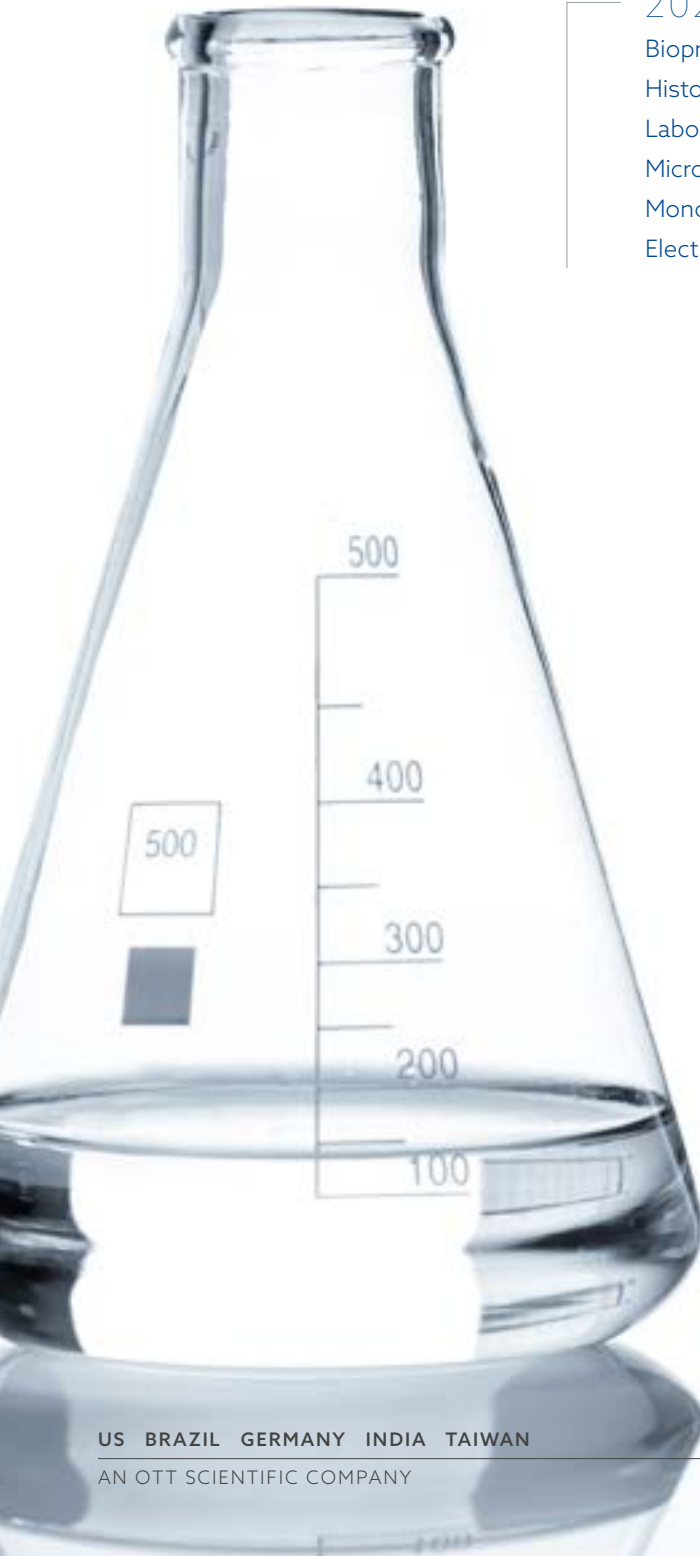
Histology, Cytology & Pathology

Laboratory Equipment & Consumables

Microparticles & Instrument Standards

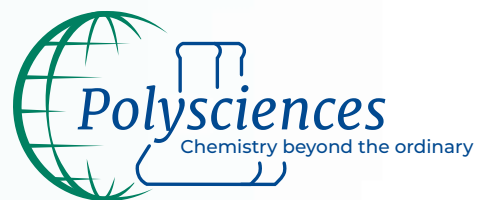
Monomers & Polymers

Electronic Chemicals



US BRAZIL GERMANY INDIA TAIWAN

AN OTT SCIENTIFIC COMPANY



Polysciences is part of the Ott Scientific family of companies. We strive to develop innovative chemistries, products and services that support advancements across scientific disciplines. Together, we are dedicated to delivering the highly specialized products and services that support scientific discovery and innovations in diagnostics, medical device, specialty chemicals and technology.

We are proud to serve customers across the globe who are working to advance what's possible.

**Catalyzing Innovation. Together.**

## CONNECT WITH US!

Follow us and like us on your favorite social channels to stay current with information on new products, events, technical resources and more!  
Polysciences.com | Info@Polysciences.com



# THANK YOU

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We'd like to take a moment to thank you for placing your confidence in Polysciences. When it comes to the business of science, we understand the importance of choice, and we appreciate that you've chosen to come to us.

In our more than 60 years of operation, we've grown into a nexus of technical operations and scientific laboratories housing custom synthesis, contract manufacturing and packaging sections. Through these divisions, we are proud to offer a broad range of products and tailored solutions for the life sciences, bioprocessing, microparticles, medical device, specialty chemical and electronic chemical industries.

We strive to deliver innovative solutions, and as a result, have cultivated our interdisciplinary Specialty Products division to capitalize on our strengths as a multifaceted enterprise. Throughout our history, we've endeavored to provide our customers with the highest quality products and services, something that is only possible through our continued emphasis on partnership and collaboration with customers like you.

Every day, we work to deliver the most useful products and advanced solutions to meet the evolving needs of our core markets. We are steadfast in our commitment to provide exceptional products and services through our scientific expertise, state-of-the-art facilities and quality systems, now and into the future.

Please reach out to us and let us know how we might put our decades of technical knowledge and real-world experience to work for you.

## The Ott Family



Andrew Ott  
*Owner, CEO & President*



Michael Ott  
*Owner & Chairman of the Board*

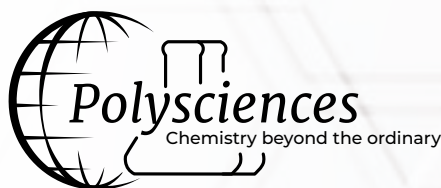


Ryan Ott  
*Owner & CEO*



# Ott Scientific

CATALYZING INNOVATION



In our more than 60 years of operation, we've grown from a specialty supplier of electron microscopy sample preparation reagents to a global family of companies serving the medical device, diagnostics, bioprocessing, fine chemical and technology industries.

**Polysciences, Inc.**

[info@polysciences.com](mailto:info@polysciences.com)

[Polysciences.com](http://Polysciences.com)



Bangs Laboratories is a manufacturer of microsphere-based reagents and analytical instrument calibrators used in *in vitro* diagnostics as well as academic and clinical research programs.

**Bangs Laboratories, Inc.**

[info@bangslabs.com](mailto:info@bangslabs.com)

[BangsLabs.com](http://BangsLabs.com)



For more than 35 years, Dionis has been a manufacturer of goat milk skincare and related products. Dionis provided Ott Scientific's gateway into consumer products and has continued to grow the business into the highly-recognized brand that it is today.

**Dionis Inc.**

[info@dionisgmskincare.com](mailto:info@dionisgmskincare.com)

[DionisGMSkincare.com](http://DionisGMSkincare.com)

**THE OTT SCIENTIFIC FAMILY OF COMPANIES BRINGS TOGETHER THE WHOLE OF OUR EXPERIENCE, BEST-IN-CLASS FACILITIES AND SCIENTIFIC, TECHNICAL, ANALYTICAL AND MANUFACTURING CAPABILITIES TO SERVE CUSTOMERS AROUND THE GLOBE.**



Founded through the acquisition of the Exocell® diagnostics arm of Glycadia, Inc., Ethos Biosciences was established to continue the design, development and manufacture of high-quality, easy-to-use diagnostic test kits and reagents for nephrology research. In 2021, Ethos Biosciences expanded its footprint and mission by bringing together American Bionostica, and Astral Diagnostics businesses under its umbrella.

**Ethos Biosciences**

[info@ethosbiosciences.com](mailto:info@ethosbiosciences.com)

[EthosBiosciences.com](http://EthosBiosciences.com)

**Astral Diagnostics**

Astral Diagnostics has been a manufacturer of high-quality stains and laboratory reagents for laboratory, veterinary and clinical research and diagnostics for more than 20 years.

**American Bionostica**

For more than two decades, American Bionostica has been manufacturing lateral flow tests and assays for OEM clients in food safety, agricultural, environmental, veterinary medical, biodefense and clinical sectors.

**Exocell**

For more than 35 years, Exocell has been a manufacturer of high-quality, easy-to-use diagnostic test kits and reagents for nephrology research.



## OUR LOCATIONS

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### **North America**

Corporate Headquarters  
Polysciences, Inc.  
400 Valley Road  
Warrington, PA 18976  
(215) 343-6484  
(800) 523-2575 (US Only)  
Fax: (215) 343-0214  
(800) 343-3291 (US Only)  
info@polysciences.com

### **Online:**

polysciences.com  
24 hours a day, 7 days / week

### **Europe**

Polysciences Europe GmbH  
Badener Str. 13  
69493 Hirschberg an der Bergstrasse  
Germany  
+(49) (0) 6201 845 20 0  
Fax: +(49) (0) 6201 845 20 20  
info@polysciences.de

### **Asia-Pacific**

Polysciences Asia-Pacific, Inc.  
2F-1, 207 DunHua N. Road  
Taipei, Taiwan 10595  
(886) 2 8712 0600  
Fax: (886) 2 8712 2677  
info@polysciences.tw

### **India**

Ott Scientific India Pvt. Ltd.  
Plot no 805, 1st Floor  
Udyog Vihar, Phase V  
Gurugram, Haryana 122016  
India  
+91 730 370 2008  
info@ottscientific.in

### **Brazil**

Ott Scientific Brasil  
Av. Victoria Rossi Martini, n°31  
Sala F  
Indaiatuba - SP  
CEP 13.347-613  
Brasil  
+55 11 3164-0521  
info@ottscientific.com.br

## CUSTOM SYNTHESIS CAPABILITIES

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### FOSTERING CORPORATE PARTNERSHIPS WITH BEST-IN-CLASS FACILITIES & EXPERTISE

Polysciences has been a manufacturer of specialty chemicals for over 60 years, beginning with stains and resins for biological electron microscopy, and continuing through our current industry leadership in the synthesis of fine chemicals for medical device, biopharma, electronics and technology sectors. Our work supports a range of applications, such as biocompatible polymers and polymer precursors for medical devices, bioresorbable polymers for drug elution systems, high-end specialty industrials, energetic additives and rare and hard-to-find chemicals.

Through our Custom Synthesis services, customers are able to leverage Polysciences' scientific and technical expertise, state-of-the-art facilities and in-house analytical capabilities. Our chemical and engineering experience comprise an array of chemistries and polymerizations, and complementary purification, processing and characterization technologies. We offer a highly adaptable, iterative and collaborative CDMO experience—we will work with you to design, replicate or refine formulations, optimize analytical methods and develop scalable production processes.

Polysciences' primary campus in Warrington, PA is home to dedicated R&D suites and a 21 CFR 820 GMP-capable production environment—designed to support projects from development through successful scale-up, validation and commercialization. We maintain FDA facility registration and ISO 13485:2016 Quality Management System certification, and are prepared to support your quality and regulatory requirements.

Polysciences has the expertise in organic chemistry, engineering and chemical characterization to meet your most critical chemistry needs. Whether you require a critical raw material or process development support, we can be your solutions partner of choice. Please contact us at [CustomSynthesis@polysciences.com](mailto:CustomSynthesis@polysciences.com) to begin the discussion.





## ANALYTICAL CAPABILITIES

NMR (300 MHz:  $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{19}\text{F}$ ,  $^{31}\text{P}$ ) - Purity, Identity  
LCMS, HPLC, GCMS - Assay, Purity Profile  
FTIR - Identity  
GPC (5) - MW, Polydispersity  
DSC, TGA, TMA - Thermal characterization  
Particle Size Analysis  
Atomic Absorption - Trace Metals  
UV/Visible & Fluorescence  
Viscosity

## CHEMISTRIES

Acrylates  
Amines  
Anhydrides  
Imides  
Glycolides

## POLYMERIZATIONS

Addition  
Condensation  
Free Radical  
Ring Opening  
Pressure Polymers (ethylene copolymers)

## PURIFICATION TECHNIQUES

Distillation  
Vacuum Drying  
Lyophilization  
Tangential Flow Filtration (TFF)  
Recrystallization

## TYPICAL REACTIONS

Alkylation  
Amidation  
Bromination  
Chiral Synthesis  
Condensation  
Dehydrohalogenation  
Diazotization  
Esterification  
Hydrogenation  
Nitration  
Oxidation  
Organometallic  
Phosgenation  
Phosphonation  
Polymerization  
Quaternization  
Reductive Amination  
Sulfonation





## CONTRACT MANUFACTURING CAPABILITIES

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### PARTNER WITH OUR CONTRACT SERVICES TEAM TO KEEP PACE WITH AN EVOLVING MANUFACTURING LANDSCAPE

Through our Contract Manufacturing services, Polysciences offers tailored solutions to support your product manufacturing pipeline and accelerate time to market. Whether you're embarking on a new product launch, seeking a new source for current products or expanding your catalog through private labeling, we have the expertise, capabilities and operations to get you there. Our comprehensive and flexible services allow you to select exactly the service you need at any point in your workflow, and our state-of-the-art manufacturing and processing equipment can accommodate your project from pilot scale to bulk production.

As dedicated partners, our experienced project management team will be with you throughout your entire process. We're happy to see your project through formulation and packaging challenges, filling with options including world class ISO 5 or 8 cleanrooms, technical concerns, product design and more, giving our full attention to the project at hand, both quickly and accurately. Thanks to decades of experience, numerous clients big and small have successfully started, completed and continued their projects with us here at Polysciences.

When it comes to working with us, know that your project will be met with knowledge, ingenuity and care by our entire Contract Manufacturing team. With modern, flexible project spaces and production suites, 21 CFR 820 cGMP and ISO 13485 certification, we're devoted to helping you develop superior product, all while meeting deadlines and bringing out the best in your concept.

### PROCESSING

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- Solids & liquid filling
- Room temp & hot-pour, emulsion and gel materials
- Flammable & hazardous
- WFI grade and DI water systems
- Custom blending – solids, liquids, high viscosity
- Polymer processing (cryogenic milling)

### PACKAGING

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- Shrink tunnels & induction sealers, including tamper evident packaging
- Bulk drums, bottles, tubes & packs
- In-line labeling
- Kit assembly





## ORDERING INFORMATION

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### UNITED STATES

Purchase orders for shipment should be directed via U.S. Mail or courier service to:

Polysciences, Inc., 400 Valley Road,  
Warrington, PA 18976 or via email to:  
info@polysciences.com

Please call: **(800) 523-2575** or **(215) 343-6484** from 8:00 am to 5:00 pm EST to place phone orders. Fax orders are received automatically 24 hours a day at: (800) 343-3291 or (215) 343-0214. When ordering, please use catalog number, name of item, and quantity. Package sizes larger than listed may be available at reduced per unit prices. For large packages or more than 20 units of any single item, price quotations are available by fax or phone. Confirming purchase orders are not required, but if sent must be clearly marked **confirming**. Duplicate shipments cannot be returned for full credit.

### Credit Cards

We accept: **VISA, MasterCard, American Express and Discover**. Service fee of 3% will be added to all credit card orders over \$5,000.00 USD

### Minimum Order Policy

Orders placed in U.S. Dollars and shipped through Polysciences, Inc.: \$35.00

### Special Handling Charges

For orders shipped from Polysciences, Inc. in the United States, a special handling fee of \$25.00 may be added to your order for special hazardous material packaging, dry ice and/or cold pack requirements of specific products. In addition, an international order processing fee of \$50.00 will be added to all orders shipped outside of the United States, to defray the added costs associated with such orders.

### Return Policy

(a) Please examine your shipments upon receipt for damage or discrepancies. If a

problem arises with your shipment, please contact our Customer Service Department within fifteen (15) days. We will work with you to quickly resolve any problems. Before returning any items, all returns must be authorized by Polysciences to insure proper credit. A Return Material Authorization (RMA) must be obtained by contacting our Customer Service Department. Not all items will be authorized for return due to temperature and packing requirements. To be accepted for consideration by Polysciences, Inc. as a return for restocking, the product must be a currently listed product. Hazardous materials must be packed and labeled in accordance with the current D.O.T., A.D.R. (*GmbH*), I.A.T.A. or I.M.D.G. regulations and practices applying to the transportation of hazardous materials. Shipping documents must also meet D.O.T., A.D.R. (*GmbH*) regulations. Non-compliant shipments will not qualify for credit. Shipping charges are the customer's/distributor's responsibility. Items returned without a RMA may not be accepted. To ensure proper credit, each Product return must include the following information:

Customer Name and Address, Purchase Order Number, Polysciences Shipping Order Number, Date of Invoice, Catalog Number of Returned Item(s), Polysciences Return Authorization Number, Reason for Return.

Authorized returns should be made within 30 days of issuance of a RMA. A 30% restocking charge will be levied on materials returned because of error on the part of the buyer. The seller shall be under no obligation to replace goods that have been lost or damaged by the carrier.

(b) Products not authorized for return: Products purchased as Custom Orders, Products not purchased from Polysciences, Inc., Products with an expired shelf life, Discontinued products, Products missing labels or parts.

### Method of Shipment

Unless specifically advised, we will ship by United Parcel Service, parcel post, common carrier or air freight. Rapid and reliable delivery of microspheres, particles and beads is ensured by Next Day Air for orders shipped from Polysciences, Inc., in the United States to domestic addresses. All materials requiring dry ice packaging must be shipped air express. All cold pack materials must be shipped via United Parcel Service's next day air service. For those hazardous chemicals covered by Department of Transportation and/or International Air Transport Association (IATA) regulations for flammable (red label) or hazardous items, we reserve the right to elect the most appropriate shipping method in order to comply with those regulations.

### Certificates of Origin: \$35.00

Polysciences, Inc. supplies Certificates of Origin documents to those customers that specifically request them. The Certificate of Origin document is not required to ship products, and is used exclusively to enable International Customers to receive a discount on import custom fees. The document is a value added service we provide to our customers.

### POLYSCIENCES EUROPE GMBH

Orders shipped to European countries will be processed through Polysciences Europe GmbH and billed in Euros. Purchase orders for shipment should be directed via International mail or courier service to:

Polysciences Europe GmbH, Badener Str. 13  
69493 Hirschberg an der Bergstrasse,  
Germany or via email to:  
info@polysciences.de

Please call: **+49 (0) 6201 845 20 0** from 8:00 am to 5:00 pm CET to place phone orders. Fax orders are received 24 hours a day at: **+49 (0) 6201 845 20 20**.

When ordering, please use catalog number, name of item, and quantity. Package sizes larger than listed may be available at reduced per unit prices. For large package or more than 20 units of any single item, price quotations are available by fax or email.

Confirming purchase orders are not required, but if sent must be clearly marked **confirming**. Duplicate shipments cannot be returned for full credit.

#### Credit Cards

Polysciences Europe GmbH only accepts **VISA**. Service fee of 3% will be added to all credit card orders over 5,000.00 EUR.

#### Minimum Order Policy

For orders placed in Euros and shipped to European countries through Polysciences Europe GmbH: On orders less than 250.00 Euro, a small order fee of 20.00 Euro will be applied to shipments outside of Germany.

#### Special Handling Charges

For orders shipped from Polysciences Europe GmbH in Germany, a special handling fee of 10.00 Euro may be added to your order for special hazardous material packaging or cold pack requirements of specific products. In addition, a 10.00 Euro fee will be added to all shipments requiring customs declarations. A 165.00 Euro Veterinary Customs Processing Fee will be added to certain antibodies.

#### Return Policy

Please examine your shipments upon receipt for damage or discrepancies. If a problem arises with your shipment, please contact our Customer Service Department within fifteen (15) days. *See full Return Policy under Polysciences, Inc. United States Ordering Information at left.*

#### Method of Shipment

Orders placed through the web site for shipment to European countries will be processed through Polysciences Europe GmbH. We cannot guarantee these shipments for overnight delivery. If you require expedited service, please contact Polysciences Europe GmbH directly at +49 (0)6201-845 200.

#### Certificates of Origin: 30.00 Euro

Polysciences Europe GmbH supplies Certificates of Origin documents to those customers that specifically request them. The Certificate of Origin document is not required to ship products, and is used exclusively to enable International Customers to receive a discount on import custom fees. The document is a value added service we provide to our customers.

#### POLYSCIENCES ASIA-PACIFIC

Purchase orders for shipment should be placed with email, phone or courier service to:

Polysciences Asia-Pacific, Inc., 2F-1, 207 DunHua N. Road, Taipei, Taiwan, 10595 or via email to: [info@polysciences.tw](mailto:info@polysciences.tw)

Please call: **+886 2 8712 0600** from 9:00 am to 6:00 pm Taipei time (GMT+8) to place phone orders. Fax orders are received automatically 24 hours a day at: +886 2 8712 2677

When ordering, please use catalog number, name of item and quantity. Package sizes larger than listed may be available at reduced per unit prices. For large package or more than 20 units of any single item, price quotations are available by fax or email. Polysciences Asia-Pacific, Inc. will issue an order acknowledgement.

#### Minimum Order Policy \$50.00 USD

#### Handling Charges

Handling fee: \$50.00 USD per shipment. For hazardous material packaged with dry ice and/or cold pack, an additional handling charge of \$25.00 USD will apply.

#### Return Policy

Please examine your shipments upon receipt for damage or discrepancies. If a problem arises with your shipment, please contact our Customer Service Department within fifteen (15) days. *See full Return Policy under Polysciences, Inc. United States Ordering Information at left.*

#### Method of Shipment

Unless specifically specified, shipment will be made by FedEx, EMS, parcel post, common carrier or air freight. All materials requiring dry ice packaging must be shipped air express. For those hazardous chemicals covered by Department of Transportation and/or International Air Transport Association (IATA) regulations for flammable (red label) or hazardous items, we reserve the right to elect the most appropriate shipping method in order to comply with those regulations.

#### Certificates of Origin: \$35.00 USD

Polysciences supplies Certificates of Origin documents under at the request of customers.

#### Terms and Conditions

Please refer to the Index Section for a full description of our Terms and Conditions of sale.

#### OTT SCIENTIFIC INDIA

Purchase orders for shipment should be directed via courier/ postal service to:

Ott Scientific India Pvt Ltd  
Plot no 805, 1st Floor  
Udyog Vihar, Phase V  
Gurugram, Haryana 122016 India  
or via email to: [info@ottscientific.in](mailto:info@ottscientific.in)

When ordering, please use catalog number, name of item and quantity. Package sizes larger than listed may be available at reduced per unit prices. For large package or more than 20 units of any single item, price quotations are available by phone: **+91 730 370 2008**.

#### Online ordering

We accept online payment by credit card (VISA, MasterCard, American Express), debit card, net banking, wallets & UPI. Service fee on online ordering per transaction:  
Credit card - 3%  
Debit card - 1%  
Internet banking/ Wallets - 2%  
UPI - NIL

#### Minimum Order Policy

Orders placed in INR and shipped through Ott Scientific India: ₹2500.00 + GST

#### Special Handling Charges

For orders shipped from Ott Scientific India in India, a special handling fee may be added to your order for special hazardous material packaging, dry ice and/or cold pack requirements of specific products which will be based on ordered product and order volume.

#### Return Policy

(a) Please examine your shipments upon receipt for damage or discrepancies. If a problem arises with your shipment, please contact our Customer Service Department within 24 hrs. 40% restocking charge will be levied on materials returned because of error on the part of the buyer.

(b) Products not authorized for return:

- Products purchased as Custom Orders
- Products not purchased from Ott Scientific India
- Products with an expired shelf life
- Discontinued products
- Products missing labels or parts

#### Method of Shipment

Unless specifically specified, shipment will be made by common carrier or air freight. All materials requiring dry ice packaging must be shipped air express. For those hazardous chemicals covered by Department of Transportation and/or International Air Transport Association (IATA) regulations for flammable (red label) or hazardous items, we reserve the right to elect the most appropriate shipping method in order to comply with those regulations.

#### Certificates of Origin: INR 2500.00

Ott Scientific India supplies Certificates of Origin documents to those customers that specifically request them. The document is a value-added service we provide to our customers.



## USING THIS CATALOG

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For most of the chemicals listed in this catalog we provide hazard, handling and storage codes as well as technical data. The information provided is believed to be current at time of printing, but is provided without warranty of any kind. We do not warrant that chemicals listed without codes are necessarily hazard-free or that all codes are listed for each chemical.

### TERMS AND ABBREVIATIONS

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Purity:	Includes: Min: minimum >: greater than ~: approximately
CAS #:	Chemical Abstracts Service Registry Number
MW:	Molecular weight or average molecular weight for polymers
Mw:	Weight Average Molecular Weight
Mn:	Number Average Molecular Weight
Density:	Density in gram/cc at 20 °C
mp:	Melting point in °C dec: with decomposition
bp:	Boiling point in °C at atmospheric pressure unless pressure is specified in millimeter (mm) of mercury
Glass transition:	Measurement of polymer in °C
R.I.:	Refractive index at 20 °C on D-line.
Inhibitor level:	Measurement in parts per million unless specified otherwise. HQ: hydroquinone MEHQ: methyl ether of hydroquinone BHT: butylated hydroxy toluene PTZ: phenothiazine
i.v.:	Inherent viscosity as dl/g at 20 °C
Rel. vis.:	Dimensionless ratio at 20 °C
MEK:	Methyl ethyl ketone
MDC:	Dichloromethane/methylene dichloride
DMF:	Dimethyl formamide
THF:	Tetrahydrofuran
DMSO:	Dimethyl sulfoxide
NMP:	N-methylpyrrolidinone
Emiss max:	Emission maximum in nm
Exc max:	Excitation maximum in nm
I max:	Absorption maximum in nm
WPE:	Weight per epoxide
FP:	Flash point in °C
pH:	Negative logarithm of hydrogen ion concentration
pK:	Negative logarithm of dissociation constant
Viscosity Units:	Includes: CPS - centipoise at 25 °C unless specified otherwise AQ - aqueous CST - centistokes
Conductivity Units:	Siemens/centimeter
TLC:	Thin layer chromatography
HLB:	Hydrophilic lipophilic balance
C.I.:	Color index number

### HAZARD, STORAGE AND HANDLING CODES

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#### Hazard Codes

A	Harmless, use normal precautions
B	Corrosive
C	Flammable liquid
D	Flammable solid
E	Combustible
F	Organic peroxide
G	Oxidizer
H	Irritant
I	Lachrymator
J	Monomer
K	Hygroscopic
L	Pyrophoric
M	Suspected carcinogen
N	Vesicant
O	Skin sensitizer
P	Poison (Ingestion)
R	Poison (Absorption)
S	Poison (Inhalation)
T	Gas, inert
U	Unknown
V	Toxic (Ingestion)
W	Toxic (Absorption)
X	Toxic (Inhalation)
Y	Special

#### Handling Codes

2	Exercise normal care in handling
3	Gloves
4	Gloves & chemical goggles
5	Gloves & fume hood
6	Gloves, chemical goggles & fume hood no chemical mask
7	Gloves, chemical goggles & chemical mask or hood

#### Storage Codes

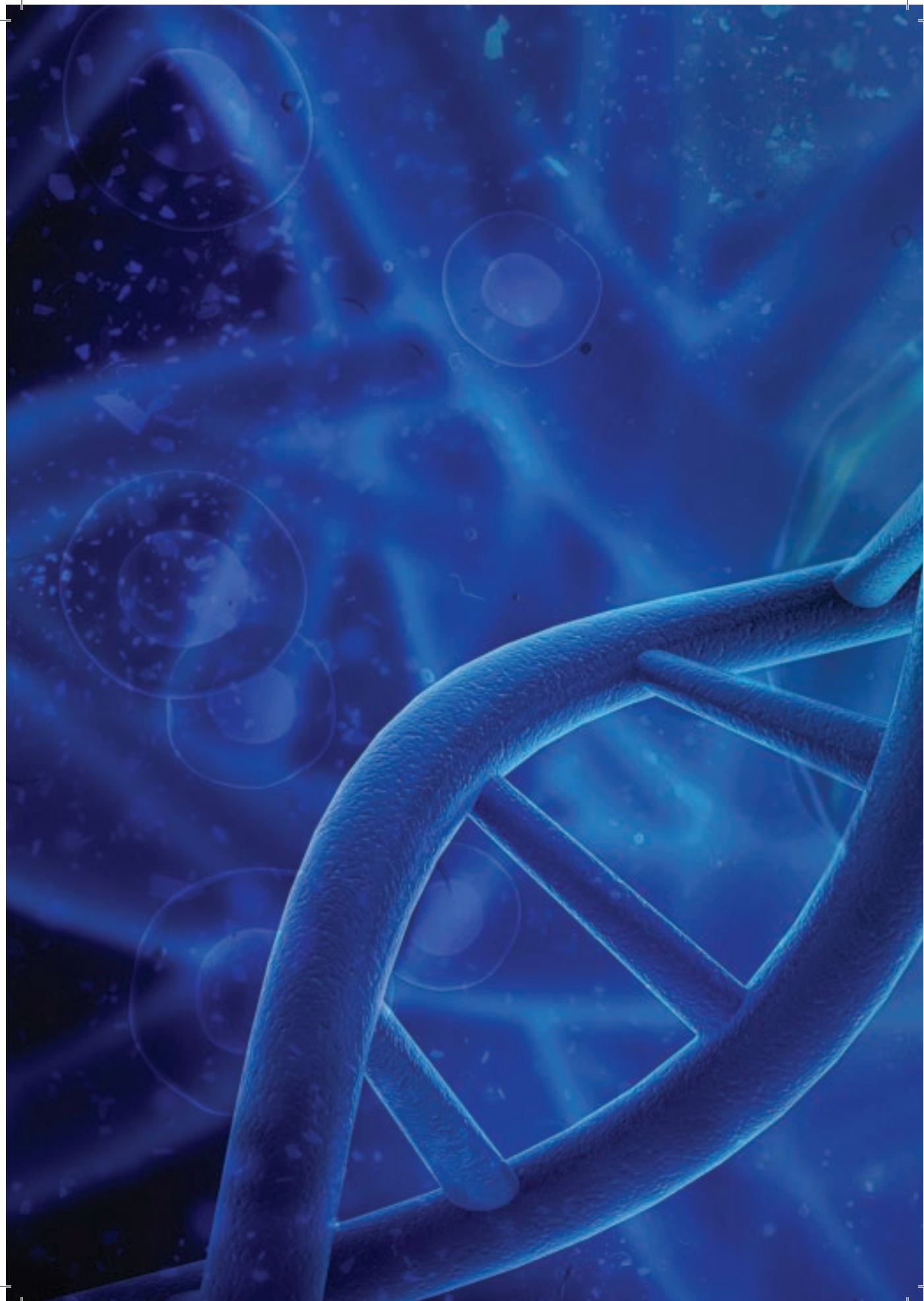
a	Protect from light
b	Protect from moisture
c	Handle under dry nitrogen
d	Store at 4 °C
e	Store below 0 °C
f	Store below -20 °C
g	Store at room temperature
h	Nuisance dust
k	Stench
m	Do not permit to freeze
n	Allow to come to room temperature before opening
p	Explosive when dry
r	Store at -70 °C
s	Long term storage at 4 °C
w	Refrigerate on arrival; do not freeze
x	Cold pack shipment
z	Dry ice shipment





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## **TRANSFECTION REAGENTS, LIPIDS, AND OTHER EXCIPIENTS**

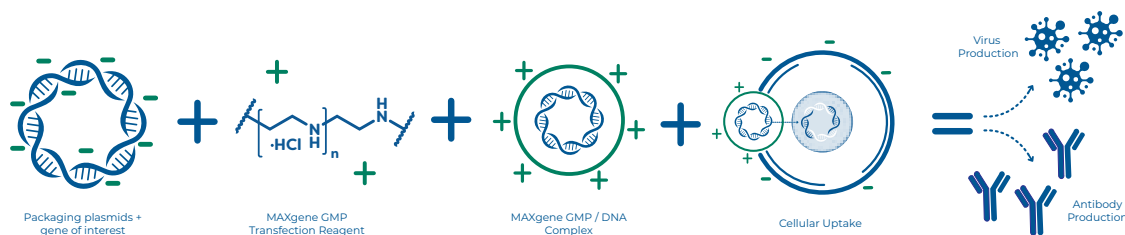
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Phospholipids .....	30
PEGylated Lipids .....	32
Fatty Acids .....	33
Cholesterols and Derivatives .....	34
Adjuvants .....	38
Other .....	40

# Kyfora Bio

EMPOWERING ADVANCED THERAPIES

*Introducing Kyfora Bio, Polysciences bioprocessing brand, supporting development of cell and gene therapy (CGT) breakthroughs from bench to clinic. Backed by 60+ years of specialty chemical development, manufacturing, and application expertise, Kyfora provides research grade through cGMP transfection reagents and excipients for viral vectors, mRNA vaccines, and other drug delivery applications. Our cost-effective and scalable cGMP processes empower advanced therapies to improve patients' lives.*



## PEI TRANSFECTION REAGENTS

PEI is a polycationic polymer that forms a positively-charged complex with nucleic acids, which then readily interacts with cell surfaces. This leads to endocytosis and transport of the PEI: nucleic acid complex into the cytoplasm and ultimately to the nucleus. PEI-mediated transfection has advantages over other available methods. PEI is well tolerated in many different cell types, including in cell lines commonly used for bioprocessing, with low cytotoxicity and compatibility in both adherent and suspension cell culture systems.

### MAXgene® GMP Transfection Reagent

MAXgene is a cGMP transfection reagent designed for efficient DNA delivery for large-scale production of high-titer AAV and LV viral vectors that are used for manufacturing cell and gene therapies. MAXgene GMP transfection reagents complete the Polysciences' PEI MAX® product range and provide the transition from process development through clinical trials up to commercialization for a straightforward and seamless process. It is fully synthetic and is manufactured in accordance with cGMP 21 CFR 210, 211 under an ISO 13485 Quality Management System.

#### Features:

- High transfection efficiency with low cytotoxicity
- Great lot-to-lot consistency
- Easy to optimize and introduce into application protocols
- Scalable for well plates, flasks and larger-capacity bioreactors
- Cost-Effective
- Designed for clinical trials and commercial manufacturing of viral vectors intended for gene/cell therapy
- R&D grades available for process development

CHARACTERISTICS	UNIT SIZE	CATALOG #
Ready-to-Use Solution	1 L	26406-1
Powder	1 g	26435-1

**PEI Transfection Reagents****Transporter 5<sup>®</sup> Transfection Reagent****26008**

Transporter 5<sup>®</sup> is a premium ready-to-use transfection reagent prepared from our popular linear PEI MAX<sup>®</sup>. Transporter 5<sup>®</sup> effectively transfects mammalian and insect cells, especially HEK-293, CHO, and Sf9.

**Features:**

- Easy to use: No solution preparation required.
- Superior Performance: High transfection efficiency with low cytotoxicity compared to other reagents on the market.
- Flexible Workflow: Easy to optimize and introduce into application protocols.
- Cost-Effective: Economical compared to similar transfection products in the market.
- R&D grades available for process development

UNIT SIZE	CATALOG #
1 ml	26008-1A
5 ml	26008-5
50 ml	26008-50

**PEI MAX<sup>®</sup> - Transfection Grade Linear Polyethylenimine Hydrochloride****24765**

Polyethylenimine MAX (PEI MAX<sup>®</sup>) is a powerful, trusted and cost-effective reagent designed for process development that is widely considered a gold standard for both in vitro and in vivo transfection. Stable complexation with DNA, efficient entry into the cell, and ability to escape the endosome make PEI MAX a highly efficient transfection reagent for a wide range of cell lines/types including HEK293 and CHO cells grown in adherent and suspension cultures. PEI MAX is capable of yielding high-efficiency cell lines without compromising cell viability compared to other PEI and liposomal transfection reagents available in the market. Stable complexation with DNA, efficient entry into the cell and ability to escape the endosome make PEI MAX a highly efficient transfection reagent for a wide range of cell lines/types including HEK293 and CHO cells grown in adherent and suspension cultures. PEI MAX is capable of yielding high-efficiency cell lines without compromising cell viability compared to other PEI and liposomal transfection reagents available in the market.

**Key Advantages**

- Superior Performance: High transfection efficiency with low cytotoxicity.
- Flexible Workflow: Easy to optimize and introduce into application protocols. Scalable for well plates, flasks, and larger capacity bioreactors.
- Cost-Effective: Economical compared to similar transfection products in the market.
- History: Polysciences is a trusted partner for pharma and medical device key players with more than 60 years in specialty chemical manufacturing. PEI MAX has been used by thousands of customers in their research and development for more than a decade.

UNIT SIZE	CATALOG #
100 mg	24765-100
1 g	24765-1

**PEI 25K™ (Polyethylenimine, Linear, MW 25000, Transfection Grade)**

**23966**

PEI25k is a non-deacylated version of PEI MAX and is a suitable transfection reagent for a wide range of cell lines.

UNIT SIZE	CATALOG #
100 mg	23966-100
1 g	23966-1

**Bioprocess Manufacturing Scale-up Sequence**



### Lipids for Drug Delivery, mRNA Vaccines & Transfection

A dependable and high-quality supply of lipids is crucial for the successful development and commercialization of new vaccines and therapies. We provide a diverse range of lipid excipients that are well-suited for LNP, NLC, and SLN formulation, as well as contract services for custom synthesis of novel lipids.



### LipoVector™ Transfection Reagent

14494

LipoVector™ is our new lipid transfection reagent designed for the delivery of RNA, DNA, and proteins into eukaryotic cells (*in vitro* and *in vivo*). LipoVector™ interacts with nucleic acids and the cell membrane to provide efficient and safe delivery into cells. It can be used for transient and stable gene expression as well as co-transfections and is a powerful tool for intracellular delivery of nucleotides, COVID-19 vaccine and drug delivery systems. This product is for *Research Use Only*.

#### Features:

- Transfection efficiency: Dependable transfection of a wide range of cell lines with low cytotoxicity
- Performance: Enhanced protein, antibody, and viral production
- Simple workflow: Easy protocol with minimal optimization
- Compatibility: Works with a variety of media
- Low cost: Cost-effective compared to competitor reagents

#### Key Applications:

- Virus, protein, and antibody expression
- LNP formulation for mRNA vaccines
- siRNA-based gene knockdown
- Stable cell line production

UNIT SIZE	CATALOG #
25 mg	14494-25
100 mg	14494-100
500 mg	14494-500



CATIONIC LIPIDS

Cationic lipids are used in LNPs to encapsulate oligonucleotides and other cargo and facilitate cellular uptake and endosomal escape. Our cationic lipids such as DOTAP-Cl are used for high efficiency transfection, mRNA vaccine, and drug delivery applications.

**DOTAP Chloride** CAS#: 132172-61-3 |  $C_{42}H_{80}ClNO_4$

**14475**

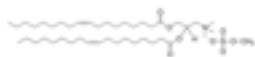


DOTAP Chloride (N-[1-(2,3-Dioleoyloxy)propyl]-N,N,N-trimethylammonium chloride) is a widely used cationic liposome-forming compound for *in vitro* and *in vivo* transfection of DNA, RNA and other negatively charged molecules. DOTAP encapsulates the nucleic acids to form a stable complex spontaneously by means of electrostatic interaction, facilitates cell attachment, internalization by endocytosis as well as endosomal escape by proton sponge. It has been used in the formation of Lipid Nanoparticles (LNP) or Nanostructured Lipid carriers (NLCs) in the development of mRNA vaccines such as COVID-19 vaccine and drug delivery systems. This product is for *Research Use Only*.

UNIT SIZE	CATALOG #
25 mg	14475-25
100 mg	14475-100
500 mg	14475-500

**DOTAP Methyl Sulfate** CAS#:144189-73-1 |  $C_{43}H_{83}NO_8S$

**14475MS**



DOTAP MS (N-[1-(2,3-Dioleoyloxy)propyl]-N,N,N-trimethylammonium methyl-sulfate) is a proven reagent for the highly efficient liposomal transfection of DNA, RNA, oligonucleotides, and some other negatively charged large biomolecules. Several other techniques of introducing genetic material into cells may suffer from inadequate reproducibility, cytotoxicity, inconvenience of process, and low transfection efficiency. DOTAP avoids these drawbacks and works by encapsulating the negatively charged DNA within a spontaneously formed liposomal vesicle. This DOTAP/DNA complex can then fuse with the cell membrane and insert DNA directly into the cytoplasm. This mechanism of action ensures transfection occurs efficiently and with little to no cytotoxicity.

UNIT SIZE	CATALOG #
25 mg	14475MS-25
100 mg	14475MS-100
500 mg	14475MS-500

## BIOPROCESSING, LIPIDS & TRANSFECTION / LIPIDS

### Lipids for Drug Delivery, mRNA Vaccines & Transfection

**DOTMA Chloride** CAS#:104162-48-3 |  $C_{42}H_{84}NO_2Cl$

**14476**

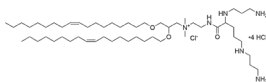


DOTMA Chloride N,N,N-trimethyl-2,3-bis[(9Z)-9-octadecen-1-yloxy]-1-propanaminium, chloride is a proven reagent for the highly efficient liposomal transfection of DNA, RNA, oligonucleotides, and other negatively charged large biomolecules. Several other techniques of introducing genetic material into cells may suffer from inadequate reproducibility, cytotoxicity, inconvenience of process, and low transfection efficiency. DOTMA Cl avoids these drawbacks and works by encapsulating the negatively charged DNA within a spontaneously formed liposomal vesicle. This DOTMA/DNA complex can then fuse with the cell membrane and insert DNA directly into the cytoplasm. This mechanism of action ensures transfection occurs efficiently and with little to no cytotoxicity.

UNIT SIZE	CATALOG #
25 mg	14476-25
100 mg	14476-100
500 mg	14476-500

**DOSPA Chloride** CAS#:282533-23-7 |  $C_{54}H_{115}Cl_5N_6O_3$

**14477**



DOSPA Chloride is a widely used cationic lipid used in the formation of Lipid Nanoparticles (LNP) or Nanostructured Lipid carriers (NLCs) in the development of mRNA vaccines such as COVID-19 vaccine. LNPs facilitate the safe and effective delivery of mRNA to target cells, therefore enabling therapeutic action. Polysciences' high purity, transfection grade DOSPA Chloride can be used in conjunction with our other cationic lipid products to provide reliable performance for bioprocessing applications. This product is for *Research Use Only*.

UNIT SIZE	CATALOG #
1 mg	14477-1
10 mg	14477-10

**DSTAP Chloride** CAS#: 220609-41-6 |  $C_{42}H_{84}NO_4Cl$

**14486**

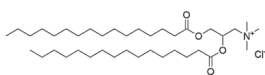


DSTAP chloride (1,2-distearoyl-3-trimethylammonium-propane chloride) is a cationic lipid with a variety of potential applications, including transfection and drug delivery.

UNIT SIZE	CATALOG #
25 mg	14486-25
100 mg	14486-100
500 mg	14486-500

**DPTAP Chloride** CAS#: 139984-36-4 | C<sub>38</sub>H<sub>76</sub>NO<sub>4</sub>Cl

**14487**

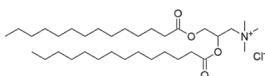


DPTAP chloride (1,2-dipalmitoyl-3-trimethylammonium-propane chloride) is a cationic lipid with applications in transfection and drug delivery. When combined with nucleic acids, this lipid forms a liposome that efficiently condenses and transports the genetic material into the cell.

UNIT SIZE	CATALOG #
25 mg	14487-25
100 mg	14487-100
500 mg	14487-500

**DMTAP Chloride** CAS#: 197974-74-6 | C<sub>34</sub>H<sub>68</sub>NO<sub>4</sub>Cl

**14488**

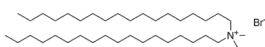


DMTAP chloride (1,2-dimyristoyl-3-trimethylammonium-propane chloride) is a saturated cationic lipid with applications in transfection and drug delivery. When combined with nucleic acids, this lipid forms a liposome that efficiently condenses and transports the genetic material into the cell.

UNIT SIZE	CATALOG #
25 mg	14488-25
100 mg	14488-100
500 mg	14488-500

**Dimethyloctadecylammonium (Bromide Salt) (DDAB)** CAS#: 3700-67-2 | C<sub>38</sub>H<sub>80</sub>NBr

**14702**



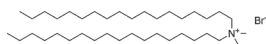
DDAB is a synthetic amphiphilic cationic lipid adjuvant that can be used to induce cell-mediated and humoral responses. DDAB forms vesicular bilayers similar to liposomes made from phospholipids. However, due to instability, it is often combined with TDB, a glycolipid with shorter fatty acid chains, that can improve the bilayer stability of the vesicle.

UNIT SIZE	CATALOG #
1 mg	14702-1
25 mg	14702-25

**Lipids for Drug Delivery, mRNA Vaccines & Transfection**

**DOTAP Chloride GMP** CAS#: 132172-61-3 | C<sub>42</sub>H<sub>84</sub>NO<sub>2</sub>Cl

**26445**



DOTAP Chloride GMP (N-[1-(2,3-Dioleoyloxy)propyl]-N,N,N-trimethylammonium chloride) is a widely used cationic liposome-forming compound for in vitro and in vivo transfection of DNA, RNA and other negatively charged molecules. DOTAP encapsulates the nucleic acids to form a stable complex spontaneously by means of electrostatic interaction, facilitates cell attachment, internalization by endocytosis as well as endosomal escape by proton sponge. It has been used in the formation of Lipid Nanoparticles (LNPs) or Nanostructured Lipid carriers (NLCs) in the development of mRNA vaccines such as COVID-19 vaccine and drug delivery systems. This product is manufactured under 21 CFR part 210,211. Contact us at [info@polysciences.com](mailto:info@polysciences.com) to inquire about sku sizes and pricing.

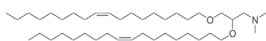
UNIT SIZE	CATALOG #
1 kg	26445-1

**IONIZABLE LIPIDS**

Ionizable lipids are neutral at physiological pH but protonated at acidic pH. When protonated, ionizable lipids condense nucleic acids through electrostatic interactions and promote fusion with endosomal membranes.

**DODMA** CAS#: 104162-47-2 | C<sub>41</sub>H<sub>81</sub>NO<sub>2</sub>

**14478**



(1,2-dioleoyloxy-3-dimethylaminopropane)  
DODMA is an ionizable cationic lipid with a protonatable tertiary amine head group that exhibits positive charge at low pH. DODMA is highly efficient at encapsulating nucleic acid to form lipoplexes during synthesis by reducing the physiological pH, which readily passes through the cell membrane. These properties make DODMA highly suitable for transfection and drug delivery applications.

**Features:**

- Efficient delivery of plasmid DNA, siRNA/miRNA and CRISPR/Cas9 components
- Cost-effective
- Flexibility and reproducibility

UNIT SIZE	CATALOG #
25 mg	14478-25
100 mg	14478-100
500 mg	14478-500

**DODAP** CAS#: 127512-29-2 | C<sub>41</sub>H<sub>77</sub>NO<sub>4</sub>

**14489**



(1,2-dioleoyl-3-dimethylammonium-propane)

DODAP is an ionizable cationic lipid with lower cytotoxicity and high transfection efficiency. DODAP is neutral at physiological pH, but acquires a positive charge inside the endosome due to the protonation of free amines when pH is lower than its pKa (<7). The electrostatic interactions between DODAP and naturally-occurring anionic lipids in endosomal membranes trigger the release of nucleic acid. These interactions promote membrane-lytic non-bilayer structures to enable the intracellular delivery of nucleic acid. A common application is in nanomedicine as an ionizable lipid component of nanocarriers (lipid-polymer hybrid nanoparticles, LPNs), widely used to encapsulate bioactive molecules, including mRNA, siRNA and plasmid DNA as a treatment for diseases.

**Features:**

- High transfection efficiency and low cytotoxicity
- Efficient delivery of plasmid DNA, siRNA/miRNA and CRISPR/Cas9 components
- Widely-used in nanomedicine
- Flexible and scalable

UNIT SIZE	CATALOG #
25 mg	14489-25
100 mg	14489-100
500 mg	14489-500

**DLin-MC3-DMA** CAS#: 1224606-06-7 | C<sub>43</sub>H<sub>79</sub>NO<sub>2</sub>

**14496**



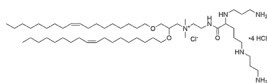
DLin-MC3-DMA is one of the most utilized ionizable cationic lipids used for gene delivery *in vivo*. It is used to form liposomes, lipid nanoparticles (LNPs), and other related nanodelivery systems that can encapsulate siRNA, mRNA, plasmid DNA, or small molecules for delivery into the cytoplasm and for systemic administration of gene therapies. DLin-MC3-DMA was used in the first FDA approved RNAi treatment consisting of an siRNA targeted to hepatocytes for the treatment of polyneuropathy of hATTR amyloidosis in adults.

UNIT SIZE	CATALOG #
1 mg	14496-1
10 mg	14496-10

Lipids for Drug Delivery, mRNA Vaccines & Transfection

**DOSPA Chloride** CAS#:282533-23-7 |  $C_{54}H_{115}Cl_5N_6O_3$

**14477**



DOSPA Chloride is a widely used cationic lipid used in the formation of Lipid Nanoparticles (LNP) or Nanostructured Lipid carriers (NLCs) in the development of mRNA vaccines such as COVID-19 vaccine. LNPs facilitate the safe and effective delivery of mRNA to target cells, therefore enabling therapeutic action. Polysciences' high purity, transfection grade DOSPA Chloride can be used in conjunction with our other cationic lipid products to provide reliable performance for bioprocessing applications. This product is for research use only. Contact us at [info@polysciences.com](mailto:info@polysciences.com) to know about our cGMP grade manufactured DOSPA Chloride under 21 CFR part 210,211.

UNIT SIZE	CATALOG #
1 mg	14477-1
10 mg	14477-10

PHOSPHOLIPIDS

Phospholipids affect the size and surface chemistry of LNPs, improving intracellular uptake. They also provide stability to the LNP and protect therapeutic payloads from degradation. They are used in vaccine and drug nanodelivery platforms.

**DSPC** CAS#: 816-94-4 |  $C_{44}H_{88}NO_8P$

**26437**

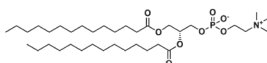


Distearoylphosphatidylcholine (DSPC) is a zwitterionic phospholipid that is used in the preparation of liposomes for transfection and drug delivery applications. DSPC functions to enhance encapsulation efficiency and liposome stability, which enables greater effectiveness in bioprocessing. Lipopolyplexes containing DSPC have been found to have less cytotoxicity and therefore greater cell viability when compared to other phospholipid-based systems. DSPC has been receiving increasing attention as a valuable component in forming lipid nanoparticles (LNPs) in the growing field of mRNA vaccines. LNPs facilitate the safe and effective delivery of mRNA to target cells, thus enabling therapeutic action.

UNIT SIZE	CATALOG #
50 mg	26437-50
250 mg	26437-250
1 g	26437-1

**DMPC** CAS#: 18194-24-6 |  $C_{36}H_{72}NO_8P$

**26447**

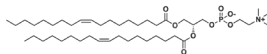


DMPC is a zwitterionic phospholipid used to formulate liposomes, lipid nanoparticles, and other related nanodelivery systems for gene delivery. DMPC, combined with cationic lipids, can be used for delivery of siRNA, mRNA, and plasmid DNA.

UNIT SIZE	CATALOG #
25 mg	26447-25
250 mg	26447-250
500 mg	26447-500

**DOPC** CAS#: 4235-95-4 | C<sub>44</sub>H<sub>84</sub>NO<sub>8</sub>P

**26450**

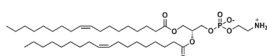


(1,2-Dioleoyl-sn-glycero-3-phosphocholine) DOPC is a neutral helper phospholipid used in gene and drug delivery liposomal formulations. DOPC has been shown to promote more stable lamellar structures. When used in combination with charged lipids, helper lipids have been shown to increase the transfection efficiency in a variety of cell types.

UNIT SIZE	CATALOG #
25 mg	26450-25

**DOPE** CAS#: 4004-05-1 | C<sub>41</sub>H<sub>78</sub>NO<sub>8</sub>P

**26451**

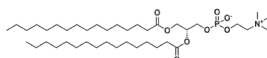


1,2-Dioleoyl-sn-glycero-3-phosphoethanolamine (DOPE) is a neutral helper phospholipid used in gene and drug delivery liposomal formulations. When used in combination with charged lipids, helper lipids have been shown to increase the transfection efficiency in a variety of cell types. DOPE is efficient at facilitating endosomal escape by disrupting membranes.

UNIT SIZE	CATALOG #
25 mg	26451-25
250 mg	26451-250

**DPPC** CAS#: 63-89-8 | C<sub>40</sub>H<sub>80</sub>NO<sub>8</sub>P

**26449**

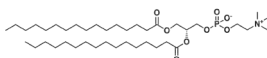


DPPC, a variant of phosphatidylcholine, is an amphipathic phospholipid used for gene and drug delivery formulations. DPPC has been shown to have excellent biodegradability and drug encapsulation capacity, and when combined with other lipids has high cellular uptake, making it ideal for use in liposomal formulations. DPPC is also an integral element of pulmonary surfactants and is often used when studying bilayers found in the human body.

UNIT SIZE	CATALOG #
25 mg	26449-25
250 mg	26449-250
500 mg	26449-500

**DSPE** CAS#: 1069-79-0 | C<sub>41</sub>H<sub>82</sub>NO<sub>8</sub>P

**26452**



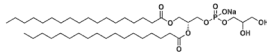
DSPE, a saturated zwitterionic phospholipid and a derivative of phosphatidylethanolamine, can be used in liposomal drug and gene delivery formulations. DSPE can be conjugated with PEG or PCB to develop stealth liposomes that have extended circulation time in the bloodstream.

UNIT SIZE	CATALOG #
25 mg	26452-25
250 mg	26452-250

## BIOPROCESSING, LIPIDS & TRANSFECTION / LIPIDS

### Lipids for Drug Delivery, mRNA Vaccines & Transfection

#### DSPG, Sodium Salt CAS#: 124011-52-5 | $C_{42}H_{82}NaO_{10}P$

**26453**

1,2-distearoyl-sn-glycero-3-phospho-rac-glycerol (DSPG) is an anionic phospholipid in liposomal drug and gene delivery formulations. Anionic phospholipids promote liposomal membrane disruption allowing for release of the drug payload. Anionic lipoplexes, formulated with a combination of anionic and zwitterionic lipids, have also demonstrated high DNA entrapment capability and high stability.

UNIT SIZE	CATALOG #
250 mg	26453-250
500 mg	26453-500

#### Hydrogenated Soybean Phosphatidylcholine (HSPC) CAS#: 97281-48-6 | $C_{44}H_{88}NO_8P$

**26439**

Hydrogenated Soybean Phosphatidylcholine (HSPC) is a saturated phospholipid used in liposomal drug delivery formulations. It is also known to increase the solubility and bioavailability of hydrophobic drugs. It also has high oxidative stability and low hygroscopicity which can improve the overall drug efficacy.

UNIT SIZE	CATALOG #
100 mg	26439-100
1 g	26439-1

### PEGYLATED LIPIDS

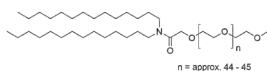
#### DSPE PEG 2000, Amine CAS#: 474922-26-4 | $(C_2H_4O)_n C_{44}H_{86}N_2O_{10}P \cdot Na$

**14499**

DSPE-PEG(2000)-amine is DSPE (a phospholipid) functionalized with PEG2000. DSPE-PEG2000 can be used in LNPs for mRNA delivery.

UNIT SIZE	CATALOG #
10 mg	14499-10

#### ALC-0159 CAS#: 1849616-42-7

**14492**

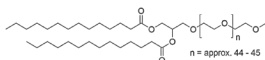
ALC-0159 (N,N-dimyristylamide of 2-hydroxyacetic acid) is a widely used liposome-forming compound for *in vitro* and *in vivo* transfection of DNA, RNA and other negatively charged molecules. ALC-0159 is a pegylated lipid used in the formation of Lipid Nanoparticles (LNP) or Nanostructured Lipid carriers (NLCs) in the development of mRNA vaccines such as COVID-19 vaccine. This product is for *Research Use Only*.

UNIT SIZE	CATALOG #
25 mg	14492-25
100 mg	14492-100
500 mg	14492-500



**DMG-PEG 2000** CAS#: 1397695-86-1 |  $(C_2H_4O)_n C_{32}H_{62}O_5$

**14493**



DMG-PEG2000 (1,2-dimyristoyl-rac-glycero-3-methoxypolyethylene glycol-2000) is a widely-used liposome-forming compound for *in vitro* and *in vivo* transfection of DNA, RNA and other negatively charged molecules. DMG-PEG2000 is a pegylated lipid used in the formation of Lipid Nanoparticles (LNPs) or Nanostructured Lipid carriers (NLCs) in the development of mRNA vaccines such as COVID-19 vaccine. This product is for *Research Use Only*.

**Features:**

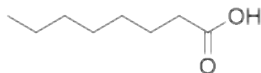
- High transfection efficiency and low cytotoxicity
- Efficient delivery of plasmid DNA, siRNA/miRNA and CRISPR/Cas9 components
- Widely-used in nanomedicine
- Flexible and scalable

UNIT SIZE	CATALOG #
100 mg	14493-100
500 mg	14493-500
1 g	14493-1

FATTY ACIDS

**Octanoic Acid** CAS#: 124-07-2 |  $C_8H_{16}O_2$

**14504**

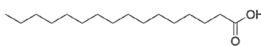


Octanoic acid, also known as caprylic acid, is a medium chain saturated fatty acid. Octanoic acid can be used to formulate self-emulsifying drug delivery systems (SEDDS) that significantly improve the bioavailability, especially for highly metabolized drugs, compared to the drug alone. Octanoic acid is also often included in the inner phase core of polymer-based nanoparticles to solubilize a wide range of drugs.

UNIT SIZE	CATALOG #
1 g	14504-1
100 mg	14504-100

**Palmitic Acid** CAS#: 57-10-3 |  $C_{16}H_{32}O_2$

**14501**



Palmitic acid is a naturally-occurring saturated fatty acid that has been shown to have high transfection efficiency for the delivery of plasmids and mRNA in a variety of cell types. It can also be used as a supplement in cell culture systems to improve the growth and viability in Chinese Hamster Ovary (CHO) cells and other mammalian eukaryotic cells.

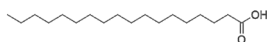
UNIT SIZE	CATALOG #
10 mg	14501-10
25 mg	14501-25
500 mg	14501-500

## BIOPROCESSING, LIPIDS & TRANSFECTION / LIPIDS

### Lipids for Drug Delivery, mRNA Vaccines & Transfection

**Stearic Acid** CAS#: 57-11-4 | C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

**14500**

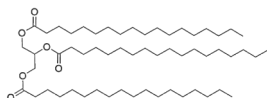


Stearic acid is a saturated fatty acid used to formulate solid lipid nanoparticles (SLNs). SLNs are advantageous due to their high stability, biocompatibility, and enhanced circulation of encapsulated therapeutic payload. Stearic acid, when combined with a surfactant, can be used to formulate SLNs to improve drug efficacy.

UNIT SIZE	CATALOG #
5 mg	14500-5
25 mg	14500-25
100 mg	14500-100

**Tristearin** CAS#: 555-43-1 | C<sub>57</sub>H<sub>110</sub>O<sub>6</sub>

**14527**



Tristearin is a lipid used in the development of solid lipid nanoparticles (SLNs). SLNs are advantageous due to their high stability, biocompatibility, and enhanced circulation of encapsulated therapeutic payload. Stearic acid, when combined with a surfactant, can be used to formulate SLNs to improve drug efficacy.

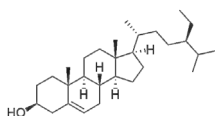
UNIT SIZE	CATALOG #
1 g	14527-1

### CHOLESTEROLS AND ITS DERIVATIVES

Cholesterol and its derivatives stabilize LNPs during storage and circulation by increasing the membrane rigidity. They also improve cellular uptake efficiency of therapeutic payloads by facilitating stable encapsulation and preventing leakage from the liposomal core.

**β-sitosterol** CAS#: 83-46-5 | C<sub>29</sub>H<sub>50</sub>O

**14495**

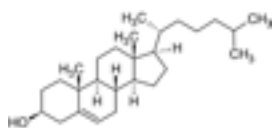


Beta-sitosterol is a naturally-occurring sterol lipid that is growing in the bioprocessing space for its ability to improve mRNA transfection efficiency. Inclusion of beta-sitosterol in lipid nanoparticle (LNP) formulations has been shown to increase transfection efficiency rates both in cell cultures and *in vivo*, leading to particular interest in the use of the lipid in mRNA vaccine development. LNPs facilitate the safe and effective delivery of mRNA to target cells, thus enabling therapeutic action. Polysciences' high purity, synthetic, transfection grade beta-sitosterol can be used in conjunction with our other lipid products to provide reliable performance for a variety of bioprocessing applications

UNIT SIZE	CATALOG #
5 mg	14495-5
25 mg	14495-25

**Cholesterol** CAS#: 57-88-5 | C<sub>27</sub>H<sub>46</sub>O

**26436**



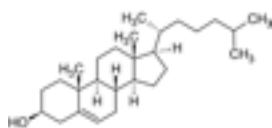
Cholesterol is a naturally-occurring sterol lipid that has received growing emphasis in the bioprocessing space for its ability to improve DNA transfection efficiency by reducing the adherence of serum proteins to lipopolyplexes and increasing fusion with cellular membranes. The benefits of Cholesterol on cationic lipid complexes have been shown to increase transfection rates both in cell cultures and *in vivo*. Cholesterol has also been shown to reduce degradation of DNA from DNase *in vivo*. Polysciences' high purity, transfection grade Cholesterol can be used in conjunction with our other cationic lipid products to provide reliable performance for bioprocessing applications.

Cholesterol is receiving increased attention as a valuable component in forming lipid nanoparticles (LNPs) in the growing field of mRNA vaccines. LNPs facilitate the safe and effective delivery of mRNA to target cells, thus enabling therapeutic action.

UNIT SIZE	CATALOG #
50 mg	26436-50
250 mg	26436-250
1 g	26436-1

**Cholesteryl Hemisuccinate (CHEMS)** CAS#: 1510-21-0 | C<sub>31</sub>H<sub>50</sub>O<sub>4</sub>

**23967**

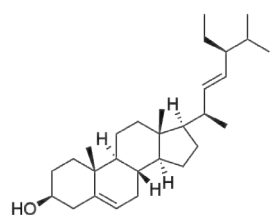


Cholesteryl hemisuccinate (CHEMS) is a cholesterol derivate that is responsive to changes in pH. When incorporated in lipid bilayer membranes, it provides membrane stabilization activity, but when exposed to acidic environments it results in a break of the lipid membrane which facilitates drug release. It can also be used in conjunction with DOPE to improve transfection efficiency.

UNIT SIZE	CATALOG #
1 g	23967-1
5 g	23967-5

**Stigmasterol** CAS#: 83-48-7 | C<sub>29</sub>H<sub>48</sub>O

**14497**



Stigmasterol is a naturally-occurring phytosterol lipid that is growing in the bioprocessing space for its ability to improve lipid nanoparticle (LNP)-based mRNA transfection efficiency. LNPs are well known for facilitating the safe and effective delivery of mRNA to target cells, thus enabling therapeutic action. Cholesterol derivatives like stigmasterol offer two major benefits to LNP formulations: they can improve the stability of the LNP and they can increase the transfection efficiency in both in cell cultures and *in vivo*. Polysciences' high purity, transfection grade stigmasterol can be used in conjunction with our other cationic lipid products to provide reliable performance for a variety of bioprocessing applications.

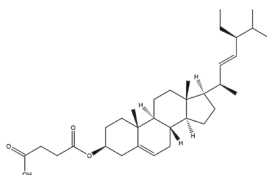
UNIT SIZE	CATALOG #
1 g	14497-1

## BIOPROCESSING, LIPIDS & TRANSFECTION / LIPIDS

### Lipids for Drug Delivery, mRNA Vaccines & Transfection

#### Stigmasteryl hemisuccinate (STEMS) CAS#: 86674-63-7 | C<sub>33</sub>H<sub>52</sub>O<sub>4</sub>

14402

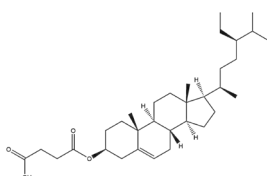


Stigmasteryl hemisuccinate (STEMS) is a stigmasterol derivative that is responsive to changes in pH. Stigmasteryl is a naturally-occurring phytosterol lipid that is growing in the bioprocessing space for its ability to improve lipid nanoparticle (LNP)-based mRNA transfection efficiency. Conjugation to hemisuccinate has been shown to improve the cellular uptake in acidic microenvironments, such as those around tumors.

UNIT SIZE	CATALOG #
1 g	14402-1

#### β-Sitosteryl hemisuccinate (β-STEMS) CAS#: 81125-67-9 | C<sub>33</sub>H<sub>54</sub>O<sub>4</sub>

14401



β-Sitosteryl hemisuccinate (β-STEMS) is a β-sitosterol derivative that is responsive to changes in pH. β-sitosterol is a naturally-occurring sterol lipid that is growing in the bioprocessing space for its ability to improve mRNA transfection efficiency. Conjugation to hemisuccinate has been shown to improve the cellular uptake in acidic microenvironments, such as those around tumors.

UNIT SIZE	CATALOG #
5 mg	14401-5

#### BODIPY-Cholesterol CAS#: 878557-19-8 | C<sub>36</sub>H<sub>51</sub>BF<sub>2</sub>N<sub>2</sub>O

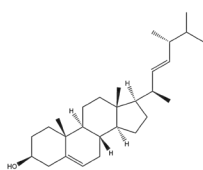
14526

BODIPY-Cholesterol is cholesterol tagged with the fluorophore BODIPY. It can be used to monitor uptake in LNP uptake in cells. It has an ex/em of 480 nm/508 nm.

UNIT SIZE	CATALOG #
1 mg	14526-1

#### Brassicasterol CAS#: 474-67-9 | C<sub>28</sub>H<sub>46</sub>O

14525

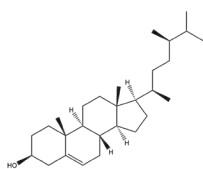


Brassicasterol is a phytosterol that can be used as a biomarker to detect the presence of marine algal matter.

UNIT SIZE	CATALOG #
5 mg	14525-5

#### Campesterol CAS#: 474-62-4 | C<sub>28</sub>H<sub>48</sub>O

14511

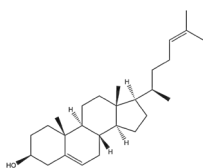


Campesterol is a phytosterol and an agonist of liver X receptors, which are involved in the transcriptional control of lipid metabolism. Inclusion of campesterol in lipid nanoparticle (LNP) formulations has been shown to increase transfection efficiency rates both in cell cultures and in vivo, leading to particular interest in the use of the lipid in mRNA vaccine development.

UNIT SIZE	CATALOG #
1 mg	14511-1

**Desmosterol** CAS#: 313-04-2 | C<sub>27</sub>H<sub>44</sub>O

**14522**

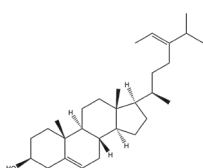


Desmosterol is a sterol lipid with a backbone similar to cholesterol. It is the precursor to cholesterol in the Bloch biosynthesis pathway. It is known to be a regulator of lipid metabolism.

UNIT SIZE	CATALOG #
5 mg	14522-5

**Fucosterol** CAS#: 17605-67-3 | C<sub>29</sub>H<sub>48</sub>O

**14510**

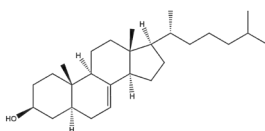


Fucosterol is a plant sterol that has antioxidant and anti-inflammatory properties. Inclusion of fucosterol in lipid nanoparticle (LNP) formulations has been shown to increase transfection efficiency rates both in cell cultures and *in vivo*, leading to particular interest in the use of the lipid in mRNA vaccine development.

UNIT SIZE	CATALOG #
5 mg	14510-5

**Lathosterol** CAS#: 80-99-9 | C<sub>27</sub>H<sub>46</sub>O

**14523**

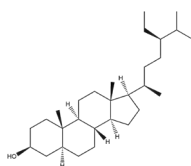


Lathosterol is a precursor in the cholesterol synthesis pathway. Lathosterol can be used as a biomarker of excess cholesterol production as lathosterol levels in serum corresponds with cholesterol synthesis.

UNIT SIZE	CATALOG #
5 mg	14523-5

**Sitostanol** CAS#: 83-45-4 | C<sub>29</sub>H<sub>52</sub>O

**14524**



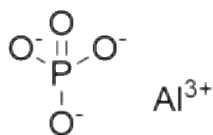
Sitostanol is a saturated plant sterol that can be used to lower serum cholesterol.

UNIT SIZE	CATALOG #
5 mg	14524-5

## BIOPROCESSING, LIPIDS & TRANSFECTION / ADJUVANTS

### Adjuvants

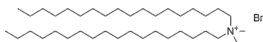
#### Aluminum Phosphate CAS#: 7784-30-7 | $\text{AlPO}_4$

**14519**

Aluminum phosphate is an adjuvant that is commonly used as a component of vaccines to stimulate immune responses against antigens.

UNIT SIZE	CATALOG #
50 g	14519-50

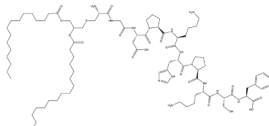
#### Dimethyldioctadecylammonium (Bromide Salt) (DDAB) CAS#: 3700-67-2 | $\text{C}_{38}\text{H}_{80}\text{BrN}$

**14702**

DDAB is a synthetic amphiphilic cationic lipid adjuvant that can be used to induce cell-mediated and humoral responses. DDAB forms vesicular bilayers similar to liposomes made from phospholipids. However, due to instability, it is often combined with TDB, a glycolipid with shorter fatty acid chains, that can improve the bilayer stability of the vesicle.

UNIT SIZE	CATALOG #
1 g	14702-1
25 g	14702-25

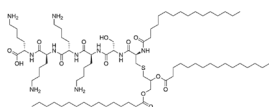
#### FSL-1 CAS#: 322455-70-9 | $\text{C}_{84}\text{H}_{140}\text{N}_{14}\text{O}_{18}\text{S}$

**14709**

FSL-1 is a synthetic lipoprotein and an agonist of the TLR2/TLR6 heterodimer which induces an innate immune response. It can be used as a vaccine adjuvant to improve therapeutic outcomes.

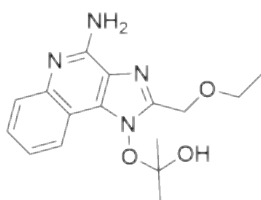
UNIT SIZE	CATALOG #
1 mg	14709-1
5 mg	14709-5

#### PAM3CSK4 CAS#: 112208-00-1 | $\text{C}_{81}\text{H}_{156}\text{N}_{10}\text{O}_{13}\text{S}$

**14518**

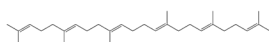
Pam3CSK4 (Pam3CysSerLys4) is a lipopeptide and an activator of proinflammatory transcription factor NF- $\kappa$ B. It is a kind of TLR agonist and ligand of TLR2/TLR1.

UNIT SIZE	CATALOG #
1 mg	14518-1

**Resiquimod** CAS#:144875-48-9 | C<sub>17</sub>H<sub>22</sub>N<sub>4</sub>O<sub>2</sub>
**14706**


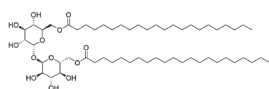
Resiquimod, an imidazoquinoline compound, is a TLR7/TLR8 synthetic agonist that can be used as a vaccine adjuvant to improve antigen-specific antibody production. Resiquimod is known to activate immune cells and upregulate the levels of cytokines like TNF- $\alpha$ , IL-6, IL-12, and IFN- $\alpha$ .

UNIT SIZE	CATALOG #
10 mg	14706-10
50 mg	14706-50

**Squalene** CAS#:111-02-4 | C<sub>30</sub>H<sub>50</sub>
**14508**


Squalene is an organic compound used as a component of some adjuvant formulations. Squalene-based emulsions have been shown to induce a strong innate immune response.

UNIT SIZE	CATALOG #
100 mL	14508-100

**Trehalose 6,6'-dibehenate (TDB)** CAS#:66758-35-8 | C<sub>56</sub>H<sub>106</sub>O<sub>13</sub>
**14701**


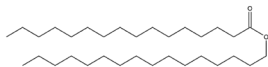
TDB is a glycolipid adjuvant and an immunomodulator that can induce a cell-mediated immune and antibody response. TDB, along with DDA, can be used to form non-phospholipid based liposomal-like nanoparticles. TDB also plays a critical role in stabilizing the nanoparticle membrane, especially during freeze-drying processes, by increasing the hydration of the membrane surface.

UNIT SIZE	CATALOG #
5 mg	14701-5
25 mg	14701-25

**Zymosan A** CAS#:58856-93-2 | (C<sub>6</sub>H<sub>10</sub>O<sub>5</sub>)<sub>x</sub>
**14703**

Zymosan A is an adjuvant that is known to stimulate macrophage receptors such as TLR2, TLR6, NLRP3, and dectin-1.

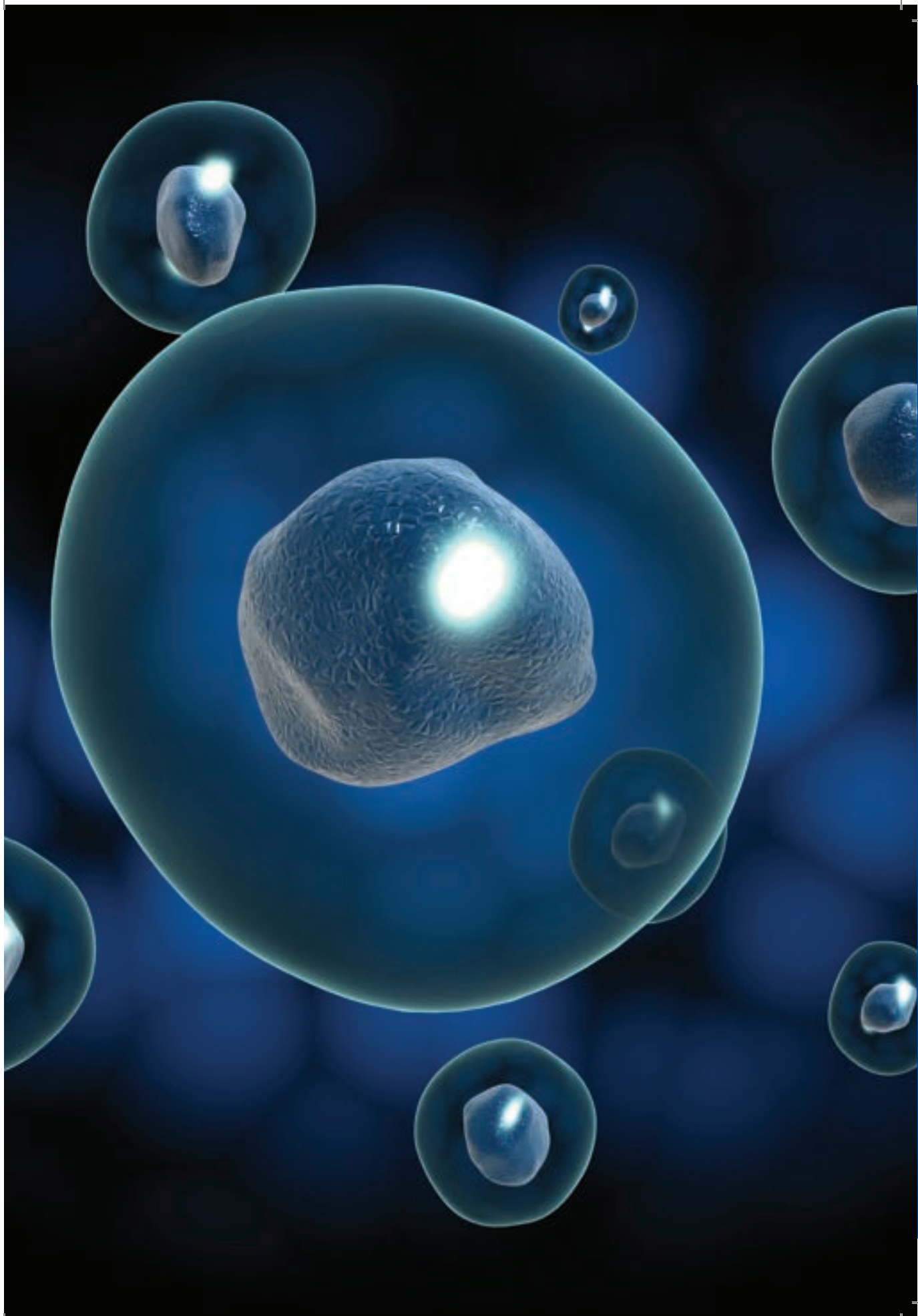
UNIT SIZE	CATALOG #
250 mg	14703-250

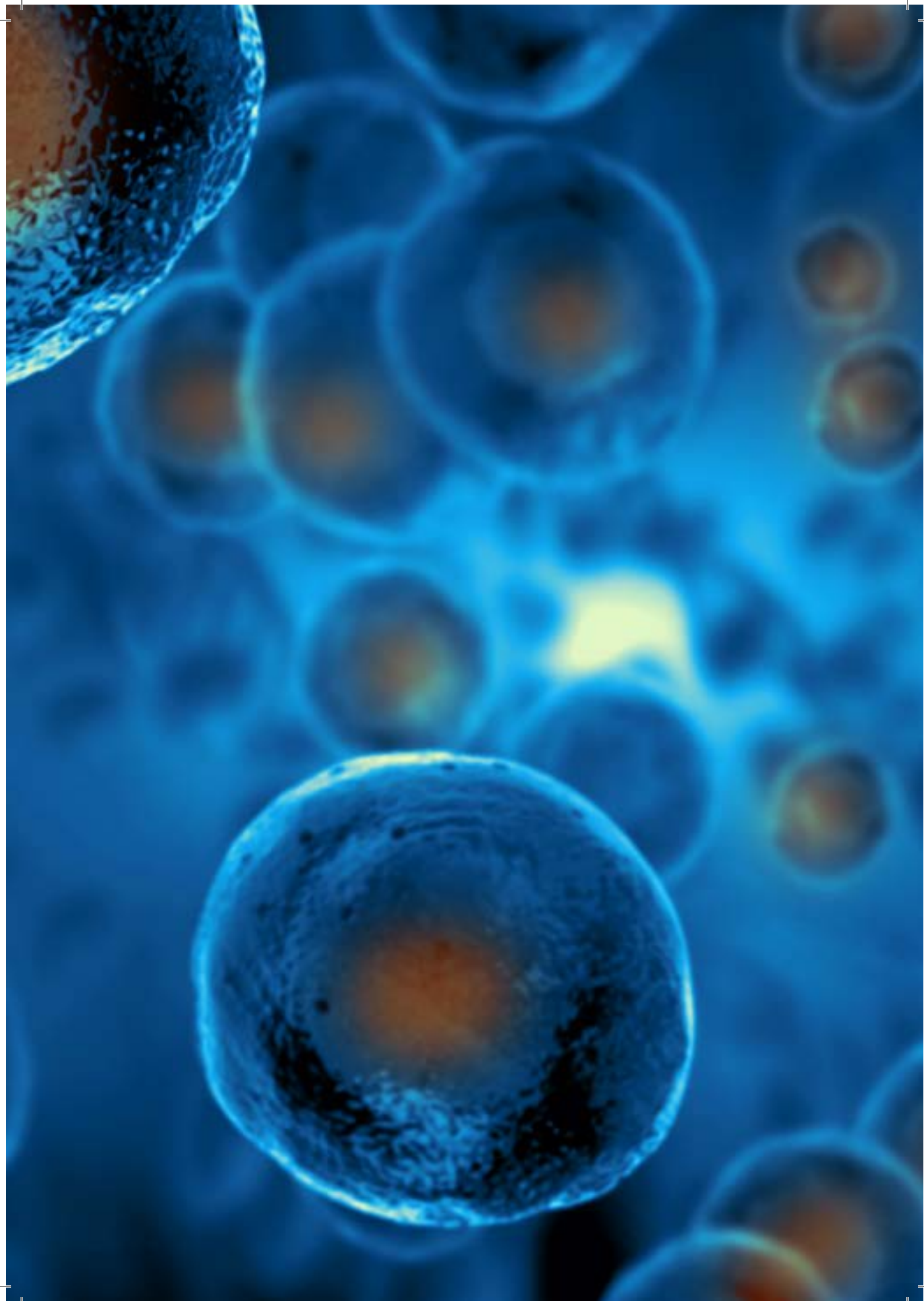
**Other****Cetyl Palmitate** CAS Number: 540-10-3 |  $C_{32}H_{64}O_2$ **14502**

Cetyl palmitate, also known as hexadecyl hexadecanoate, is a naturally occurring waxy lipid used to formulate solid lipid nanoparticles (SLNs). SLNs are nano-sized particles composed of certain lipids, like waxes, that are solid at room and body temperature. SLNs are advantageous over other drug delivery systems due to the inherent biocompatibility of the materials used for formulation. Cetyl palmitate, in combination with other two-tailed lipids, has been effectively utilized for transfection as well as other types of drug delivery in a variety of cell lines.

UNIT SIZE	CATALOG #
100 mg	14502-100







A vertical strip on the left side of the page features a microscopic image of cells. The cells are stained, with some showing a bright blue nucleus and others appearing more translucent. The background is a deep blue, creating a scientific and cellular atmosphere.

# LIFE SCIENCES I

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## HISTOLOGY, CYTOLOGY & PATHOLOGY

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## Certified Dyes

PRODUCT NAME	C.I. #	CAT. #
Acid Fuchsin	42685	24991
Acridine Orange	46005	04539
Alcian Blue 8GX	74240	19175
Biebrich Scarlet	26905	03336
Chlorazole Black E	30235	02730
Cibacron Blue, F3GA	61211	25721
Congo Red	22120	02736
Coomassie® Blue G250	42655	03707
Coomassie® Blue R250	42660	00352
Cresyl Violet Acetate	-	21063
Eosin Y	45380	02740
Fast Green	42053	02745
Fuchsin, basic (Pararosaniline)	42500	06342
Hematoxylin	75290	02749
Light Green SF Yellowish	42095	02753
Nuclear Fast Red	60760	09773
Oil Red O	26125	06317
Orange G	16230	00968
Pyronin Y	45005	18614
Rhodamine 6G	45160	25004
Safranin O	50240	02782
Sirius Red	35780	09400
Sudan Black B	26150	25008
Tetrachrome Stain (MacNeal)	25004	02783
Toluidine Blue O	52040	01234
Toluidine Blue O (purified)	52040	15931
Wright Stain	-	02785

## Embedding Media Selection Guide

PRODUCT	TDS #	MEDIUM TYPE	APPLICATION	VISCOSITY	POLYMERIZATION TEMP.	TIME	CAT. #
Embed-It™ Low Viscosity Epoxy Kit	622	Epoxy	EM/Histo	Low	60° C	12-24 hrs.	24300
Poly/Bed 502 Kit, Luft's Formula	128	Epoxy PO	EM/Histo	Med.	60° C	12-24 hrs.	02600
Batson's #17 Anatomical Corrosion Kit	105	Methacrylate	EM/Histology	Med./High	RT	24 hrs.	07349
JB-4® Plus Embedding Kit	393	Glycol Methacrylate	Histology	Low	0 - 4° C	60 min.	18570
JB-4® Embedding Kit	123	Glycol Methacrylate	Histology	Low	0 - 4° C	60 min.	00226

Embedding Media Selection Guide *continued*

PRODUCT	TDS #	MEDIUM TYPE	APPLICATION	VISCOSITY	POLYMERIZATION TEMP.	TIME	CAT. #
JB-4® Mini Embedding Kit	494	Glycol Methacrylate	Histology	Low	4 - 25° C	1-2 hrs.	22507
LR White® Embedding Media	305	Acrylic	EM/Histo/IHC	Very low	60° C	12-20 hrs.	17411
Lowicryl®HM 20 Non-polar, hydrophobic, Embedding Kit	248	Acrylic	EM/Histo	Low	-70° C	24 hrs.	15924
Lowicryl®HM 23 Non-polar, hydrophobic, Embedding Kit	248	Acrylic	EM/Histo	Low	-80° C	12 hrs.	18162
Lowicryl®K4M Polar Kit, hydrophilic, Embedding Kit	248	Acrylic	EM/Histo	Low	-35° C	24 hrs.	15923
Lowicryl®K11M Polar Kit, hydrophilic, Embedding Kit	248	Acrylic	EM/Histo	Low	-60° C	12 hrs.	18163
Methyl Methacrylate-Butyl Methacrylate Embedding Kit	408	Methacrylates	EM/Histo	Med.	40° C 60° C	12-24 hrs.	03573
MonoStep™ Lowicryl® K4-M Polar Embedding Kit	-	Acrylic	EM/Histo	Low	-35° C polar 50° C non-polar	24 hrs.	23646
Osteo-Bed Bone Embedding Kit	355	Methyl Methacrylate	Histo/IHC	Med.	35° C	12-48 hrs.	17734
Osteo-Bed Plus Embedding Kit	785	Methyl Methacrylate	Histo/IHC	Med.	35° C	12-48 hrs.	24889
Poly/Bed® 812 (Luft formulations) Embedding Kit / DMP-30	233	Epoxy	EM/Histo	Med.	60° C	24 hrs.	08792
Poly/Bed® 812 (Luft formulations) Mini Kit	233	Epoxy	EM/Histo	Med.	60° C	24 hrs.	21958
Poly/Bed® 812 Embedding Kit / BDMA (Glauert Version)	471	Epoxy	EM/Histo	Low/Med.	60° C	24 hrs.	21844
SPURR Low Viscosity Kit	127	Epoxy	EM/Histo	Low	70° C	8 hrs.	01916
PolyFreeze	678	Polyol	Histo/ IHC	Low	-8° - -25°	---	19636

## Fluorophores

PRODUCT	EXCITATION MAX	EMISSION MAX	CAT. #
Acridine Orange	502nm	525nm	04539
Burgundy – Mini Kit	683nm	707nm	24843
Burgundy – MIDI Kit	683nm	707nm	24850
Claret – Mini Kit	655nm	675nm	24844
Claret – MIDI Kit	655nm	675nm	24849
Jade – Mini Kit	478nm	508nm	24904
Jade – MIDI Kit	478nm	508nm	24905
Lavender – Mini Kit	425nm	671nm	24841
Lavender – MIDI Kit	425nm	461nm	24851
Lilac – Mini Kit	423nm	471nm	25568
Maroon – Mini Kit	647nm	667nm	24840
Maroon – MIDI Kit	647nm	667nm	24847
NIR780 – Mini Kit	743nm	776nm	24845
NIR780 – MIDI Kit	743nm	776nm	24852
NIR815 – Mini Kit	786nm	814nm	24846
NIR815 – MIDI Kit	786nm	814nm	24853
Plum – Mini Kit	652nm	671nm	24842
Plum – MIDI Kit	652nm	671nm	24848
Red – Mini Kit	567nm	588nm	25567
Red – MIDI Kit	567nm	588nm	25682
Coumarin 6, laser grade	350nm	435nm	8037L
CTC (Cyanoditoyl Tetrazolium Chloride)	450nm	630nm	19292
DAPI (4',6-Diamidino-2-phenylindole dihydrochloride)	342nm	488nm	09224
Fast Blue	365nm	420nm	17740
Fluorescein, Sodium Salt	460nm	515nm	24997
Hydroethidine (Dihydroethidium bromide)	365nm	420nm	17084
Burgundy	683nm	707nm	24838
Jade	494nm	507nm	24837
Jade Solid	478nm	508nm	25687
Maroon	647nm	667nm	24834
Orange	550nm	570nm	24836
Red	567nm	588nm	24835
Red Plus	567nm	588nm	24906
Red Solid	567nm	588nm	24907
Rhodamine 6G, C.I. 45160	528nm	551nm	25004
Thiazole orange	512nm	533nm	19352

PRODUCT NAME	USE(S)	CAT. #
2% Acridine Orange, Ready-to-Use	RNA Stain, Apoptosis	24603
AFB Kinyoun Kit (Cold Method)	Mycobacteria - Microbiology	25765
AFB Ziehl-Neelson Kit (Hot Method)	Mycobacteria - Microbiology	24669
Alcian Blue/PAS Kit	Histology	25086
Amyloid Stain Kit (Congo Red)	Amyloids	24614
Bielschowsky Silver Stain	Histology - Silver Stain, Neuroscience	25994
Differential Quik III Stain Kit	Hematology, Cytology, Histology	26419
Eosin Y, 0.5% alcoholic solution, Acidic	Histology Counterstain, Cytology	09859
Eosin Y, 1% alcoholic solution, Non-Acidic	Histology Counterstain, Cytology	17269
Fontana Masson Stain Kit	Histology - Silver Stain	25104
Fungi-Fluor® Kit for Fungal Detection	Fungal Stain	17442
Fungi-Fluor® Pneumocystis Kit	PCP Stain	22363
Gill's Hematoxylin #1 for Cytology	Cytology Stain	24242
Gill's Hematoxylin #2, double strength for Histology & Cytology	IHC Stain - Cytology / Histology	24243
Gill's Hematoxylin #3, triple strength for Histology	Histology	24244
Gill's modified OG-6	Pap Stains - Cytology	09782
Gill's modified EA	Pap Stains - Cytology	09783
GlycoGel Stain Kit	Histology, Electrophoresis	24693
Gomori's Trichrome Stain Kit	Histology, Electrophoresis	24205
Grocott Methenamine Silver Stain (GMS) for Fungus & PCP	Histology - Silver Stain	25087
Harris Hematoxylin, Acidified (mercury-free)	Histology	24245
Jones PAS-M Stain Kit	Histology - Silver Stain	25091
Lithium Blue	Histology, Cytology	24820
Luxol Fast Blue, Ready-to-Use	Histology, Myelin	24611
Mayer's Hematoxylin	Histology - Plastic Embedding	24821
Multiple Stain Solution (Paragon)	Tzanck / EM / Frozen sections	08824
Gram Stain Set (Stabilized)	Histology, Microbiology	25036
Neat Stain Hematology Stain Kit	Histology, Microbiology	25034
Neat Stain Trichrome Stain Kit	Histology, Microbiology	25035
Periodic Acid Schiff's (PAS) Stain	Histology - Glycogen	24200
Picrosirius Red Stain Kit	Histology - Collagen I, Collagen III	24901
Prussian Blue Iron Stain Kit (Reaction for Demonstration of Iron)	Histology, Electrophoresis	24199
Reticulin Stain Kit	Histology - Silver Stain	25094
Scott's Bluing Reagent	Histology, Cytology	24605
StainRITE® Giemsa Stain (for May-Grünwald)	Hematology, Cytology	25038
StainRITE® May-Grünwald Stain Solution	Histology, Hematology	24981
StainRITE® Wright Stain Solution	Histology, Hematology, Microbiology	24986
StainRITE® Wright-Giemsa Stain Solution	Histology, Hematology, Microbiology	24985
TB Fluorostain Kit	Mycobacteria - Histology / Microbiology	22422

## LIFE SCIENCES / QUICK REFERENCE PRODUCT GUIDE

### Ready-to-use Stains *continued*

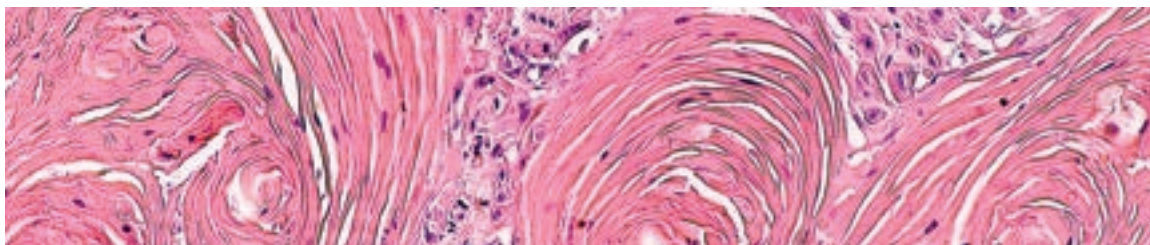
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PRODUCT NAME	USE(S)	CAT. #
Terry's Polychrome Methylene Blue 2% Aqueous	STAT One Step - Frozen or Fixed tissue	09978
Villanueva Osteochrome Bone Stain	Histology - Plastic Embedding	16280
Von Kossa Method for Calcium Kit	Histology - Calcium	24633
Weigert's Hematoxylin Kit (Solution A & B)	Histology - Nuclear Staining	25373









## FIXATIVES

### Acetone CAS#: 67-64-1 | $\text{CH}_3\text{COCH}_3$ | HAZARD CODE: CH6g

For hardening and dehydrating tissues. It can also be used for the extraction of various principals from animal and plant substances.

CHARACTERISTICS	UNIT SIZE	CATALOG #
EM and Histology grade, 99.5% minimum	1 L	01921-1
EM and Histology grade, 99.5% minimum	4 L	01921-4
Glass Distilled, >99.5%	4 L	08523-4

### Bouin's Fixative (Bouin's Fluid) | HAZARD CODE: BHM6g

**16045**

Picric acid, formalin and acetic acid fixative. Bouin's fixative is excellent for use in preserving soft and delicate tissue structures. The shrinking induced by the picric acid is offset by the swelling of the glacial acetic acid.

CHARACTERISTICS	UNIT SIZE	CATALOG #
d 1.09 n20/D 1.376	1 L	16045-1
d 1.09 n20/D 1.376	1 gal	16045-G

### Flow Fix Fixative Kits

A buffer comprised of a neutral pH-buffered saline (i.e., Dulbecco's Phosphate-Buffered Saline). Sodium Azide-Free. Do not add sodium azide to buffers if you are concerned with recovering cell function.

CHARACTERISTICS	UNIT SIZE	CATALOG #
1% w/v paraformaldehyde Hazard Code: H2d	1 kit	25037-1
2% w/v paraformaldehyde Hazard Code: H4g	1 kit	25085-1

### Formaldehyde 37%, U.S.P CAS#: 50-00-0 | $\text{CH}_2\text{O}$ | HAZARD CODE: BHMV6g

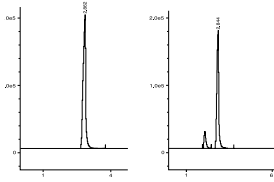
**00625**

(Formalin 100%) *Special handling charge & carrier surcharges.*

UNIT SIZE	CATALOG #
1 gal	00625-1

Fixatives

**Formaldehyde, methanol free, Ultra Pure** CAS#: 50-00-0 | CH<sub>2</sub>O | HAZARD CODE: HM06g



Left: Polysciences Quality Formaldehyde  
Right: Formaldehyde showing methanol impurity

Suitable for both electron and light microscopy. Easily penetrates large blocks of tissue. When used in combination with glutaraldehyde, it fixes delicate tissues such as brain in vascular perfusion. Avoids the problem of having to depolymerize paraformaldehyde. Used in Karnovsky's fixative in conjunction with your own buffer system. Source of the formaldehyde is paraformaldehyde.

CHARACTERISTICS	UNIT SIZE	CATALOG #
10%	1 L	04018-1
10%	4 x 1 L	04018-4
16%	10 x 10 ml	18814-10
16%	20 x 10 ml	18814-20

**Formalin, 10% neutral buffered (phosphate buffer)** | HAZARD CODE: HMV6g

**08379**

Widely used fixative for processing tissues in routine histology laboratories. Used for IHC in the clinical laboratory for paraffin embedded tissues. Volume of the fixative should be 15 – 20 times that of the tissue.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Formaldehyde 3.7%	3.75 L	08379-3.75
Formaldehyde 3.7%	20 L	08379-20

**Glutaraldehyde, Biological Grade** CAS#: 111-30-8 | HAZARD CODE: B6g

Purified to minimize by-product formation and maximize shelf life. Suitable for most morphological studies. For more demanding purity and longer stability, use EM-grade glutaraldehyde.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Biological Grade, 25%	500 ml	00376-500
Biological Grade, 25%	4 x 500 ml	00376-4
Biological Grade, 50%	500 ml	00377-500
Biological Grade, 50%	1 L	00377-1
Biological Grade, 50%	4 x 1 L	00377-4

**Glutaraldehyde, EM Grade** CAS#: 111-30-8

Glutaraldehyde, EM Grade, 25%, is recommended for histochemical or immunological techniques. We supply EM (electron microscopy) grade glutaraldehyde in ampoules to ensure the highest activity. Each ampoule is fitted with an ampoule cracker for added safety. Also available in 100 ml amber glass bottle.

CHARACTERISTICS	UNIT SIZE	CATALOG #
EM Grade, 8% Hazard Code: B6g	100 ml	07710-100
M Grade, 8% Hazard Code: B6g	5 x 100 ml	07710-5
EM Grade, 8% (10 x 10ml) Hazard Code: B6g	10 x 10 ml	00216A-10
EM Grade, 8% (30 x 10ml) Hazard Code: B6g	30 x 10 ml	00216-30
EM Grade, 25% Hazard Code: HOV6d	100 ml	01909-100
EM Grade, 25% Hazard Code: HOV6d	10 x 10 ml	01909-10
EM Grade, 25% Hazard Code: HOV6d	5 x 100 ml	01909-5
EM Grade, 50% Hazard Code: BOV6d	100 ml	18428-100
EM Grade, 50% Hazard Code: BOV6d	10 x 10 ml	18428-10
EM Grade, 50% Hazard Code: BOV6d	5 x 100 ml	18428-5
EM Grade, 70% Hazard Code: BOV6d	10 x 2 ml	01201-2
EM Grade, 70% Hazard Code: BOV6d	5 x 10 ml	01201-5

**Hartmann's Fixative (modified Davidson's fixative)** | HAZARD CODE: BCHM7ag**24355**

Overnight fixative for the visualization of lymph nodes in radical dissection specimens. Helpful with both breast and colon specimens by turning lymph nodes white.

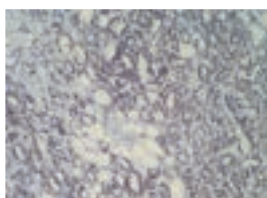
UNIT SIZE	CATALOG #
500 ml	24355-500
1 gal	24355-1

**Hollandes Fixative** | HAZARD CODE: HMOV7gp**24354**

Excellent for large and small gastric tissue, GI biopsies or any tissues that contain large amounts of inflammatory and mucinous cells. This solution is one of the best fixatives for certain kinds of protozoa. Hollandes is a preferred fixative for flagellates and ciliates which are demonstrated with silver stains. It is also an excellent fixative for routine surgical specimens.

UNIT SIZE	CATALOG #
500 ml	24354-500
1 gal	24354-1

## Fixatives

**HOPE® Fixation** | HAZARD CODE: A2d

Detection of estrogen receptor in human breast carcinoma tissue via IHC without any antigen retrieval. Photo Courtesy of DCS - Innovative Diagnostik-Systeme.

HOPE - Formalin-free fixation technique for molecular pathology and research. Tissue conservation using the new HOPE®-technique provides paraffin embedded tissue blocks with native structure of the macro-molecules (protein, DNA, RNA) in the tissue.

During HOPE fixation, tissue samples are incubated in HOPE I solution, then in HOPE II solution, followed by a dehydration with acetone and subsequent embedding in paraffin. With this tissue processing, no alcohols or aldehydes (formalin, glutaraldehyde) are used. As a consequence, there is no cross-linking of macromolecular structures during the process. This opens up new opportunities to characterize tissues out of paraffin blocks.

RNA, DNA and proteins are conserved, thus making subsequent applications such as PCR, RT-PCR, Northern-Blot, Immunohistochemistry, Western-Blot and many others possible out of the same tissue blocks.

HOPE® is a registered trademark of DCS, Innovative Diagnostic Systeme, Germany. HOPE® is manufactured by DCS, Germany.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>HOPE Fixative Starter Kit Contains:</b> 10 transportation vials of 5 ml HOPE® with protection vials, 1 x 1 ml, HOPE II & 200 grams of low mp paraffin.	1 kit	24884-1
HOPE Fixative System I	500 ml	24823-500
HOPE Fixative System I	2500 ml	24823-2500
HOPE FixativeSystem II	1 ml	24824-1

**Karnovsky's Fixative** | HAZARD CODE: BHM0V6d**22872**

Formaldehyde/glutaraldehyde fixative commonly used in EM for structural preservation. Pre-measured in ampoules for one-step preparation. Working solution can be stored for up to six months at 4° C.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1 x 10ml 50% Glutaraldehyde, 2 x 10ml 16% Formaldehyde & 1 x 50ml 0.2M Phosphate Buffer.	5 kits	22872-5

**Paraformaldehyde EM Grade** CAS#: 30525-89-4 | HAZARD CODE: DH6g**00380**

Paraformaldehyde depolymerizes in water to formaldehyde solution yielding consistent quality fixative solutions. To achieve a strong solution, raise the temperature of the water to 60°C then add sodium hydroxide solution dropwise.

UNIT SIZE	CATALOG #
250 g	00380-250
1 kg	00380-1

**Poly/LEM Fixative** | HAZARD CODE: HM6g**16864**

For Light and Electron Microscopy. This popular methanol-free fixative is a formaldehyde-based material formulated to eliminate the need to select a fixative for tissue based on the type of microscopy to be employed.

UNIT SIZE	CATALOG #
3.75 L	16864-3.75
4 x 3.75 L	16864-4

**Zinc Formalin Fixative, pH 6.25** | HAZARD CODE: HVWX6g**21516**

Excellent morphological preservation of nuclear and cytoplasmic components. Can replace neutral buffered formalin for routine tissue and immunohistochemical procedures. Non-precipitating fixative that can be used with automated and manual methods. Zinc formalin is best used as a primary fixative, which minimizes denaturation. Specimens initially fixed in buffered formalin may be post fixed in Zinc Formalin for one week.

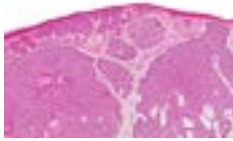
UNIT SIZE	CATALOG #
3.75 L	21516-3.75

Grossing

Grossing

**Mohs Lab Reagent Starter Kit**

**26417**



All the reagents needed to start a complete Mohs lab. From cryotomy, fixation, staining and orientation, to the complete production of a finished slide that can be viewed within minutes.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<p><b>Kit Contains:</b></p> <ul style="list-style-type: none"> <li>(24108-1) Tissue Marking Dye (5x2oz colors with stand &amp; applicator sticks)</li> <li>(19636-1) PolyFreeze Tissue Freezing Medium (6x4oz)</li> <li>(18606-5) Aqua-Poly / Mount, (24216-1) Tissue Tack (+ Charged) Microscope Slides</li> <li>(24909-1) Delicate Melanin Bleach Kit for Special Stains and IHC (2x250mL)</li> <li>(24214-100) CitraMount™ Medium (100ml), (18646D-1) Peel-A-Way Disposable Embedding Molds Sampler Pack</li> </ul>	1 kit	26417-1

**Mohs Lab Starter Kit with Diagnostic Stains**

**26418**

All the reagents needed for a complete Mohs lab. From cryotomy, fixation, staining and orientation, to the complete production of a finished slide that can be viewed within minutes.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<p><b>Kit Contains:</b></p> <ul style="list-style-type: none"> <li>(24108-1) Tissue Marking Dye (5x2oz colors with stand &amp; applicator sticks)</li> <li>(19636-1) PolyFreeze Tissue Freezing Medium (6x4oz)</li> <li>(24216-1) Tissue Tack (+ Charged) Microscope Slides</li> <li>(18606-5) Aqua-Poly / Mount, (24244-1000) Gill's Hematoxylin #3</li> <li>(09859-10000) .5% Eosin, (24605-1) Scott's Bluing Reagent</li> <li>(24909-1) Delicate Melanin Bleach Kit for Special Stains and IHC (2x250mL), (24214-100) CitraMount™ Medium (100ml)</li> <li>(18646D-1) Peel-A-Way Disposable Embedding Molds Sampler Pack</li> </ul>	1 kit	26418-1

**Tissue Marking Dye – 7 Color Kit** | HAZARD CODE: H6gm

**24772**



Makes marking margins of excised tissue specimens easier than ever. Kit contains opaque pigments formulated for excellent adherence to tissue surfaces. Colors selected to avoid confusion with routine histological stains. The viscosity allows for an even, thin coating of pigment, penetrating the tissue surface slightly allowing it to remain visible through routine tissue processing.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<p><b>Kit Contains:</b> 2 oz. bottles of dye: Blue, Black, Yellow, Red, Green, Orange, Purple, and convenient holder with application sticks.</p>	1 kit	24772-1



**Tissue Marking Dye – 5 Color Kit** | HAZARD CODE: H6gm**24108**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 2 oz. bottles of Blue, Black, Yellow, Red, Green dye and convenient wood bottle holder with application sticks.	1 kit	24108-1

**Tissue Marking Dye Replacement Bottles – 2 oz. and 8 oz.**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Color: Black   Hazard Code: H6gm	2 oz	24113-2
	8 oz	24113-8
Color: Blue   Hazard Code: H4gm	2 oz	24111-2
	8 oz	24111-8
Color: Green   Hazard Code: H6gm	2 oz	24110-2
	8 oz	24110-8
Color: Orange   Hazard Code: A4gm	2 oz	24117-2
	8 oz	24117-8
Color: Purple   Hazard Code: A4gm	2 oz	24120-2
	8 oz	24120-8
Color: Red   Hazard Code: H6gm	2 oz	24109-2
	8 oz	24109-8
Color: Yellow   Hazard Code: H6gm	2 oz	24112-2
	8 oz	24112-8

Decalcification

**Deli-Cal Block Solution** | HAZARD CODE: BH4g

**24900**

Our microtome soak, Deli-Cal Block Solution, saves time and money by allowing you to salvage problem blocks right at cutting stations. The quality and thoroughness of Deli-Cal Block Solution is dependent upon the original decalcification procedure and condition of the specimen.

**Benefits:**

- Useful for Bone Marrows, Special Stains and IHC
- Enhances ribbon cutting
- Salvages undecalcified and under processed bone marrow biopsies at the cutting station
- Fast soaking procedure
- Environmentally safe and biodegradable

UNIT SIZE	CATALOG #
250 ml	24900-250
500 ml	24900-500

**De-Calcify Block Solution** | HAZARD CODE: BH4g

**24903**

Use De-Calcify Block Solution as a fast microtome soak that saves you time and money by allowing you to salvage problem blocks right at your cutting station.

**Benefits:**

- Enhances ribbon cutting
- Useful for H&E and routine staining
- Fast soaking procedure
- Ready-to-use formulation
- Environmentally safe and biodegradable

UNIT SIZE	CATALOG #
250 ml	24903-250
500 ml	24903-500

**Poly-NoCal & Fixative** | HAZARD CODE: BHM6g

**24163**

Poly-NoCal & Fixative is a formic acid and formaldehyde-based solution designed to fix and decalcify in one easy, convenient step. Small histological specimens, such as bone marrow, will achieve softening sufficient for sectioning in four hours.

UNIT SIZE	CATALOG #
1 L	24163-1
3.8 L	24163-3.8

**Poly-NoCal End Point Determination Kit** | HAZARD CODE: BH6g**24119**

Control of decalcification is an important part of tissue morphology. Over-decalcification interferes with nuclear and cytoplasmic staining and destroys cell structure. Under-decalcification causes poor dehydration and infiltration during processing and also results in sectioning problems. Poly-NoCal End Point Determination Kit includes all the necessary materials you need to determine endpoint decalcification—accurately, consistently and conveniently. While actual use conditions may vary, each kit typically performs approximately 200 tests, helps save you time and money and increases productivity.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 500 ml 5% Ammonium hydroxide, 250 ml 5% Ammonium oxalate pH papers and measuring vials (components are also sold separately).	1 kit	24119-1

**Super Decalcifier I: Delicate** | HAZARD CODE: BH4g**24888**

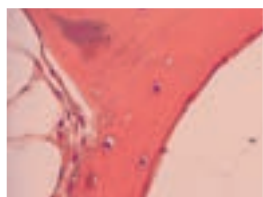
Human Degenerative Joint Disease, decalcified with Super Decal I Delicate Decal, stained with H & E, 10X

Recommended for use with delicate specimens and specimens such as bone marrow biopsies (core) that are to be submitted to IHC, cytochemistry and special stain procedures. Biodegradable.

**Benefits:**

- Save time – decalcify in as little as three hours
- Ready-to-use decalcifier for human and animal tissues
- Recommended for IHC, special stains and routine stains
- Enhanced nuclear detail

UNIT SIZE	CATALOG #
120 ml	24888-120
500 ml	24888-500
1 L	24888-1

**Super Decalcifier II: Heavy Duty** | HAZARD CODE: H4g**24887**

Human Degenerative Joint Disease, decalcified with Super Decalcifier II - Heavy Duty, stained with H & E, 40X

For hard compact bone, (i.e. femur heads, above-the-knee amputation (AKA) and below-the-knee amputation [BKA]). Extremely effective and versatile decalcifier that can be used in specific lab routines. As with most acids, nucleic acids in the cell can become subject to ribonuclease digestion, resulting in a loss of basophilic properties. Most decalcification occurs in approximately 4 – 6 hours or less, depending on the thickness and density of the specimens. Overnight decalcification should be avoided. Not recommended for IHC.

**Benefits:**

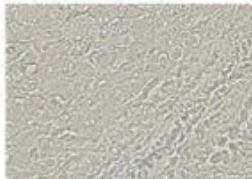
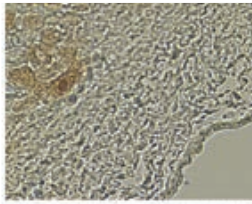
- Biodegradable
- Save time – decalcify in as little as three hours
- Ready-to-use decalcifier for human and animal tissues

UNIT SIZE	CATALOG #
120 ml	24887-120
500 ml	24887-500
1 L	24887-1

Bleaching Agents

**Melanin Bleach Kit** | HAZARD CODE: BH4g

**24883**



Human skin sample before (top) and after (bottom) using Melanin Bleach Kit, magnified 40X.

Remove melanin pigment in cells of malignant melanomas and reveal cellular detail. Accumulation of heavy melanin pigment in the cells of malignant melanoma can obscure cellular morphology and hinder special staining, IHC or histochemical staining. (Melanins are pale brown to dark brown and even black pigments that are found intracellular in the cytoplasm.) Melanins are found in hair, skin, retina and the substantia nigra of the brain. Removing melanin from tissue sections allows for positive staining to be interpreted correctly, especially if DAB is used when performing immunohistochemistry. Our Melanin Bleaching Kit saves time by removing melanin pigment prior to incubation with primary antibody.

**Benefits:**

- Reveals cellular morphology obscured by melanin pigment
- No mixing required
- Easy to visualize results

UNIT SIZE	CATALOG #
1 kit	24883-1

**Delicate Melanin Bleach Kit for Special Stains and IHC** | HAZARD CODE: BH4g

**24909**

Delicate formula for removing melanin pigment in cells of malignant melanomas. Created specially for Special Stains and IHC.

UNIT SIZE	CATALOG #
1 kit	24909-1

CLEARING & DEHYDRATION

**Alcohol Reagent, 100% - Histology Grade** | HAZARD CODE: CV5g

**09860**

Suitable for most histological procedures.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Composed of 90 parts ethyl alcohol, 5 parts methyl alcohol and 5 parts isopropyl alcohol, v/v blend.	1 gal	09860-1

**Clear-Advantage Xylene Substitute** | HAZARD CODE: CH7g**24770**

Clear-Advantage is a specific fraction of petrochemical derivatives that creates a safer xylene substitute for processing, staining and coverslipping. There are several types of xylene substitutes in the market today, including both standard hydrocarbon and citrus limonene types that contain overpowering odors. Clear-Advantage is virtually odorless and offers improved clearing performance compared to these types.

**Benefits:**

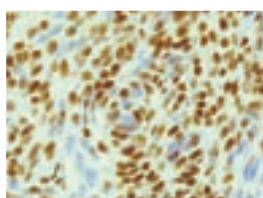
- Slides dry 3 times faster than with xylene
- Slides clear faster and crisper
- Paraffin dissolves 50% faster than with xylene
- Virtually odorless, low toxicity and stable
- Recycling is faster in conventional recycling units
- Decreases “tissue hardening”
- Compatible with automated processing units manufactured by TBS®, Leica, Sakura, Shandon, Lipshaw, Surgipath® and others
- Tissue morphology and cell structure definition is exceptional

UNIT SIZE	CATALOG #
1 gal	24770-1
4 x 1 gal	24770-4

**Hexamethyldisilazane (HMDS)** CAS#: 999-97-3 |  $C_6H_{19}NSi_2$  | HAZARD CODE: BCH6g**00692**

Used in place of critical point drying for preparation of soft tissues for SEM observation. Procedure takes 5 minutes as compared to 90 minutes for critical point drying.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 161.4, bp 125°C, d 0.765	250 g	00692-250

**L.A.B. Solution (Liberate Antibody Binding Solution)** | HAZARD CODE: H3ag**24310**

L.A.B. Solution liberates your antibody binding sites for improved immunohistochemical (IHC) staining. Incubate your slides in L.A.B. Solution for 5 to 20 minutes at room temperature, rinse with buffer and stain. It's that simple, no high temperature or special equipment required. Incubating at room temperature makes L.A.B. Solution compatible with automated stainers. Set up a pre-treatment cycle with L.A.B. Solution before your staining protocol.

**Benefits:**

- Ready-to-use solution, no dilution necessary
- Turn off the heat and preserve tissue - incubate samples at room temperature
- No special equipment required
- Compatible with automated stainers

UNIT SIZE	CATALOG #
500 ml	24310-500

## Clearing &amp; Dehydration

**Methanol (Methyl alcohol) ≥ 99.85% – EM Grade** CAS#: 67-56-1 | HAZARD CODE: CHP6g**08032**

Dehydrating agent of tissue as a preparation for embedment.

UNIT SIZE	CATALOG #
6 x 1 pint	08032-6

**Methyl salicylate** CAS#: 119-36-8 | HAZARD CODE: HO5g**05943**

Safe tissue clearing agent. Xylene substitute.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Methyl 2-hydroxybenzoate; Wintergreen oil) MW 152.15, bp 220 – 222°C	1 kg	05943-1
	4 kg	05943-4

**ParaClear Odorless Xylene Substitute** | HAZARD CODE: EH5g**22463**

Naphtha-petroleum derivative that replaces xylene for clearing. It is odorless and presents a low hazard for routine histological processing and staining. ParaClear will remove alcohol during the final steps of routine tissue processing and is miscible with paraffin for infiltration. It has a higher flash point than xylene, reducing the flammability danger to the laboratory.

UNIT SIZE	CATALOG #
3.8 L	22463-3.8
4 x 3.8 L	22463-4

**Poly/Clear Solvent** CAS#: 5989-27-5 | HAZARD CODE: EHO4g**17326**

A pleasant citrus odor replaces the strong xylene odor when you switch to Poly/Clear Solvent in your laboratory as your paraffin clearing agent. This low-toxicity material is for use in histology and cytology procedures whenever xylene is used. The high flash point and biodegradability of this product make it an attractive alternative. Poly/Clear is miscible with solvent-based mounting media and solubilizes both paraffin and Peel-A-Way®.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 136.2	1 gal	17326-1
	4 gal	17326-4

**Propylene Oxide** CAS#: 75-56-9 | HAZARD CODE: BCHV6g**00236**

Solvent used in the last stage of dehydration of tissue for epoxy embedding. *Requires poison pack*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 58.08, bp 34°C, d 0.83, n20/D 1.366.	1 pint	00236-1

**Xylene, Histology Grade** CAS#: 1330-20-7 | HAZARD CODE: CH5g**08389**

Routine clearing agent.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 106.17	1 gal	08389-1

## BUFFERS

**2,4,6-sym-Collidine Buffer Kit, EM Grade** | HAZARD CODE: BEHPVX7g**00346**

A biologically stable buffer system for osmium tetroxide and other EM fixatives. Provides better stability and buffering capacity than traditional veronal acetate buffers. One kit will make 1000 ml of buffer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> (2,4,6-Trimethylpyridine Kit) 5 x 5.34ml of Collidine & 5 x 18ml of 1.0N HCl.	1 kit	00346-1

**Michel's Transport Medium** | HAZARD CODE: A2d**24353**

Holding medium for tissue undergoing immunofluorescent studies. Not to be used for tissues used in fluorescence *in situ* hybridization.

UNIT SIZE	CATALOG #
500 ml	24353-500

**PolyTransport Buffer** | HAZARD CODE: A2g**24311**

Used to transport and preserve specimens from surgery to the point of grossing and fixation prior to further processing. Prevents proteins from denaturing or crosslinking and prevents bacterial growth. Also contains a cryoprotectant to prevent ice crystal formation during rapid freezing techniques and a membrane stabilizer to prevent membrane lysis. No washing of specimens necessary prior to placing in fixative or rapid freezing.

UNIT SIZE	CATALOG #
250 ml	24311-250
500 ml	24311-500

Paraffins & Molds

PARAFFINS & MOLDS

Paraffin wax is used as an embedding medium, aiding in the preservation and preparation of tissue samples for microscopic examination. Derived from petroleum, paraffin wax is a colorless, odorless substance with a low melting point, making it ideal for embedding tissues. The process of paraffin embedding involves impregnating tissue samples with molten paraffin wax. This method replaces the water content within the tissues, allowing for the creation of thin, transparent sections that can be easily mounted on microscope slides. The inherent properties of paraffin wax, such as its low viscosity when molten and solid-state rigidity, contribute to the ease of sectioning tissues into thin slices.

Paraffin Wax, Histology Grade

CHARACTERISTICS	UNIT SIZE	CATALOG #
56-58°C	4x2.5 KG	27003
60-62°C	4x2.5 KG	27004

PolyGuard, Paraffin Repellent | HAZARD CODE: EH5g

21168

Xylene-free paraffin repellent. Used to put a protective coating on surfaces exposed to paraffin as well as to clean adhering paraffin off of laboratory countertops and equipment.

UNIT SIZE	CATALOG #
120 ml	21168-120
6 x 120 ml	21168-6

Disposable Base Molds



Disposable base molds offer ease and convenience. Inexpensive enough to be discarded after use, yet strong enough to be reused. They offer excellent thermal exchange, and have a smooth interior finish and rounded corners to facilitate specimen removal. Made of PVC.

CHARACTERISTICS	UNIT SIZE	CATALOG #
7 x 7 x 5 mm	500 molds	25374-500
15 x 15 x 5 mm	500 molds	25375-500
24 x 24 x 5 mm	500 molds	25376-500
30 x 24 x 5 mm	500 molds	25377-500



**Peel-A-Way® Disposable Embedding Molds Sampler Pack****18646D**

Easy to use and saves time - Unique design will Peel-A-Way from a solidified embedded block. There is no need for trimming. Can be used with JB-4®, GMA, Osteo-Bed, Osteo-Bed Plus and MMA embedding resins. Especially useful for frozen sections where orientation is critical. Creates a buffer to allow the specimen to freeze to the chuck without defrosting the base.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Sampler Pack contains:</b> <ul style="list-style-type: none"> <li>• 18646C - Rectangular Molds R40 (8 molds)</li> <li>• 18646B - Rectangular Molds R30 (8 molds)</li> <li>• 18646A - Square Molds S22 (16 molds)</li> <li>• 18986 - Truncated Molds T12 (8 molds)</li> <li>• 18985 - Truncated Molds T8 (8 molds)</li> </ul>	1 package	18646D-1

**Individual Peel-A-Way® Embedding Mold**

Easy to use and saves time. Unique design will Peel-A-Way from a solidified embedded block. There is no need for trimming. Can be used with Micro-Cut paraffin, JB-4®, GMA, Osteo-Bed, Osteo-Bed Plus and MMA embedding resins. Especially useful for frozen sections where orientation is critical and defrosting during transfer to cryostat chuck is an issue. Creates a buffer to allow the specimen to freeze to the chuck without defrosting the base.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Rectangular – R30, 22mm wide x 30mm long x 20mm deep	288 molds	18646B-1
Rectangular – R40, 22mm wide x 40mm long x 20mm deep	264 molds	18646C-1
Square – S22, 22mm x 22mm square x 20mm deep	288 molds	18646A-1
Truncated – T12, 22mm x 22mm square truncated to 12mm x 12mm square, 20mm deep	288 molds	18986-1
Truncated – T8, 22mm x 22mm square truncated to 8mm x 8mm square, 20mm deep	288 molds	18985-1

**BEEM® Embedding Capsules, Unit Size 00****00224**

Polyethylene BEEM® capsules are the most commonly used embedding capsules for all types of resins. The embedding block requires little or no trimming. The closed capsules are UV transparent for polymerization of acrylics. In addition to the two standard 3 and 00 Unit Sizes, we have the conical and bottle-necked 00 Unit Sized designs for centrifuged material embedding. These capsules can withstand up to 600 G. Use with JB-4®, Osteo-Bed, Osteo-Bed Plus (MMA) and other resins that do not polymerize well in conventional silicone rubber molds.

UNIT SIZE	CATALOG #
100 caps	00224-100
500 caps	00224-500
1000 caps	00224-1000

Paraffins & Molds

**BEEM® Embedding Capsules, Unit Size 3 capsules**

**00336**

Polyethylene BEEM® embedding capsules are the most commonly used embedding capsules for all types of resins. The embedding block requires little or no trimming. The closed capsules are UV transparent for polymerization of acrylics. In addition to the two standard 3 and 00 Unit Sizes, we have conical and bottle-necked 00-Unit Sized designs for centrifuged material embedding. These capsules can withstand up to 600 G. Be sure to use our capsule holders and capsule press for convenient use of these versatile capsules.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: 5.6 mm ID x 14 mm High	100 capsules	00336-100

**BEEM®, Flat, Transparent**

**23257**

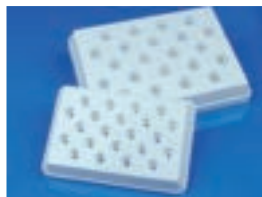


Manufactured from transparent polyethylene. Useful for embedding media such as JB-4®, glycol methacrylate and other methacrylates that do not polymerize well in conventional silicone rubber molds. The transparency of the mold permits accurate specimen orientation when illuminated from below. The molds are flexible and reusable. Each mold is supplied in a protective plastic case.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: 2.54mm x 5.33mm x 12.32mm	1 mold	23257-1

**BEEM® Capsule Holders**

**0256A**

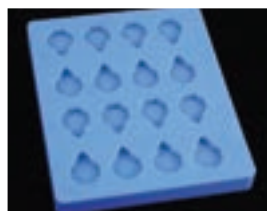


For holding capsules upright during polymerization. Holds 22 capsules in numbered cavities. Made from an epoxy-resistant material that resists sticking of embedding media. Also suitable for gelatin capsules. Cavities may be illuminated from below to facilitate specimen orientation. Unit Size 00, regular (heat curing) for capsules.

UNIT SIZE	CATALOG #
3 holders	0256A-3
12 holders	0256A-12

**Chien Embedding Molds, Universal**

**19440**



Allows up to 16 tissue samples to be sectioned both on lateral and transverse planes without re-embedding. Can also be used as a general flat embedding mold. Casts made from this mold can be used on Leica®/Reichert, LKB and most EM Microtomes with flat embedment chucks. Use with epoxy-based resins, Araldite® resins, Embed-It™, Spurr Low Viscosity Embedding Kit and Ultra Low Viscosity Embedding Kit.

UNIT SIZE	CATALOG #
1 mold	19440-1

**Embedding Molds**

For JB-4®, JB-4 Plus®, Immuno-Bed, LR®-White or Paraffin embedding. This is an embedding system of reusable molds and trays with colored stubs.

CHARACTERISTICS	UNIT SIZE	CATALOG #
12mm x 8mm	100 molds	23184-1
16mm x 8mm	100 molds	23185-1
19mm x 13mm	100 molds	23186-1
10mm thick – mixed	100 stubs	23197-1
4mm thin – white	100 stubs	23189-1
Embedding Mold Trays	10 trays	23188-1

**Embedding Molds - Multispecimen, Flat - Opaque****23261**

This mold contains 20 shaped cavities plus 8 oblong cavities 3.5mm wide in three different lengths. Use with epoxy-based resins, Araldite® resins, Embed-It™, Spurr Low Viscosity Embedding Kit and Ultra Low Viscosity Embedding Kit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: 113mm x 17mm.	1 mold	23261-1

**Embedding Molds – Silicone, Flat, Numbered Cavities – Opaque****23258**

Produced from opaque silicone rubber. Durable and flexible with 21 consecutively numbered shaped cavities. Molds have high thermal and chemical resistance. Use with epoxy-based resins, Araldite® resins, Embed-It™, Spurr Low Viscosity Embedding Kit and Ultra Low Viscosity Embedding Kit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mold dimensions: 69mm x 90mm - Cavity dimensions: 5mm x 12mm x 4mm.	1 mold	23258-1

**Embedding Molds – Silicone, Flat****02615**

Flexible silicon rubber mold, releases up to 21 blocks by flexing. Reusable and can be used to store material prior to sectioning. Use with epoxy-based resins, Araldite® resins, Embed-It™, Spurr Low Viscosity Embedding Kit and Ultra Low Viscosity Embedding Kit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Cavity dimensions: 5mm x 12mm x 4mm deep.	1 mold	02615-1

Paraffins & Molds

**Embedding Molds – Silicone, Round**

**23260**



For use with epoxy-based resins, Araldite® resins, Embed-It™, Spurr Low Viscosity Embedding Kit and Ultra Low Viscosity Embedding Kits for large or odd-shaped specimens.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Embedded blocks are 14mm in diameter. Up to six blocks per mold.	1 mold	23260-1

**Gelatin Embedding Capsules**

Economical and convenient method for producing resin blocks. UV transparent, ideal for UV Polymerization of acrylic resins. Can be used with most resins. Capsules have snap-shut lids that cannot slide off accidentally. Capsules are also useful for storing grids and TEM calibration specimens.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Gelatin, Unit Size 00 (23.3mm long x 8.18mm wide; 0.95ml volume)	1000 caps	00225-1000
Gelatin, Unit Size 1 (19.0mm long x 6.63mm wide; 0.50ml volume)	1000 caps	07347-1000
Gelatin, Unit Size 4 (13.9mm long x 5.05mm wide; 0.21ml volume)	1000 caps	07348-1000

**Micron Micromolds Embedding Capsules**

**08408**



Self-supporting unit of 10 Unit Size 00 conical end capsules in numbered positions for economical embedding. The capsules are self-supporting and do not require additional holders. The mold is made from polyethylene and gives pre-shaped blocks with 1mm square tips similar to BEEM® capsules. The blocks are easy to remove and require little or no final trimming. Use with JB-4®/JB-4®Plus, Osteo-Bed/Osteo-Bed Plus and other GMA or MMA resins.

UNIT SIZE	CATALOG #
50 units	08408-50

**Polyethylene Molding Cup Trays**

Light-weight, durable plastic trays, ideal for resin molding specimen blocks with JB-4® and other resins. Use in conjunction with Polysciences' popular and affordable block holders and chucks. Also use with LR White®, L.R. Gold®, Micro-Cut and GemCut™ paraffins.

CHARACTERISTICS	UNIT SIZE	CATALOG #
6 x 12 x 5mm (20 cavities)	1 unit	16643A-1
6 x 8 x 5mm hexagon (9 cavities) – Set of 3	3 trays	17177A-3
2 x 15 x 5mm (9 cavities) – Set of 3	3 trays	17177B-3
13 x 19 x 5mm (9 cavities) – Set of 3	3 trays	17177C-3

**Peel-A-Way® Tissue Capsules****19802A**

Resistant to most chemicals and acids used in processing. Provides three compartments for average Unit Size specimens and a removable divider for larger (34mm) specimens. They are weighted to assume upright position for complete exposure during processing. Use with all epoxy, GMA, MMA and acrylic resins.

UNIT SIZE	CATALOG #
1 carton	19802A-1

**Tissue Cassettes**

Allows infiltration, embedding, sectioning and filling steps to be done with a single specimen container. They have a plastic lid and base that are resistant to solvents, microwaving techniques and decalcifying solution. Their universal Unit Size fits all popular base molds, and they may be used with stainless steel process covers. The unique patented design permits maximum fluid exchange and drainage.

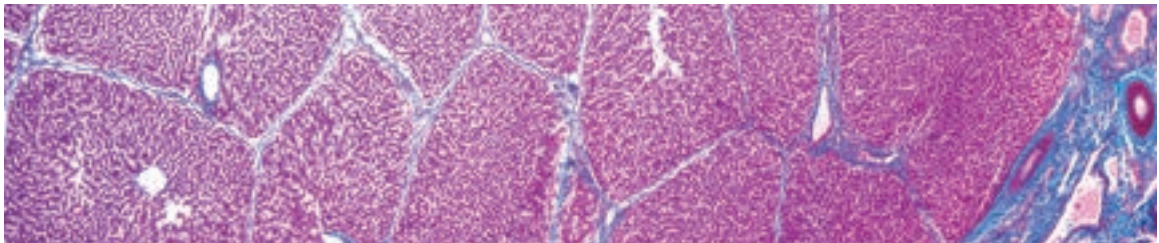
CHARACTERISTICS	UNIT SIZE	CATALOG #
Blue - Dimensions: 32mm L x 26mm W x 5mm D	250	21468-250
Pink - Dimensions: 32mm L x 26mm W x 5mm D	250	21471-250
Yellow - Dimensions: 32mm L x 26mm W x 5mm D	500	21469-500

Frozen Tissue Media

**PolyFreeze** | HAZARD CODE: A2g

A support matrix or form of embedding medium for frozen sectioning. This medium freezes quickly, supporting the tissue for sectioning with no cracking of the matrix at temperatures from -8°C. Cryo-embedding matrix for frozen specimens. Color makes differentiating multiple specimens easy during sectioning and staining. Experience less curling, less ice artifacts and faster freezing with PolyFreeze.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Blue	4 oz	25116-4
	6 x 120 ml	25116-1
Clear	4 oz	19636-4
	6 x 120 ml	19636-1
Green	4 oz	25113-4
	6 x 120 ml	25113-1
Red	4 oz	25115-4
	6 x 120 ml	25115-1
Yellow	4 oz	25114-4
	6 x 120 ml	25114-1



RESINS & CATALYSTS

**Batson's #17 Anatomical Corrosion Kit** | HAZARD CODE: CHM06d

**07349**

Low viscosity, acrylic-based resin system for room temperature preparation of anatomical corrosion castings. After hardening, tissue is corroded away by caustic solution, yielding a durable, scientifically exact model for anatomical study.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<p><b>Kit Contains:</b></p> <ul style="list-style-type: none"> <li>• 940ml monomer base</li> <li>• 2 x 100ml catalyst</li> <li>• 50ml promotor</li> <li>• 10g pigment red, pigment blue.</li> </ul>	1 kit	07349-1

**Batson's #17 Anatomical Corrosion Kit Components**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Blue pigment   HAZARD CODE: HM4g	100 g	07352-100
Catalyst   HAZARD CODE: CH6g	100 ml	02608-100
Maceration solution   HAZARD CODE: B5g	940 ml	07359-940
Monomer base solution   HAZARD CODE: CHO5d	940 ml	02599-940
Promoter   HAZARD CODE: HO6g	50 ml	02610-50
Red pigment   HAZARD CODE: H3g	100 g	07350-100
Yellow pigment   HAZARD CODE: H3g	100 g	07354-100

**Benzoin methyl ether** CAS#: 3524-62-7 |  $C_6H_5CH(OCH_3)COC_6H_5$  | HAZARD CODE: H6g**00425**

UV polymerization catalyst.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 226.3, mp 47 – 49°C	10 g	00425-10

**Benzoyl peroxide, 70% active (water wet)** CAS#: 94-36-0 |  $(C_6H_5CO)_2O_2$  | HAZARD CODE: HF4gp**21446**

Thermal polymerization catalyst.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 242.23, mp 105°C	100 g	21446-100

**Benzoyl Peroxide, Plasticized** CAS#: 94-36-0 |  $(C_6H_5CO)_2O_2$  | HAZARD CODE: HG5d**24232**

Thermal polymerization catalyst. Appearance: dry powder.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 242.23, dry powder	100 g	24232-100

**N,N-Benzyl dimethylamine** CAS#: 103-83-3 |  $C_6H_5CH_2N(CH_3)_2$  | HAZARD CODE: BEH6g**00141**

Low viscosity epoxy accelerator.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(BDMA; N,N-Dimethylbenzylamine), MW 135.21, mp -75°C	100 g	00141-100

## Resins &amp; Catalysts

**Dibutyltin dilaurate** CAS#: 77-58-7 |  $[\text{CH}_3(\text{CH}_2)_{10}\text{CO}_2]_2\text{Sn}[(\text{CH}_2)_3\text{CH}_3]_2$  | HAZARD CODE: BH6g**01862**

Catalyst for polymerizing lactide and glycolide and isocyanate reactions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 631.6, mp 24°, bp 205°, d 1.066, n20/ D 1.470, Appearance: Yellowish liquid.	50 g	01862-50

**Dimethylaminoethanol (DMAE)** CAS#: 108-01-0 |  $\text{HOCH}_2\text{CH}_2\text{N}(\text{CH}_3)_2$  | HAZARD CODE: BE6g**01458**

Curing agent for epoxy resins.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 89.14, bp 130° – 136°C	100 g	01458-100

**2,4,6-Tris-(dimethylaminomethyl)phenol, ≥ 96%** CAS#: 90-72-2 |  $[(\text{CH}_3)_2\text{NCH}_2]_3\text{C}_6\text{H}_2\text{OH}$  | HAZARD CODE: BH6g**00553**

2,4,6-Tris-(dimethylaminomethyl)phenol (DMP-30) is a curing catalyst for epoxy resins. It is used as the accelerator in many of our embedding media kits (Cat #s: 02600, 08792, and 21958).

DMP-30 is a Lewis Base catalyst that can be used both as a curing agent and as an activator for other curing agents in sealant and concrete adhesives applications. It is a catalyst and co-curing agent for room temperature cure of epoxides.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 265.4, bp 316°C, Viscosity ~200 cps, n20/D 1.515, light yellow to yellow liquid	100 g	00553-100

**Dodecenylsuccinic anhydride (DDSA)** CAS#: 25544-38-7 | HAZARD CODE: H2g**00563**

Epoxy hardener, suitable for use in embedding procedures.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 266.38, bp 181°C/5mm, d 1.005, Viscosity 440 cps, n20/D 1.479	450 g	00563-450
	4 x 450 g	00563-4

**Poly/Bed Araldite resins (modified epoxy resins)**  $\text{C}_6\text{H}_4$ -1,2,- $[\text{CO}_2(\text{CH}_2)_3\text{CH}_2]$ 

CHARACTERISTICS	UNIT SIZE	CATALOG #
Grade 502 WPE 233 – 250 CAS#: 84-74-2   HAZARD CODE: HO5g	500 g	00552-500
Grade 6005 WPE 182 – 189 CAS#: 3101-60-8   HAZARD CODE: HO7g	500 g	02116-500



**Embed-It™ Low Viscosity Epoxy Kit** CAS#: 64-86-8**24300**

A modification of the Spurr's formulation, Embed-It™ Low Viscosity Epoxy Kit can be used for embedding biological, material and mineralogical samples. This kit is composed of two very low viscosity components (~65cps) packaged in easy to dispense squeeze top bottles. Components are mixed in equal parts by weight to make the infiltration and embedding resin. The resin readily penetrates into the specimen and cures to a clear hard solid overnight at 60°C.

**Benefits:**

- Easy to use – mix only 2 components in equal proportions
- Save time – prepare the Embed-It™ resin for both infiltration and embedding
- Convenient – mix only the amount you need
- Less hazardous – components ship together as non-hazardous materials

CHARACTERISTICS	UNIT SIZE	CATALOG #
Embed-It™ Low Viscosity Epoxy Kit   HAZARD CODE: H4g	1 kit	24300-1
Embed-It™ Low Viscosity Epoxy Solution A   HAZARD CODE: HO4g	1 L	24300A-1
Embed-It™ Low Viscosity Epoxy Solution A   HAZARD CODE: HO4g	3.8 L	24300A-3.8
Embed-It™ Low Viscosity Epoxy Solution B   HAZARD CODE: HO4g	1 L	24300B-1
Embed-It™ Low Viscosity Epoxy Solution B   HAZARD CODE: HO4g	3.8 L	24300B-3.8

**Epoxy Resin Removal Kit** | HAZARD CODE: BCEHK5cg**21487**

Quickly removes epoxy resin from thin sections in five minutes under mild conditions, preserving delicate immunogenicity of specimens.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 100 ml of solution A, 3ml of solution B	1 kit	21487-1

**ERL-4221** CAS#: 2386-87-0 | C<sub>14</sub>H<sub>20</sub>O<sub>4</sub> | HAZARD CODE: HO4g**24738**

ERL-4221 is a cycloaliphatic, diepoxy functional organic compound that is a useful building block in the production of semi-hard to hard cured epoxy resins. It is incompatible with amines, acids and strong bases and will cure to form a resinous product. ERL-4221 is often used in manufacture of plastic embedding kits for electron microscopy. Appearance: transparent, low color viscous liquid.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 252.3 g/mole, bp (760 mm Hg) > 250°C, Freezing Point: -35°C Specific Gravity: (20°C) ~1.17	250 g	24738-250

**Ethylene glycol diglycidyl ether (EGDGE)** CAS#: 2224-15-9 | HAZARD CODE: H5g**01479**

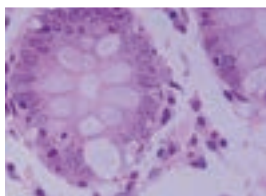
Crosslinker for carboxyl-, amine- and hydroxyl- functional polymers. Material is ~100% active and contains higher molecular weight compounds having chloropropylene segments produced by reaction with more than one epichlorhydrin molecule per hydroxyl in synthesis.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 174.2, bp 112°C/4.5mm, n <sub>20</sub> /D 1.463	10 g	01479-10
	100 g	01479-100

Resins & Catalysts

**JB-4® Embedding Kit** | HAZARD CODE: HO5g

**00226**



Colon tissue embedded in JB-4®, stained with H&E, 40X, 2µm

Water-soluble, GMA based, plastic resin kit intended for use in the preparation of embedded samples for high-resolution light microscopy. Widely used for research and clinical diagnosis. JB-4® yields semi-thin sections (0.5µ – 2µ) with excellent morphological preservation. Clear casts are obtained in 90 minutes or less at room temperature. JB-4® is the leading water-soluble plastic embedding kit for light microscopy. It has been successfully used in enzyme histochemistry and auto-radiography.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Kit Contains: 800ml Solution A, 30ml Solution B and 12g Catalyst.	1 kit	00226-1

**JB-4® Embedding Kit Replacement Bottles**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Benzoyl Peroxide Plasticized (Catalyst)   HAZARD CODE: HG5d	12 g	02618-12
Solution A (Monomer)   HAZARD CODE: HO5g	800 ml	0226A-800
Solution B (Accelerator)   HAZARD CODE: HO5g	30 ml	0226B-30

**JB-4® Mini Embedding Kit** | HAZARD CODE: GHOWX5g

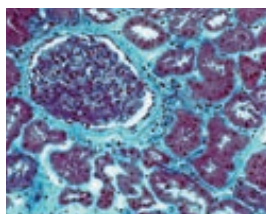
**22507**

A pre-measured and ready-to-use version of the JB-4® Kit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Kit Contains: 2 – 40ml Embedding Solution A, 2ml Embedding Solution B and 0.50g Benzoyl Peroxide Plasticized.	1 kit	22507-1

**JB-4 Plus® Embedding Kit** | HAZARD CODE: HgO5g

**18570**



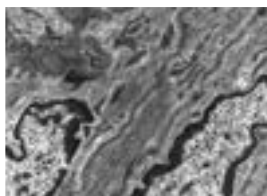
JB-4® Plus Section, Kidney glomerulus

JB-4 Plus® offers all the benefits of JB-4®, plus some added features: cooler acting accelerator system for greater protection of tissue components; yields crystal clear non-yellowing blocks; the blocks resulting from JB-4 Plus® are ideal for processing dense material such as bone. GMA based plastic such as regular JB-4® cannot be removed from sections and is not recommended for IHC.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Kit Contains: 500ml Solution A, 15ml Solution B, 8g Benzoyl Peroxide and Catalyst.	1 kit	18570-1

**JB-4 Plus® Embedding Kit Replacement Bottles**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Benzoyl Peroxide Plasticized (Catalyst)   HAZARD CODE: HG5d	8 g	18570C-8
Solution A (Monomer)   HAZARD CODE: HO4g	500 ml	18570A-500
Solution B (Accelerator)   HAZARD CODE: A2g	15 ml	18570B-15

**LR White® Embedding Media** CAS#: 7732-18-5 | HAZARD CODE: H2d**17411**

LR White Embedded Hamster Intestine.

L.R. White is the first low viscosity acrylic embedding medium product made by London Resin Company. Used for routine light and electron microscopy, histochemistry and immunohistochemistry, LR White can be cold or thermally cured. Accelerator for room temperature curing of the resin is available for those applications where simple heat catalysis is inappropriate. *Requires cold pack.*

UNIT SIZE	CATALOG #
500 g	17411-500

**Accelerator for L.R. White®** CAS#: 50-00-0**17413**

Accelerator for use with L.R. White Embedding Media.

UNIT SIZE	CATALOG #
10 ml	17413-10

**Lowicryl® HM 23 Non-polar, hydrophobic, -80° C Embedding Kit** HAZARD CODE: CH6ag**18162**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 3 x 225 g of monomer G, 1 x 40g of crosslinker F, 1 x 3.7g of initiator C and 1 x 5.5g of initiator J.	1 kit	18162-1

**Lowicryl® K11M Polar Kit, hydrophilic, -60° C Embedding Kit** HAZARD CODE: BHORV6ag**18163**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 3 x 250gm of monomer I, 1 x 40g of crosslinker H and 1 x 4.3 g of initiator C.	1 kit	18163-1

**Lowicryl® HM 20 Non-polar, hydrophobic, -70° C Embedding Kit** HAZARD CODE: HC6d**15924**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 33 x 225g of monomer E, 1 x 130g of crosslinker D and 1 x 4.8g of initiator C.	1 kit	15924-1

## Resins &amp; Catalysts

**Lowicryl® K4M Polar Kit, hydrophilic, -35° C Embedding Kit** | HAZARD CODE: BORVX6ag**15923**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1 x 130g of crosslinker A, 3 x 250g of monomer B and 2 x 4.8g of initiator C.	1 kit	15923-1

**Methyl Methacrylate Embedding and Casting Kit** | HAZARD CODE: CDHOV5d**23679**

Resin cures thermally (preferably under pressure) under anaerobic conditions and is capable of producing the highest quality hard, clear, colorless castings.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 3 kg methyl methacrylate, 1 kg poly(methyl methacrylate) powder and 30g catalyst.	1 kit	23679-1

**Methyl Methacrylate-Butyl Methacrylate Embedding Kit** | HAZARD CODE: CEFHOV7d**03573**

For electron microscopy. Can be used to embed tissue for thin or thick sectioning. By varying butyl methacrylate amount in embedding mix, block hardness is changed. Can be UV catalyzed.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 2 x 500g of methyl methacrylate, 1 x 500g of butyl methacrylate, 1 x 8g benzoyl peroxide, plasticized 70% & 1 x 10g benzoin methyl ether.	1 kit	03573-1

**MonoStep™ Lowicryl® Embedding Media**

Pre-mixed, ready to use, saves time and minimizes chemical contact. These products are ideal for use in Immunohistochemistry. They are based on our popular Lowicryl® K4M and HM-20 formulations for low temperature embedding or freeze substitution. MonoStep™ products are especially appropriate for immunolabeling resulting in better preservation of antigenicity and lower background labeling.

CHARACTERISTICS	UNIT SIZE	CATALOG #
HM-20 Non-polar   HAZARD CODE: CHO6d	225 g	23994-225
K4-M Polar   HAZARD CODE: BH06d	225 g	23646-225

**Nadic Methyl Anhydride (NMA)** CAS#: 25134-21-8 | HAZARD CODE: HO6g**00886**

Liquid anhydride for curing epoxy resins. The larger the proportion of NMA used in the epoxy resin formula, the harder the resultant block.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 178.2, n25/D 1.505 - This material is a mixture of methyl isomers of methylbicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic anhydride.	100 g	00886-100
	500 g	00886-500

**Osteo-Bed Bone Embedding Kit** | HAZARD CODE: CGH05g**17734**

Formulated for embedding large and small mineralized (undecalcified) bone specimens. Large bone samples embedded with Osteo-Bed should be sectioned with a heavy-duty microtome. Small bone and soft tissue should be sectioned with a microtome designed to cut plastic embedded materials. Osteo-Bed is a methyl methacrylate-based material that can be removed from the section and allows the use of staining procedures very much like a paraffin section. Not water-soluble.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 900ml Osteo-Bed Resin Solution A, 2 x 12g Benzoyl Peroxide and Plasticized (Catalyst)	1 Kit	17734-1

**Additional Osteo-Bed Bone Kit Components**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Benzoyl Peroxide Plasticized (Catalyst)   HAZARD CODE: GH5g	12 g	17734C-1
Resin Solution A   HAZARD CODE: CHO5g	900 ml	17734A-900
Solvent   HAZARD CODE: HVWX6g	4 x 500 ml	17734B-4

**Osteo-Bed Plus Embedding Kit** | HAZARD CODE: CGH05g**24889**

Offers the same benefits as Osteo-Bed Bone Embedding Kit with the added benefit of producing much harder blocks for supporting undecalcified bone specimens and bone containing metal implants, grafts and stents. Suitable for use with large and small mineralized (undecalcified) bone sections and hard tissues. Try Osteo-Bed Bone Embedding Solvent (Cat. #17734B) to remove plastic from sections for brilliant staining.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit contains:</b> 2x12g Osteo-Bed Bone Embedding Catalyst and 1x900ml Osteo-Bed Plus Resin Solution A	1 kit	24889-1

**Poly/Bed® 502 Kit, Luft's Formula** | HAZARD CODE: BHO6g**02600**

Poly/Bed 502 kit, Luft's Formula overcomes penetration difficulties by using propylene oxide as an additional clearing agent. Permits embedding of tissue from fixation to sectioning in about 24 hours.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 500g Araldite® 502, 450g DDSA, 100g DMP-30 & Instruction sheet. (Viscosity Med.)	1 kit	02600-1

**Poly/Bed® 812 Embedding Kit / BDMA (Glauert Version)** | HAZARD CODE: BEH07g**21844**

This kit configuration provides even lower viscosity, and faster diffusion and penetration than the standard Luft formulation.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit contains:</b> 1 x 200ml Poly/Bed 812, 1 x 160ml Dodecenyl Succinic Anhydride (DDSA), 1 x 100ml Nadic Methyl Anhydride (NMA) & 1 x 20ml BDMA (Benzyl dimethyl amine).	1 kit	21844-1

## LIFE SCIENCES / HISTOLOGY

### Resins & Catalysts

#### **Poly/Bed® 812 Mini Kit/BDMA (Glauert Version)** | HAZARD CODE: BEH06g

**21959**

This kit configuration provides even lower viscosity, and faster diffusion and penetration than the standard Luft formulation.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit contains:</b> 1 x 50ml Poly/Bed 812, 1 x 40ml DDSA, 1 x 25ml NMA, 1 x 5ml BDMA.	1 kit	21959-1

#### **Poly/Bed® 812 Embedding Media** | HAZARD CODE: H4g

**08791**

Epoxy resin for embedding. Cured by amine catalysts. Exact WPE number supplied on label, ranging from 140 – 160.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity 100 – 200 cps	500 g	08791-500

#### **Poly/Bed® 812 (Luft formulations) Embedding Kit / DMP-30** | HAZARD CODE: BHO6g

**08792**

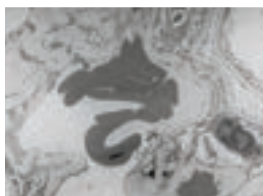
CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1 x 500gm Poly/Bed 812, 1 x 450g Dodeceny succinic anhydride (DDSA), 1 x 450g Nadic Methyl anhydride (NMA), 1 x 100g DMP-30.	1 kit	08792-1

#### **Poly/Bed® 812 (Luft formulations) Mini Kit** | HAZARD CODE: BHO6g

**21958**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 50ml Poly/Bed 812, 30ml DDSA, 20ml NMA, 5ml DMP-30, Instructions.	1 kit	21958-1

#### **Spurr Low Viscosity Embedding Kit** | HAZARD CODE: BEH06g

**01916**

*Microscopic blood clot in glomerulus of the human kidney after transplant.  
Courtesy of P.Wills, Harris Medical Labs*

Exceptional penetration for tissue, mineral and dense structures. A low viscosity of 60 cps allows easy penetration into a variety of difficult materials. May be used to prepare mineral specimens for polishing. The low viscosity of the Spurr formulation allows rapid infiltration into tissues, minerals and other dense structures. Facilitates embeddings with high lipid contents or hard membranes or highly vacuolated parenchymatous tissues.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 450g NSA, 250g ERL 4221, 250g D.E.R. 736, 100g DMAE.	1 kit	01916-1

**Ultra Low Viscosity Embedding Kit** | HAZARD CODE: BEHMOX6g**17706**

ERL-4221 is useful for rapid embedding of materials that are difficult to infiltrate even with Spurr's resin. Exhibits good sectioning qualities, beam stability and staining properties. Miscible with alcohol or acetone so propylene oxide can be avoided. For EM and LM – NOT water soluble.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1 x 100g ERL-4221, 2 x 00g Octenyl Succinic Anhydride (OSA), 1 x 25g 1,4-Butanediol Diglycidyl Ether (BDE), & 1 x 100g Dimethylaminoethanol (DMAE).	1 kit	17706-1

**PEG 4000 Resin** CAS#: 25322-68-3 | HAZARD CODE: A2g**16861**

This water soluble, nonionic material is used like paraffin to infiltrate and embed tissue. Easily removed from sections with 95% ethanol for immunocytochemical and x-ray microanalytical techniques.

CHARACTERISTICS	UNIT SIZE	CATALOG #
mp 53 – 56°C	250 g	16861-250

**Poly(ethylene glycol) (n) distearate** CAS#: 9005-08-7 |  $\text{CH}_3(\text{CH}_2)_{16}\text{CO}(\text{OCH}_2\text{CH}_2)_n\text{O}_2\text{C}(\text{CH}_2)_{16}\text{CH}_3$  | HAZARD CODE: A2g

Soluble in IPA, hot water, mineral oil. Waxy, water dispersible solid. n = value is MW of PEG unit.

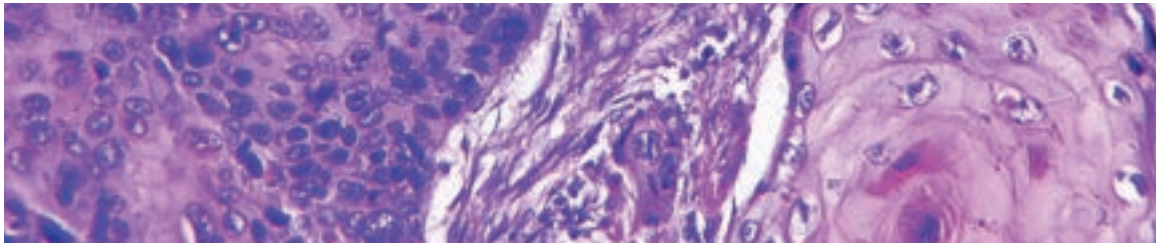
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 400, mp 35 – 37°C	100 g	01048-100
MW 400, mp 35 – 37°C	500 g	01048-500
MW 6,000, mp 52 – 57°C	100 g	19234-100

**PolyCut-Ease** | HAZARD CODE: A2g**18615**

The addition of 1% PolyCut-Ease to any epoxy embedding recipe will enable many stress-free sections to be cut from a single area of a knife. It preserves the life of your diamond knife edge as it markedly reduces friction of the knife as it cuts through the plastic. The additive will not change the block color or EM image quality. Does not contain silicone.

UNIT SIZE	CATALOG #
100 ml	18615-100

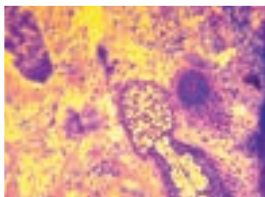
Routine Stains



ROUTINE STAINS

**Differential Quik III Stain Kit** | HAZARD CODE: CH6d

**26419**



*Helix shaped Helicobacter pylori bacteria in human colon tissue.*

High quality, rapid turnaround staining kit that serves many purposes in the cost-conscious laboratory environment. May be used for rapid blood smears for differential assessment, as well as detecting *H. pylori* microorganisms. The stain is very useful to pathologists for immediate interpretation of fine needle aspiration biopsies. Fast alternative to Wright-Giemsa staining procedures.

	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Differential Quik III Fixative, Differential Quik III Stain, Solution I, Differential Quik III Stain, Solution II.	8 oz	26419-8
	16 oz	26419-16

**Eosin Y, 0.5% alcoholic solution, Acidic** | HAZARD CODE: CHV5g

**09859**



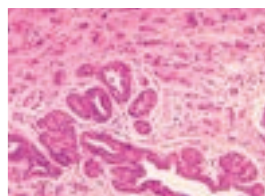
*Human kidney tissue stained with Harris Hematoxylin and Eosin Y.*

Used as counterstain with hematoxylin; contains acetic acid. Does not contain isopropanol or methanol. Ready-to-use with any automated stainer.

	UNIT SIZE	CATALOG #
	500 ml	09859-500
	1000 ml	09859-1000
	3.75 L	09859-3.75

**Eosin Y, 1% alcoholic solution, Non-Acidic** | HAZARD CODE: CHV5g

**17269**



*Human Breast Duct Carcinoma, Harris Hematoxylin and Eosin Y, 1% alcoholic solution, ammonia water bluing solution. 10X magnification.*

Contains no acetic acid. Used as counterstain with hematoxylin. Ready-to-use with any automated stainer.

	UNIT SIZE	CATALOG #
	500 ml	17269-500
	1000 ml	17269-1000



**Gill's modified OG-6 & EA** CAS#: 64-17-5 | HAZARD CODE: CHV6g

OG-6 is a cytoplasmic counterstain solution used in sequence with EA (EA 50, EA 65 or EA36) in the Papanicolaou staining method for clinical cytology. Gill's modified OG-6 is stable in solution and gives predictable high quality staining results not previously possible with other formulations.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Gill's modified OG-6	500 ml	09782-500
	1000 ml	09782-1000
	3.75 L	09782-3.75
Gill's modified EA	500 ml	09783-500
	1000 ml	09783-1000
	3.75 L	09783-3.75

**Gill's Hematoxylin #1 for Cytology** | HAZARD CODE: A2g

**24242**



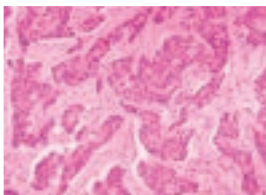
Human cheek cells, Gill's #1, Gill's Modified EA, Gill's Modified OG-6

Gill's #1 is ideal for routine cytology staining. This single strength formulation optimally stains gynecological and non-gynecological specimens.

UNIT SIZE	CATALOG #
500 ml	24242-500
1000 ml	24242-1000

**Gill's Hematoxylin #2, double strength for Histology & Cytology** | HAZARD CODE: A2g

**24243**

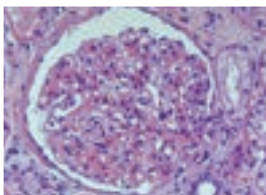


Gill's #2 should be used when a stronger or darker nuclear stain is required for cytology samples. Preferred for immunohistochemical counterstaining of the nucleus. General purpose nuclear stain, progressive type. Used with hematoxylin and eosin staining.

UNIT SIZE	CATALOG #
500 ml	24243-500
1000 ml	24243-1000

**Gill's Hematoxylin #3, triple strength for Histology** | HAZARD CODE: A2g

**24244**



Kidney stained with Gill's Hematoxylin #3, Eosin Y, 20X, 4

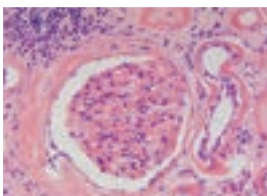
Gill's #3 is the formulation of choice for routine histological staining when a darker nuclear stain is desired. General purpose nuclear stain, progressive type. Used with hematoxylin and eosin staining.

UNIT SIZE	CATALOG #
500 ml	24244-500
1000 ml	24244-1000

Routine Stains

**Harris Hematoxylin, Acidified (mercury-free)** | HAZARD CODE: H2g

**24245**



Human Kidney, 20X Harris Hematoxylin, Eosin Y

Polysciences' Hematoxylin and Eosin products offer you the highest quality for routine staining. Strict QC for all routine stains ensures lot-to-lot consistency. Packaged in convenient plastic recyclable containers. General purpose nuclear stain, regressive type. Used with hematoxylin and eosin staining. Use Harris Hematoxylin for routine histology and cytology. Similar results can be achieved to those of Gill's Hematoxylin #1, #2 and #3 formulations by varying staining times.

UNIT SIZE	CATALOG #
500 ml	24245-500
1000 ml	24245-1000

**Mayer's Hematoxylin** | HAZARD CODE: H4g

**24821**

For use in both cytology and histology. General purpose nuclear stain, progressive type. Used with hematoxylin and eosin staining. Used as a counterstain for immunohistochemistry procedures.

UNIT SIZE	CATALOG #
500 ml	24821-500
1 L	24821-1

**Scott's Bluing Reagent** | HAZARD CODE: A2g

**24605**

A gentle formulation of "bluing" reagent for those specimens that may be affected by harsher "bluing" agents. Our premixed and ready to use Scott's Bluing Reagent provides rapid bluing and crisp nuclear detail obtained with routine Hematoxylin and Eosin stains. For use in both Cytology and Histology.

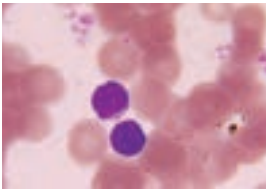
UNIT SIZE	CATALOG #
1 gal	24605-1
1 L	24605-1000

**StainRITE® Giemsa Stain (for May-Grünwald)** CAS#: 67-56-1 | HAZARD CODE: CHP6g

**25038**

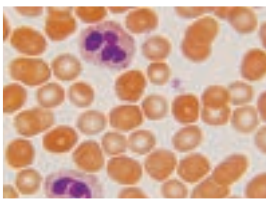
Giemsa stain is a classical blood film stain for peripheral blood smears and bone marrow specimens, used to visualize chromosomes, stain fungus *Histoplasma* and identify mast cells.

UNIT SIZE	CATALOG #
100 ml	25038-100
400 ml	25038-400

**StainRITE® May-Grünwald Stain Solution** | HAZARD CODE: CHP6g**24981**

May-Grünwald Stain Solution is a classic hematology stain that produces dense coloration in the staining of peripheral blood smears and bone marrows.

UNIT SIZE	CATALOG #
1 L	24981-1
4 L	24981-4

**StainRITE® Wright Stain Solution** | HAZARD CODE: CHP6g**24986**

A dual purpose stain used for staining blood smears and bone marrow aspirates. Ready-to-use solution makes the differentiation of human blood cells much easier to identify.

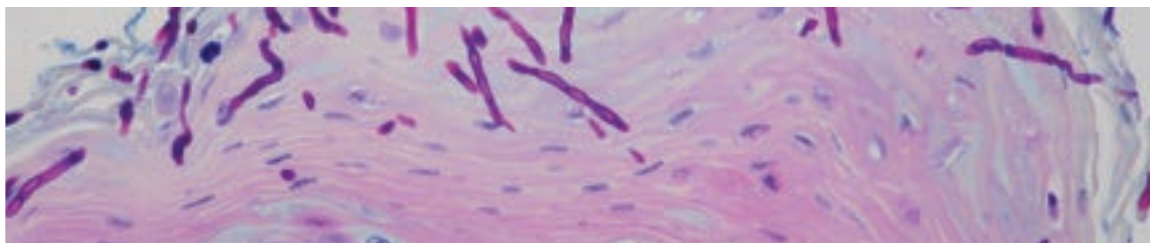
UNIT SIZE	CATALOG #
1 L	24986-1
4 L	24986-4
20 L	24986-20

**StainRITE® Wright-Giemsa Stain Solution** | HAZARD CODE: CHP6g**24985**

Wright-Giemsa Stain Solution is a dual purpose stain useful for blood films, parasites and bone marrow aspirates. Prepared from certified dyes. Ready-to-use solution makes the differentiation of human blood cells much easier to identify. Based on a commonly used Azure-Eosin formula.

UNIT SIZE	CATALOG #
1 L	24985-1
10 L	24985-10

Special Stains & Kits



SPECIAL STAINS & KITS

**Alcian Blue/PAS Kit** | HAZARD CODE: CH6d

**25086**



Demonstrates neutral and acidic mucosubstances on tissue at pH 2.5 and imparts a blue color to the acidic mucins and other carboxylated or weakly sulphated acid mucosubstances. Periodic Acid Schiff (PAS) reaction is then used to stain basement membranes, glycogen and neutral mucosubstances pink to red. Mixtures of neutral and acidic mucosubstances will appear purple due to positive reactions with both Alcian Blue and PAS. *Requires cold pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 500ml of Alcian Blue, 1% in 3% Acetic Acid, Periodic Acid 0.5%, Harris Hematoxylin, Scott's Bluing and Schiff's Reagent.	1 kit	25086-1

**Amyloid Stain Kit (Congo Red)** | HAZARD CODE: CHV4ag

**24614**

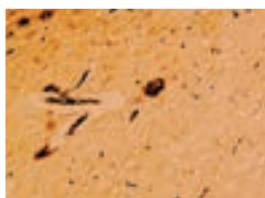


Complete kit to aid in the staining of tissue for amyloidosis. Used in the detection of amyloid FFPE as well as frozen tissue sections cut at 10 microns. The amyloid stains red and the nuclei stains blue. Control tissue is Alzheimer's or other known amyloidosis.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 250ml bottle of Congo Red Solution A, Alkaline Alcohol Solution B, and Gill's Hematoxylin #3 Solution C.	1 kit	24614-1

**Bielschowsky's Stain Kit** | HAZARD CODE: BHMVWX6gdm

**25994**

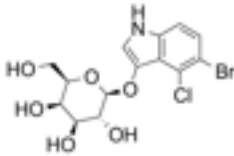


Silver stain used to demonstrate the presence of senile plaques and neurofibrillary tangles in Alzheimer's disease. Used on FFPE sections cut at 8-10 microns. Senile plaques, neurofibrillary tangles and axons stain dark brown to black.

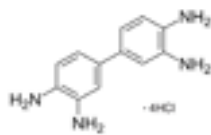
CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> <ul style="list-style-type: none"> <li>• 10% Silver Nitrate Solution (250 ml; SOLN A)</li> <li>• Ammonium Hydroxide, concentrate (125 ml; SOLN B)</li> <li>• Developer Stock Solution (5 ml; SOLN C)</li> <li>• 1% Ammonium Hydroxide Solution (250 ml; SOLN D)</li> <li>• 5% Sodium Thiosulfate (250 ml; SOLN E)</li> </ul>	250 ml	25994-250

**5-Bromo-4-chloro-3-indolyl  $\beta$ -D-galactopyranoside** CAS#: 7411-49-6 | C<sub>12</sub>H<sub>14</sub>N<sub>4</sub> · 4HCl**17316**Histochemical substrate for  $\beta$ -galactosidase.

X-gal



UNIT SIZE	CATALOG #
100 mg	17316-100
1 g	17316-1

**DAB-4HCl, Immunochemical Grade, 10mg Lyophilized per vial** CAS#: 7411-49-6 | C<sub>12</sub>H<sub>14</sub>N<sub>4</sub> · 4HCl**04008**

Polysciences' 3, 3'-Diaminobenzidine Tetrahydrochloride is manufactured to the highest standards with a strong emphasis on experimenter safety. Our DAB•4HCl comes lyophilized in 10mg portions per serum vial. Buffer can be added directly to the DAB serum vial with a hypodermic syringe, thereby significantly reducing product contact and enhancing safety.

Our DAB•4HCl is the chromogen of choice for immunoperoxidase techniques. It is fully water soluble and may be used without need for further purification. The brown reaction product is highly insoluble and will not diffuse from the site of localization. The color does not fade, and therefore, slides can be saved as permanent record. The reaction product also chelates with osmium tetroxide and becomes electron dense for use in electron microscopy. 10mg Lyophilized DAB•4HCl per vial.

**KEY ADVANTAGES:**

- Safety focused
- Easy to use
- Manufactured to ISO 13485:2016

UNIT SIZE	CATALOG #
5 x 10 mg	04008-5

**Dextran, FITC** CAS#: 60842-46-8 | HAZARD CODE: A2d**15759**

Valuable materials for studying permeability and microcirculation *in vivo*. These are used to trace neuronal projections and active transport in live and unfixed tissue and as neuronal tracers in a variety of species.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Fluorescein isothiocyanate), MW 150,000, yellow-orange crystalline powder	500 mg	15759-500

**Duramycin-LC-Biotin** | HAZARD CODE: U3a**25690**

Biotin is attached to amino groups of duramycin via a 6-carbon aminohexanoyl spacer. The conjugate contains 1 biotin molecule per duramycin molecule. Duramycin binds phosphatidylethanolamine (PE) at a 1:1 ratio with high affinity (Kd of 4-6 nM) and exclusive specificity.

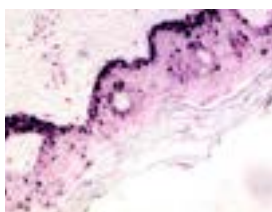
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 2,352, Appearance: Colorless Solid	100 $\mu$ g	25690-100

## Special Stains &amp; Kits

**1,9-dimethyl methylene blue zinc chloride double salt** CAS#: 931418-92-7 | HAZARD CODE: H2g**03610**

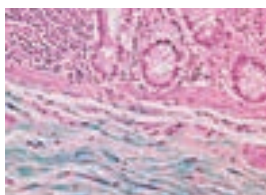
Used in dye binding assays for glycosaminoglycans.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Taylor's blue; 3,7'-Bis(dimethylamino)-1,9-dimethyldiphenothiazin-5-ium chloride), MW 416.05 g/mol mp 250°C (dec.)	1 g	03610-1

**Fontana Masson Stain Kit** | HAZARD CODE: H4g**25104**

Intended for the use in the histological visualization of Argentaffin cells and melanin in paraffin or frozen sections.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> (500ml ) 10% Silver Nitrate, (500ml) 0.1% Gold Chloride, (100ml) 28-30% Ammonium Hydroxide, (500ml) 1% Nuclear Fast Red and (500ml) 5% Sodium Thiosulfate.	1 kit	25104-1

**Gomori's Trichrome Stain Kit** | HAZARD CODE: BCHM6g**24205**

Human colon tissue stained with Gomori's Trichrome Stain Kit.

Gomori's One Step Trichrome refers to the multiple stain action of this reagent only. The mordant is Bouin's Fixative (Cat. #16045). All components and counterstains are included in kit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Bouin's Fixative (250 ml), Weigert's Iron Hematoxylin Solution A & B (250 ml/ each), Gomori's Trichrome Stain (250 ml), 0.5% Acetic Acid Aqueous (250 ml), 0.5% Hydrochloric Acid Aqueous (250 ml)	1 kit	24205-1

**GlycoGel Stain Kit** | HAZARD CODE: H4d**24693**

Glycoproteins are macromolecules composed of both a protein and carbohydrate portion. The sugar group can assist in protein folding or improved stability.

Glycoproteins are often found in proteins that are located in extracellular spaces and are important in immune cell recognition such as: antibodies and Major Histocompatibility Complex (MHC). Glycoprotein detection in gel electrophoresis (PAGE) is performed by modified (PAS) Periodic Acid Schiff chemistry. This method is very selective and has a detection limit of approximately 25-100 nanograms/band.

**Benefits:**

- Detect glycoprotein on SDS-PAGE gels
- Glycoproteins are detected as magenta bands with a colorless background
- Ready-to-use Kit stains 10 gels

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Schiff's Reagent (1000 mL), 0.5% Periodic Acid Aqueous (1000 mL), 0.55% Potassium Metabisulfite (1000 mL)	1 kit	24693-1

**Hanker-Yates reagent** | HAZARD CODE: HVWX7d**08661**

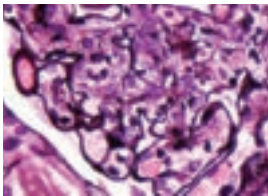
A specific, sensitive and non-carcinogenic chromogen for immunoperoxidase techniques. Contains p-phenylenediamine and pyrocatechol. Gives a blue reaction product.

UNIT SIZE	CATALOG #
5 x 1 g	08661-5

**Hydroxynaphthol Blue, ACS**  $C_{20}H_{12}N_2Na_2O_{11}S_3$  | HAZARD CODE: HU2g**25000**

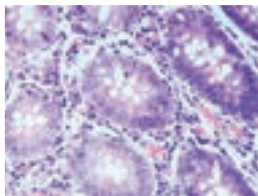
Stain is suitable for calcium determinations.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 620.47	25 g	25000-25

**Jones PAS-M Stain Kit** | HAZARD CODE: BCGOV3d**25091**

Periodic Acid Schiff Methenamine Silver Stain for Basement Membranes. An improved Jones PAS-M technique that utilizes an enhancer to accelerate the methenamine silver reaction with the glomerular basement membranes, while reducing the time to achieve results better than the original Jones PAS-M and a more stabilized silver solution. Used in kidney biopsies, Jones PAS-M may also be used for plastic sections for glomerular and tubular basement membranes.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 0.5% Periodic Acid, 0.5% Thiosemicarbazide, 5% Silver Nitrate Stock, 3% Methenamine, 3% Borax, 0.2% Gold Chloride, 2% Sodium Thiosulphate, Nuclear Fast Red.	100 ml	25091-100
	500 ml	25091-500

**Lithium Blue** | HAZARD CODE: H4g**24820**

Human Colon, 20X Harris Hematoxylin, Eosin Y

Our premixed and ready-to-use Lithium Blue is a gentle yet rapid formulation of bluing hematoxylin in only five minutes. Lithium Blue is buffered at an alkalinity of pH = 8.0 and provides crisp nuclear detail obtained with Gills, Mayers and Harris Hematoxylin stains. For use in both cytology and histology.

UNIT SIZE	CATALOG #
1 gal	24820-1

**Luxol Fast Blue, Ready-to-Use** | HAZARD CODE: CHV4ag**24611**

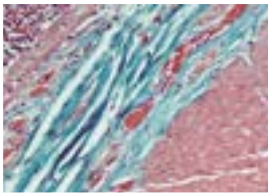
Used to stain myelin and phospholipids.

UNIT SIZE	CATALOG #
500 ml	24611-500

Special Stains & Kits

**Masson's Trichrome Stain Kit** | HAZARD CODE: CV5g

**25088**

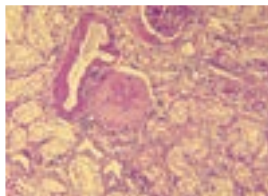


Used for the detection of collagen fibers in tissues such as skin, heart, etc. on formalin-fixed, paraffin-embedded sections and may be used for frozen sections as well. (Collagen fibers stained blue, nuclei stained black and cytoplasm, muscle, erythrocytes stained red.)

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 100ml / 500ml – Bouin's Fixative, 75ml / 250ml – Weigert's Iron Hematoxylin Soln A, 75ml / 250ml – Weigert's Iron Hematoxylin Soln B, 100ml / 500ml – Biebrich Scarlet-Acid Fuchsin, 100ml / 500ml – Phosphotungstic/Phosphomolybdic Acid, 100 ml / 500ml – Aniline Blue, 100 ml / 500ml – 1% Acetic Acid, Aqueous.	100 ml	25088-100
	500 ml	25088-1

**Multiple Stain Solution** | HAZARD CODE: C5g

**08824**



Kidney stained with Multiple Stain Solution in Peel-A-Way<sup>®</sup> Micro-Cut Paraffin, 4µ, 10X

(Paragon Stain) Used in Tzanck preparations of herpetic lesions and differentiates acidophilic and basophilic structures. Multiple Stain is a replacement for the former Paragon Multiple Stain (PMS). Can be directly applied to frozen sections, epoxy, JB-4<sup>®</sup> embedded sections or paraffin. It is utilized as a general cytoplasmic and nuclear stain. Multiple Stain also differentiates various cytologic processes including basal cell carcinoma, squamous cell carcinoma, malignant melanoma, B-cell lymphoma, acute myelomonocytic leukemia and metastatic breast cancer. Multiple Stain Solution is an easy-to-use, one-step procedure with H & E quality staining.

UNIT SIZE	CATALOG #
100 ml	08824-100
500 ml	08824-500

**Neat Stain Hematology Stain Kit**

**25034**



Three-step procedure for differentiation of morphological cell types in peripheral blood smears. Staining characteristics are similar to the traditional Wright's and Wright-Giemsa stains. Performs 150 tests.

**Benefits:**

- Neat – self-contained foil sealed, pre-filled multi-well containers
- Fast – immerse slides sequentially in each reagent for specified time, air dry and read
- Convenient – additional foils for re-sealing containers

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 6 Reagent packs, plastic stand & 6 reclosure foils.	1 kit	25034-4



**Neat Stain Trichrome Stain Kit** | HAZARD CODE: CH5g**25035**

For staining stool specimens. Based upon the Wheatley Trichrome technique which is a rapid staining procedure providing optimal results for routine examination. Simplified method—use of a mordant prior to staining is not necessary.

**Benefits:**

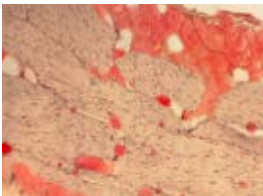
- Neat – self-contained foil sealed, pre-filled multi-well containers
- Fast – immerse slides sequentially in each reagent for specified time, air dry and read
- Convenient – additional foils for re-sealing containers

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 6 Reagent packs, plastic stand & 6 reclosure foils.	1 kit	25035-1

**Nuclear Fast Red, 1% Solution** | HAZARD CODE: A2g**24199C**

Ready-to-use nuclear fast red staining is a simple method of nuclear chromatin staining and is mainly used for high-contrast counterstaining in a number of histological applications.

UNIT SIZE	CATALOG #
250 ml	24199C-250

**Oil Red O Staining Kit** | HAZARD CODE: AK2g**25962**

Oil Red O staining procedure provides excellent demonstration of fats and lipids in frozen tissue sections. Stains up to 100 slides.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 100 ml Oil red O solution, 200 ml Propylene glycol & 100 ml Hemotoxyline.	250 ml	25962-250

**Periodic Acid Schiff's (PAS) Stain Kit** | HAZARD CODE: HU5d**24200**

Human kidney tissue stained with Periodic Acid Schiff's Stain Kit (PAS).

PAS techniques are used to demonstrate polysaccharides, neutral mucosubstances and basement membranes primarily in tissue. The PAS reagent is also called Fielgen Stain for the demonstration of DNA with a different protocol. Kidney is the most sensitive control. The demonstration of glycogen is best represented by a section of liver with a digestion step used as a negative control for staining. Kit is supplied with Harris Hematoxylin Acidified (Cat. #24245) as a counterstain.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 0.5% Periodic Acid Aq (250 ml), Schiff' Reagent (250 ml), 0.55% Potassium Metabisulfite (250 ml), Harris Hematoxylin Acidified (250 ml), Phosphate Citrate Buffer pH 5.0 (250 ml), Diastase Powder (0.5 gm)	1 kit	24200-1

Special Stains & Kits

**Phosphotungstic/Phosphomolybdic Acid**

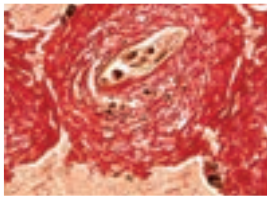
**25088D**

Used in Trichrome Stain as a decolorizer causing Biebrich Scarlet-Acid Fushsin to diffuse out of the collagen while leaving the muscle red.

UNIT SIZE	CATALOG #
1 gal	25088D-1

**Picrosirius Red Stain Kit** | HAZARD CODE: H4gp

**24901**

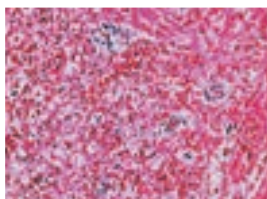


Our Picrosirius Red Stain binds specifically to collagen fibrils of varying diameter that is used to distinguish collagen Type I from Type III. Picrosirius Red Stain will quantify the amount of collagen in a given area of myocardial tissue (i.e. the collagen area fraction). Collagenous structures of the mandible stain brilliant red. Unlike sections stained with hematoxylin and eosin alone, dentinal tubules, Sharpey's fibers and other structures can be seen clearly after using Picrosirius Red Stain procedure. Under polarized light, collagen fibers can be specifically identified and their orientation determined.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Solution A - Phosphomolybdic Acid (250ml or 500ml), Solution B - Picrosirius Red F3BA Stain (250ml or 500ml), Solution C - 0.1 N Hydrochloride Acid (250ml or 500ml)	250 ml	24901-250
	500 ml	24901-500

**Prussian Blue Iron Stain Kit (Reaction for Demonstration of Iron)** | HAZARD CODE: H4g

**24199**



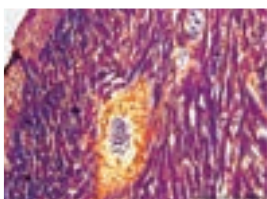
Human kidney tissue stained with Prussian Blue iron Stain Kit.

Prussian Blue or Perls' reaction is used to demonstrate ferric iron and ferritin. This is not a true staining technique rather, it is a histochemical reaction. The protein is split off by the hydrochloric acid, allowing the potassium ferrocyanide to combine with the ferric iron. This forms the ferric ferrocyanide or Prussian Blue.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 250 ml of: 4% Potassium Ferrocyanide, 4% Hydrochloric Acid, 1% Nuclear Fast Red	1 kit	24199-1

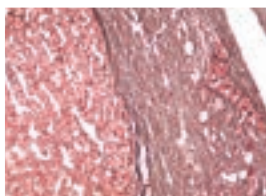
**Rapid PTAH Stain Kit** | HAZARD CODE: H4ag

**25715**



PTAH is used to demonstrate cross-striations of the skeletal muscle as well as fibrin and collagen. Used on formalin-fixed, paraffin-embedded tissue (FFPE). Muscle striations, fibrin and nuclei stain various shades of blue. Collagen, reticulum, basement membrane and cartilage stain various shades of red to red-brown.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Solution A- Langeron's Iodine, Solution B- 5% Sodium Thiosulfate, and Solution C- Phosphotungstic Acid Hematoxylin.	250 ml	25715-250
	500 ml	25715-500

**Reticulin Stain Kit** | HAZARD CODE: BVWX6d**25094**

Identifies reticulin fibers in tissue sections liver kidney and spleen. Reticulin is a Type III collagen found in the basement membrane of many organs and provides structural integrity. Reticulin Stain Kit is a metal impregnation technique, where ammoniacal silver initially binds to the tissue component of interest, the reducing agent (formalin) produces a dark insoluble precipitate, then treated by toning and fixing in sodium thiosulfate.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1% Potassium Permanganate, Oxalic Acid, 2.5% Ferric Ammonium Sulfate, 0% Silver Nitrate, 28 – 30% ACS Ammonium Hydroxide, 3% Sodium Hydroxide, 0% Formalin Aqueous Soln., 0.2% Gold Chloride, 5% Sodium Thiosulfate & 1% Nuclear Fast Red Stain Soln.	250 ml	25094-250
	500 ml	25094-500

**Saffron** CAS#: 42553-65-1 | HAZARD CODE: HU2g**25007**

Saffron is used in a variety of histological staining methods including the Hematoxylin, Phloxine and Saffron (HPS) staining technique. The HPS stain demonstrates collagen in connective tissues. Hematoxylin stains acidic structures such as DNA purple. Phloxine stains most proteins pink and Saffron stains collagen yellow.

UNIT SIZE	CATALOG #
25 g	25007-25

**Szechrome NAS** | HAZARD CODE: U3g**08762**

Suitable for the determination of the nitrate content of natural waters, industrial waste effluents, soil, plant and meat extracts, tinned goods, biological fluids (sputum, urine), chemicals, fertilizers and drugs. NAS has been used in place of the phenoldisulfonic acid, brucine and chromotropic acid methods used previously. This sensitive reagent reacts rapidly to produce stable colors suitable for precise quantitative determinations or rapid estimations in routine field work. Szechrome NAS produces color reactions which are specific and proportional to the nitrate content of the sample tested. Optical density (OD) at 570nm after 5-minute development is proportional to nitrate in the range of 2-20ppm.

UNIT SIZE	CATALOG #
5 g	08762-5

**Stains-all** CAS#: 7423-31-6 |  $C_{30}H_{27}BrN_2S_2$  | HAZARD CODE: H5g**03943**

Stains proteins red, DNA blue and RNA bluish-purple. Also useful for staining acid polysaccharides.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(1-Ethyl-2-[3-(1-ethylnaphtho[1,2-d]thiazolin-2-ylidene)-2-methylpropenyl]naphtho[1,2-d]thiazolium bromide, 3,3-Diethyl-9-methyl-4,5,4,5-dibenzothiacarbocyanine) MW 559.6	1 g	03943-1
	5 g	03943-5

Special Stains & Kits

**Terry's Polychrome Methylene Blue 2% Aqueous** | HAZARD CODE: A2d

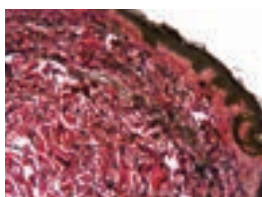
**09978**

A STAT staining method for unfixed and fixed tissue. Stains nuclei more strongly than cell cytoplasm. Excellent dye for nuclear and nucleolar details. Can be used to demonstrate erythrocyte alterations/inclusions and some erythrocyte parasites, as well as to visualize reticulocytes. Methylene blue is different from that in Romanowsky stains. In order to stain a slide with methylene blue a drop of stain is placed on a coverslip. The coverslip is then placed on an unfixed blood smear. An alternative method is to mix some stain with fresh blood before a blood smear is made.

UNIT SIZE	CATALOG #
470 ml	09978-470

**Verhoeff Van Gieson Elastin Stain Kit** | HAZARD CODE: BCOPPRS3g

**25089**



This stain is useful in demonstrating atrophy of elastic tissue in cases of emphysema, thinning and loss of elastic fibers in arteriosclerosis and other vascular diseases. With increasing age, changes such as splitting and fragmentation occur. These changes are most obvious in the skin, which becomes wrinkled and rather loose-fitting.

UNIT SIZE	CATALOG #
1 kit	25089-1

**Villanueva Osteochrome Bone Stain** | HAZARD CODE: CHV6g

**16280**



Useful for staining fresh, fixed, unembedded or plastic-embedded sections of bone. Villanueva Osteochrome Bone Stain gives uniform and reproducible results. Useful in studying biopsy or postmortem tissue.

UNIT SIZE	CATALOG #
450 ml	16280-450

Human degenerative joint disease, stained with Villanueva Osteochrome Bone Stain, 20X.

**Von Kossa Method for Calcium Kit** | HAZARD CODE: BH6d

**24633**



Calcified Necrotic kidney section, 4μ, stained with Von Kossa Method for Calcium Stain Kit.

Demonstrates only calcium phosphate and calcium carbonate salts. Note that when used in skin specimens, the silver will reduce the melanin in the skin to also give a black deposit. Used as a bone stain to indicate osteomalacia, or in other paraffin-embedded tissues to stain calcium deposits seen in metabolic diseases, Paget's disease, renal osteodystrophy and hyperparathyroidism, necrotic areas associated with tuberculoses (TB), infarction (Gandy Gamna bodies), atheroma in blood vessels and Malakoplakia in the bladder (Michaelis-Gutman bodies).

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 3% Silver Nitrate, 5% Sodium Thiosulfate, Nuclear Fast Red.	1 kit	24633-1

**Weigert's Hematoxylin Kit (Solution A & B)** | HAZARD CODE: CH6g**25373**

A nuclear staining solution containing hematoxylin, ferric chloride and hydrochloric acid used in many non-routine techniques (special stains) because it resists decolorization in acidic staining solutions. Ferric Chloride is a strong oxidizer, serving as both a mordant and an oxidizer for Weigert's Hematoxylin.

UNIT SIZE	CATALOG #
250 ml	25373-1

## CERTIFIED DYES &amp; STAINS

**Acid Fuchsin, C.I. 42685, certified** CAS#: 989-38-8 |  $C_{20}H_{17}N_3Na_2O_9S_3$  | HAZARD CODE: HU2g**24991**

Used in the Masson's Trichrome Staining technique. This method is commonly used to stain tissue sections in the Histology and Cytology Laboratory to distinguish muscle from collagen. The muscle stains red with the acid fuchsin and the collagen is stained green or blue with light green SF yellowish or methyl blue.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 585.24	25 g	24991-25
	100 g	24991-100

**Alcian Blue 8GX, C.I. 74240** CAS#: 33864-99-2 | HAZARD CODE: HU5g**19175**

Used primarily for demonstrating acid mucopolysaccharides with Scott's method and Mowry's staining methods. Used in electrophoresis for detecting glycoproteins. Also available in ready-to-use, see (Cat. #25086).

UNIT SIZE	CATALOG #
10 g	19175-10

**Aniline Blue, C.I. 42755, certified, water-soluble** CAS#: 28631-66-5 | HAZARD CODE: U5g**02570**

Used as contrast stain in histology and cytology and as a pH indicator (pH 10.0-13.0). Used with acid fuchsin as Mallory's connective tissue stain. Also used to visualize chromosomes and cellulose wall implants.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Acid blue 22) MW 739.7	25 g	02570-25

**Chlorazole Black E, C.I. 30235, certified** CAS#: 1937-37-7 | HAZARD CODE: HM3g**02730**

A valuable stain in general histology and cytology. Gives sharp, clear-cut pictures of both nuclei and cytoplasmic structures. Also useful for differentiation of fungi.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 781.7	25 g	02730-25

## Certified Dyes &amp; Stains

**Congo Red, C.I. 22120, certified (Direct Red 28)** CAS#: 573-58-0 | HAZARD CODE: BHX6g**02736**

Anionic metachromatic dye. Good contrast stain or counterstain. Specific stain for amyloids in pathology. Also, a pH indicator; transition interval: pH 3.0 (blue) to 5.0 (red). Also available in ready-to-use, see (Cat. #24614)  $\lambda$  max: 497nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 781.7	25 g	02736-25

**Cresyl Violet Acetate, certified** CAS#: 10510-54-0 | HAZARD CODE: U5g**21063**

Useful for staining Nissl substances in nerve cells and for bulk staining of nerve tissue.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(9-Amino-5-imino-5H-benzo[a]phenoxazine acetate salt) MW 321.34 mp 140-143°C	10 g	21063-10

**Eosin Y, C.I. 45380, certified** CAS#: 17372-87-1 | HAZARD CODE: U5g**02740**

Cytoplasmic counterstain. Component of Wright stain and MacNeal's Tetrachrome stain.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Eosin yellowish; Acid red 87; 2',4',5',7'-Tetrabromo-fluorescein, disodium salt) MW 691.9	50 g	02740-50

**Fast Green FCF, C.I. 42053, certified** CAS#: 2353-45-9 | HAZARD CODE: A2g**02745**

Breast tissue, no nuclear staining, stains support structures.

Sensitive stain for proteins in polyacrylamide gels. Especially suitable in isoelectric focusing. Also suitable for use as a cytological counterstain, and mammalian tissue stain for muscle and collagen.  $\lambda$  max: 622-626nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Food green 3) MW 808.85, mp 290°C (dec.)	25 g	02745-25
	100 g	02745-100

**Fuchsin, basic, certified, C.I. 42500** CAS#: 569-61-9 | HAZARD CODE: HM4g**06342**

For staining bacilli in tissue. Coupling agent for ultrastructural localization of esterases.  
 $\lambda$  max: 542 – 548

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Pararosaniline hydrochloride; Basic red 9) MW 323.83	25 g	06342-25

**Hematoxylin, C.I. 75290, certified (Natural Black 1)** CAS#: 517-28-2 | HAZARD CODE: A2g**02749**

Nuclear protein stain and glycogen stain. Also a general tissue stain for human, animal and VIR histology.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 302.3	25 g	02749-25
	100 g	02749-100

**Light Green SF Yellowish, C.I. 42095, certified** CAS#: 5141-20-8 | HAZARD CODE: A5g**02753**

Used as a dye and as a biological stain. Certified for use as a counterstain in cytology. An important contrast stain for plasma as a critical component of Papanicolaou (PAP) stains. Stains collagen fibers when substituted for aniline blue in Masson's trichrome.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 792.85	25 g	02753-25

**Oil Red O, C.I. 26125, certified** CAS#: 1320-06-5 | HAZARD CODE: A2g**06317**

A post-electrophoresis stain for lipoproteins on cellulose acetate plates. Used to stain adipocytes in frozen sections.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Solvent red 27; Sudan red 5B; Ceres red 5B) MW 408.5, mp 120°C	25 g	06317-25
	100 g	06317-100

**Orange G, C.I. 16230, certified** CAS#: 1936-15-8 | HAZARD CODE: U4g**00968**

Mallory's stain for collagen in connective tissue. Also useful as a stain for granules, elastic fibers, mast cells, and pollen tubes. General histology and cytology counterstain. Also available in ready-to-use, see (Cat. #09782).

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 452.38	100 g	00968-100

**Nuclear Fast Red, C.I. 60760** CAS#: 6409-77-4 | HAZARD CODE: H3g**09773**

Nuclear fast red staining is a simple method of nuclear chromatin staining and is mainly used for high-contrast counterstaining for histological applications. Also available in ready-to-use, see (Cat. #24199 & 24633).  $\lambda$  max: 518nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Calcium Red, Kernechtrot, Bordeaux R, C.I. 60760) MW 357.28	5 g	09773-5

## Certified Dyes &amp; Stains

**Pyronin Y, C.I. 45005, certified** CAS#: 92-32-0 | HAZARD CODE: A3g**18614**

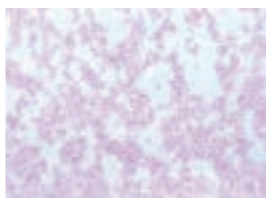
Used in combination with methyl green for the selective and differential staining of nucleic acids. The pyronin Y stains RNA red, while the methyl green stains DNA green. The combined methyl green-pyronin Y stain is a useful histochemical reagent. Pyronin Y can also be used as a tracking dye for polyacrylamide gel electrophoresis.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 302.8	5 g	18614-5
	25 g	18614-25

**Rose Bengal, C.I. 45440, certified** CAS#: 632-69-9 |  $C_{20}H_2Cl_4Na_2O_5$ **25005**

Rose Bengal can be used as an alternative to phloxine B in Kreyberg's stain for keratin and mucus. Useful for detecting bacteria in soil.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 1017.64	25 g	25005-25

**Safranin O, C.I. 50240, certified** CAS#: 477-73-6 | HAZARD CODE: H5g**02782**

*Francisella tularensis* using a Safranin stain, Magnified 1000X. Image courtesy of CDC Public Health Library / Dr. P. B. Smith.

A general biological stain. Used as a nuclear stain for histological studies. Also used as a cationic lipophilic probe and in the detection of glycosaminoglycans and proteoglycans.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Basic red 2; 3,7-Diamino-2,8-dimethyl-5-phenylphenazinium chloride) MW 350.85	25 g	02782-25

**Sirius Red, C.I. 35780** CAS#: 2610-10-8 | HAZARD CODE: H4g**09400**

Cardiac muscle stain. Used to quantify collagen I & III under polarized light.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Direct red 80) MW 1373.09	10 g	09400-10
	25 g	09400-25



**Sudan Black B, C.I. 26150, certified** CAS#: 4197-25-5 |  $C_{29}H_{24}N_6$  | HAZARD CODE: H4g **25008**

Useful for staining neutral triglycerides and lipids on frozen sections and some lipoproteins on paraffin sections. It has the appearance of a dark brown to black powder with maximum absorption at 596 – 605nm and melting point 120 – 124°C. It stains blue-black. Sudan Black B is one of the dyes used for Sudan staining. Similar dyes include Oil Red O, Sudan III and Sudan IV.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Oil Red O, Sudan III, Sudan IV) MW 456.54	25 g	25008-25

**Tetrachrome Stain, certified (MacNeal)** | HAZARD CODE: H4g **02783**

Blood stain similar to Wright's stain. Also useful for staining bone sections.

UNIT SIZE	CATALOG #
5 g	02783-5

**Toluidine Blue O, C.I. 52040, certified** CAS#: 92-31-9 | HAZARD CODE: U5g **01234**

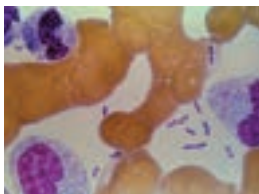
A metachromatic, cationic thiazine dye that is widely used in *in vitro* biological applications. Also used in techniques for DNAse detection.  $\lambda$  max: 626nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 305.83	25 g	01234-25

**Toluidine Blue O, C.I. 52040, purified** CAS#: 92-31-9 | HAZARD CODE: U5g **15931**

Useful for staining RNA, oligodeoxynucleotides, proteins, glycosaminoglycans and skin lesion for Mohs.  $\lambda$  max: 626nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 305.83	10 g	15931-10

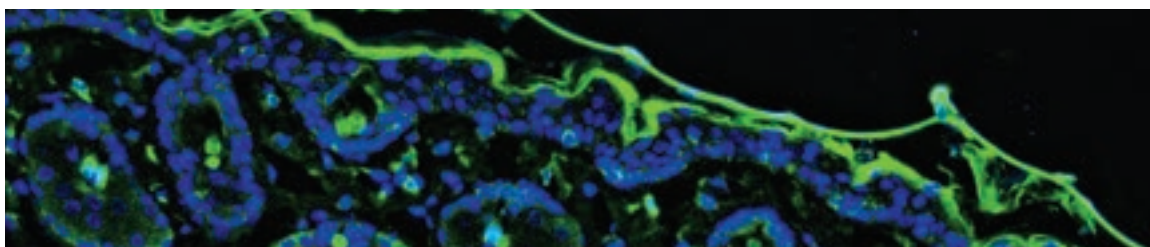
**Wright Stain, certified** CAS#: 68988-92-1 | HAZARD CODE: U4g **02785**

Dark stained bipolar ends of *Yersinia pestis* can clearly be seen in this Wright's stain of blood from a plague victim. Image courtesy of the CDC Public Health Library.

Useful for staining blood films and malarial parasites in blood films. Also available in ready-to-use, see (Cat. #24986).

UNIT SIZE	CATALOG #
25 g	02785-25
100 g	02785-100

## Fluorescent Dyes &amp; Stains



## FLUORESCENT DYES &amp; STAINS

**Acridine mutagen ICR 191** CAS#: 17070-45-0 | HAZARD CODE: HU6bg**08704**

Frameshift mutagenic standard for Ames test in *Salmonella* and *E. Coli*.

CHARACTERISTICS	UNIT SIZE	CATALOG #
[[6-Chloro-9-(3-[2-chloroethylamino]propylamino)-2-methoxyacridine] dihydrochloride; ICR 191 Acridine mutagen; Ames mutagen 191), MW 451.2	100 mg	08704-100

**Acridine Orange, C.I. 46005, very high purity** CAS#: 65-61-2 | HAZARD CODE: UH5e**04539**

DNA intercalating dye. A grade of acridine orange of exceptionally high purity, suitable for quantitative work. Free of inorganic salts. A specific stain for RNA, used as a 2% solution containing 1% lanthanum acetate in 15% acetic acid.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(3,6-Bis[[dimethylamino]acridine hydrochloride hydrate), MW 301.83, $\lambda$ max 494 $\pm$ 4nm	1 g	04539-1
	5 g	04539-5

**2% Acridine Orange, Ready-to-Use** CAS#: 65-61-2 | HAZARD CODE: HU5d**24603**

Ultrapure DNA intercalating dye. A grade of acridine orange of exceptionally high purity, suitable for quantitative work. Ready-to-use and free of inorganic salts. A specific stain for RNA, used as a 2% solution. Ready-to-use format eliminates the exposure to potentially irritating powdered dyes.

UNIT SIZE	CATALOG #
10 ml	24603-10

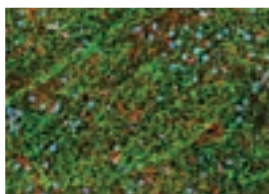
**Acridine Yellow** CAS#: 135-49-9 | C<sub>15</sub>H<sub>13</sub>N<sub>3</sub>**14513**

Acridine yellow is an organic fluorescent dye that binds DNA of viruses and other biological samples and can be used for fluorescent microscopy. It absorbs light between 400-500 nm and emits light between 500-600 nm.

UNIT SIZE	CATALOG #
25 mg	14513-25

**Biebrich Scarlet, C.I. 26905** CAS#: 4196-99-0 |  $C_{22}H_{14}N_4Na_2O_7S_2$  | HAZARD CODE: U4g**03336**Widely used as a counterstain, as well as a useful plasma stain.  $\lambda$  max 505nm

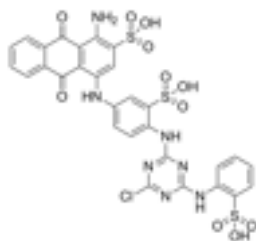
CHARACTERISTICS	UNIT SIZE	CATALOG #
(Acid red 66; Ponceau B) MW 556.49	100 g	03336-100

**Bisbenzimidide (Hoechst 33258)** CAS#: 23491-45-4 |  $C_{27}H_{37}Cl_3N_6O_4$  | HAZARD CODE: H4abd**09460**

Rat Brain Sagittal, 8 micrometer section, stained with Hoechst 33342, Alexa Fluor® 568-6FAP (Rb) and Alexa Fluor® 488-NF-P (Ms). Photo: Mike Davidson of Florida State University.

Fluorescent chromosome stain. Recommended use is 10mg/ml for 2 – 10 minutes. This will vary based on section thickness.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(2'-[4-Hydroxyphenyl]-5-[4-methyl-1-piperazinyl]-2,5'-bi-1H-benzimidazole trihydrochloride pentahydrate; Hoechst 33258) MW 623.97	100 mg	09460-100

**Cibacron Blue, F3GA, C.I. 61211, Affinity Chromatography Grade** CAS#: 84166-13-2 | HAZARD CODE: U5g**25721**

Sulfonated triazine dye that can be immobilized on a support matrix and used for affinity chromatography of proteins. Also used for probing nucleotide binding sites in proteins. 1H NMR and mass spectrometry data are consistent with the structure shown.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Reactive Blue 2) MW 774.16. Appearance: Powder.	1 g	25721-1
	5 g	25721-5
	100 g	25721-100

**Coomassie® Blue G250, C.I. 42655** CAS#: 6104-58-1 | HAZARD CODE: H2g**03707**

Protein stain for SDS gels. Used in dye binding techniques for protein quantification.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Brilliant blue G250; Acid blue 90) MW 854.03	10 g	03707-10
	50 g	03707-50
	100 g	03707-100

## Fluorescent Dyes &amp; Stains

**Coomassie® Blue R250, C.I. 42660** CAS#: 6104-59-2 | HAZARD CODE: H3g**00352**

Rapid acting and sensitive dye for SDS gels.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Brilliant blue R250; Acid blue 83) MW 825.98	10 g	00352-10
	100 g	00352-100

**Coumarin 1** CAS#: 91-44-1 | HAZARD CODE: A2g**24185**

Fluorescent dye, miscible in ethanol or neutral buffer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(7-Diethylamino-4-methylcoumarin; 7-Diethylamino-4-methyl-1-benzo-pyran-2-one) MW 231.3	250 g	24185-250

**Coumarin 6, laser grade** | HAZARD CODE: U7g**8037L**

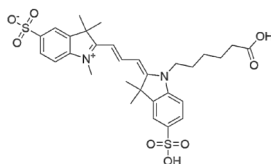
For pulsed and CW operation in the green-blue spectral region. Tunable from 515-585nm. Absorption max (in ethanol): 458nm, Optimum lasing (in ethanol): 540nm, Fluorescence max (in ethanol): 505nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 350.44	100 mg	8037L-100

**Cyanoditoly Tetrazolium Chloride (CTC)** CAS#: 102568-47-8 | HAZARD CODE: HU6ad**19292***E. coli* bacteria in CTC.

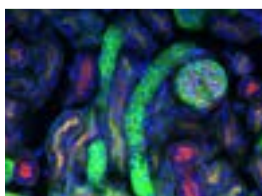
Cyanoditoly tetrazolium chloride has been used to measure the redox activity of tumor cells. It has also been employed for direct epifluorescent microscopic enumeration of respiring bacteria in food samples and environmental samples, especially water samples. Reveals a quantitative methodology for measuring marine bacteria. These methods yield 80% activity in 2 to 10 minutes. Cell samples mixed with CTC can be stored refrigerated or frozen in liquid nitrogen for at least 4 weeks without a significant loss of cells. Formazan fluoresces in solid state. Em. max: 630nm, Ex. max: 450nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 311.8, mp 230°C Soluble in ~100mg in 6.6cc water.	100 mg	19292-100
	1 g	19292-1

**Disulfo-Cy3-carboxylic acid** CAS#: 1121756-11-3 | C<sub>30</sub>H<sub>35</sub>N<sub>2</sub>NaO<sub>8</sub>S<sub>2</sub>**14521**

Sulfo-Cy3 carboxylic acid has absorbance and emission spectra that match the Cy3 fluorophore. It is water soluble and an unactivated carboxylic acid that can be used for conjugation.

UNIT SIZE	CATALOG #
5 mg	14521-5

**4',6-Diamidino-2-phenylindole dihydrochloride (DAPI)** CAS#: 28718-90-3 | HAZARD CODE: U3acd**09224**

Mouse Kidney cells were stained with DAPI, Alexa Fluor<sup>®</sup> 488 wheat germ agglutinin, Alexa Fluor<sup>®</sup> 568 phalloidin. Contributed by Walt Metcalfe, Molecular Probes, Inc.; photographed by Gregg Jarvis, Omega Optical, Inc.

A cationic fluorescent dye that specifically binds to adenine-thymine-rich DNA. Applications include detection of nanogram quantities of DNA in cellular homogenates and cytofluorometric determination of the DNA base content in human chromosomes. Available in bulk quantities for OEM users at significant savings.  $\lambda$  max: 342nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 350.25	10 mg	09224-10
	50 mg	09224-50

**Laurdan** CAS#: 74515-25-6 | C<sub>24</sub>H<sub>35</sub>NO**14512**

Laurdan is a membrane-permeable fluorescent probe that can be used to image lipid rafts in membranes. It can also be used to image lipids in live and fixed cells. The absorption/emission for laurdan is 366 nm/490 nm.

UNIT SIZE	CATALOG #
25 mg	14512-25

**LipidGreen 2** CAS#: 1382764-52-4 | C<sub>22</sub>H<sub>29</sub>NO<sub>4</sub>**14520**

Lipid Green 2 is a cell permeable molecular probe used for imaging neutral lipid.

UNIT SIZE	CATALOG #
2 mg	14520-2

**Fast Blue** CAS#: 74749-42-1 | HAZARD CODE: U7g**17740**

Fluorescent dye commonly used as a neuronal tracer and referred to as a hydrophilic retrograde tracer. Fast Blue can be used alone or with other types of fluorescent retrograde and anterograde tracer dyes. Other neuronal tracers such as True Blue, Evans Blue and Nuclear Yellow are commonly used in conjunction with Fast Blue.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Soluble in water, lower alcohols.	1 mg	17740-1
	5 mg	17740-5

**Filipin** (from *Streptomyces filipinensis*) CAS#: 11078-21-0 | HAZARD CODE: HO6d**08707**

Polyene antibiotic fluorochrome for cholesterol determination. Used as an antifungal agent.

UNIT SIZE	CATALOG #
50 mg	08707-50

## Fluorescent Dyes &amp; Stains

**Fluorescein, Sodium Salt, C.I. 45350** CAS#: 518-47-8 | C<sub>20</sub>H<sub>10</sub>Na<sub>2</sub>O<sub>5</sub> | HAZARD CODE: HU2g **24997**

Fluorescein sodium is used extensively as a diagnostic tool in the field of ophthalmology and optometry. Topical fluorescein is used for the diagnosis of corneal abrasions, ulcers and herpetic corneal infections.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Acid Yellow, Uraïne) MW 376.27	100 g	24997-100
	500 g	24997-500

**Granular Blue (GB) Dihydrochloride** CAS#: 55453-00-4 | HAZARD CODE: A3g **26273**

Granular Blue (GB) is a fluorescent retrograde tracer used in experimental studies of the peripheral nervous system to determine the number and origin of neurons projecting to a specific area. The retrograde tracing techniques allow for detailed assessment of neuronal connections from a single population of neurons to their various targets throughout the nervous system. These techniques allow the "mapping" of connections between neurons in a particular structure (e.g. the eye) and the target neurons in the brain. In rats, GB is effectively transported over long distances to produce blue fluorescent labeling of neuronal cytoplasm in cell bodies and proximal dendrites. It also produces an accumulation of silver-blue granules in cytoplasm. Ex.: 365 nm, Em.: 410 nm

UNIT SIZE	CATALOG #
1 mg	26273-1
5 mg	26273-5

**Hydroethidine (Dihydroethidium bromide)** CAS#: 104821-25-2 | HAZARD CODE: HU5cd **17084**

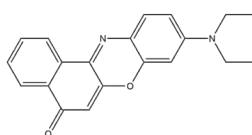
Reduced ethidium bromide. A vital stain. Enters and stains living cells without cellular trauma. Double staining system. Stains cytoplasm blue and chromatin red. Excellent cellular retention. Remains incorporated in chromatin with virtually no leakage. Essentially non-toxic. Shows no toxicity at levels useful for visualizing chromatin. Em. max: 420nm Ex. max: 365nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 315.5, mp 202 – 206°C	50 g	17084-50

**Indocyanine green** CAS#: 3599-32-4 | HAZARD CODE: HK3g **08263**

Dye for hemodynamic studies.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Cardiogreen; Fox green) MW 774.99	50 g	08263-50

**Nile Red** CAS#: 7385-67-3 | C<sub>20</sub>H<sub>18</sub>N<sub>2</sub>O<sub>2</sub> **14509**

Nile red is a dye used to stain lipids, especially neutral lipid droplets in cell. It has an excitation/emission spectra of ~550/636 nm in methanol.

UNIT SIZE	CATALOG #
10 mg	14509-10

## Fluorescent Dyes &amp; Stains

**Sudan II** CAS#: 3118-97-6 | C<sub>18</sub>H<sub>16</sub>N<sub>2</sub>O**14514**

Sudan II is a fat-soluble azo dye with an absorption peak around 493 nm. It is used to stain neutral triglycerides frozen sections and lipids and lipoproteins on paraffin section.

UNIT SIZE	CATALOG #
25 g	14514-25

**Sudan III** CAS#: 85-86-9 | C<sub>22</sub>H<sub>16</sub>N<sub>4</sub>O**14515**

Sudan III is a fat-soluble azo dye with a maximum absorption peak around 507 nm. It is used to stain neutral triglycerides frozen sections and lipids and lipoproteins on paraffin section.

UNIT SIZE	CATALOG #
25 g	14515-25

**Sudan IV** CAS#: 85-83-6 | C<sub>24</sub>H<sub>20</sub>N<sub>4</sub>O**14516**

Sudan III is a fat-soluble azo dye with a maximum absorption peak around 507 nm. It is used to stain neutral triglycerides frozen sections and lipids and lipoproteins on paraffin section.

UNIT SIZE	CATALOG #
25 g	14516-25

**Sudan Orange G C.I. 11920** CAS#: 2051-85-6 | C<sub>12</sub>H<sub>10</sub>N<sub>2</sub>O<sub>2</sub>**14517**

Sudan Orange G C.I. 11920 is a fat-soluble azo dye with a maximum absorption peak between 380 and 420 nm in methanol. It is used to stain neutral triglycerides frozen sections and lipids and lipoproteins on paraffin section.

UNIT SIZE	CATALOG #
25 g	14517-25

**Rhodamine 6G, C.I. 45160** CAS#: 989-38-8 | C<sub>28</sub>H<sub>31</sub>N<sub>2</sub>O<sub>3</sub>Cl | HAZARD CODE: H2g**25004**

Used as a tracer dye within water to determine the rate and direction of flow and transport. Rhodamine dyes fluoresce and thus can be detected easily, used extensively in fluorescence microscopy, flow cytometry, fluorescence correlation spectroscopy and ELISA.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Basic Red 1) MW 479.01	25 g	25004-25
	50 g	25004-50

## Fluorescent Dyes &amp; Stains

**Thiazole orange** CAS#: 107091-89-4 | HAZARD CODE: Hk6g**19352**Fluorescent dye for reticulocyte analysis. Also useful for *Plasmodium* species analysis.  $\lambda$  max: 512nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 476.32, mp 270°C (dec.)	250 g	19352-250

**Uvitex® 2B** CAS#: 27344-41-8 | HAZARD CODE: BH6g**19517**

UV absorber. Em. max: 435nm in PBS Buffer Ex. max: 350nm

CHARACTERISTICS	UNIT SIZE	CATALOG #
(C.I. Fluorescent Brightener 362; Derivative of stilbene disulfonic acid.) Appearance: Yellow powder.	10 g	19517-10

**PSVue® reagents**

PSVue reagents are a family of fluorescent probes containing a bis(zinc<sup>2+</sup>-dipicolylamine) group (Zn-DPA), a motif that has been found to bind with high affinity to surfaces enriched with anionic phospholipids, especially phosphatidylserine (PS) exposed on cell membranes. The fluorescent part of the probe is a reporter element that provides a means of detecting the probe once it is bound to the membrane of interest.

**Key Features of PSVue Probes:**

- Bind to a variety of cell types which have negatively charged phospholipids exposed on their membranes including apoptotic cells, necrotic cells, Gram+ and Gram- bacteria activated cells, tumor vascular endothelial cells, viruses, etc.
- Available in a range of detection wavelengths from long-UV to near infrared
- Suitable for *in vitro* and *in vivo* use
- Suitable for high-throughput screening assays
- Bind to the same PS site as annexin-V-angiogenesis, traumatic head injury, apoptosis

**PSVue® 380****25102**

The PSVue 380 (formerly PSS-380) reagent kit contains components to provide ~0.40ml of a 2mm solution of PSVue 380 in 50% aqueous ethanol solution. The compound has an absorbance max at 380nm and a fluorescence emission max at 440nm. Provides a 10X increase in fluorescence intensity upon binding to anionic membranes.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Vial containing pre-weighed amount of apo-PSS380 solid dye (at least 0.5mg) & vial of 8.4mm zinc nitrate solution in water (0.5ml).	1 kit	25102-1

**PSVue® 550** C<sub>60</sub>H<sub>61</sub>N<sub>13</sub>O<sub>17</sub>Zn<sub>2</sub> | HAZARD CODE: BH3ag**25684**

The compound has an absorbance max at 553nm and fluorescence emission max at 615nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Components to provide ~0.5ml of 1mm solution of PSVue® 550. MW 1,365	1 kit	25684-1



**PSVue® 643**  $C_{70}H_{80}N_{13}O_{20}S_2Zn_2Na$ **25685**

The compound has an absorbance max at 643nm and a fluorescence emission max at 658nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 0.25ml of a 1mM solution of PSVue® 643 in water. MW 1,641.4	1 kit	25685-1

**PSVue® 794****25101**

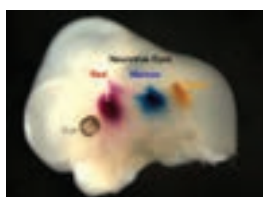
The PSVue 794 (formerly PSS-794) reagent kit contains components to provide ~0.68ml of a 1mM solution of PSVue 794 in aqueous solution. The compound exhibits absorbance and fluorescence excitation maximum at 794nm and emission maximum at 810nm. The labeling vehicle provided with the kit (Diluent X) is designed to maximize dye solubility and is suitable for *in vitro* and *in vivo* use.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Vial containing pre-weighted amount of apo-PSS794 solid dye (at least 1mg), vial of diluent X (1ml) and vial of 4.2mm zinc nitrate solution in diluents X (1ml).	1 kit	25101-1

**PSVue® Biotin**  $C_{46}H_{55}N_{13}OSZn_2$  | HAZARD CODE: BH3ag**25683**

PSVue Biotin can be complexed with streptavidin-coated quantum dots (not provided) for *in vivo* and *in vitro* use. Procedures to formulate PSVue® biotin and prepare the PSVue biotin-streptavidin-coated quantum dot complex are provided.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 1,191 Vial contains 1mg of solid.	1 kit	25683-1

**NeuroVue® Filter Square and Dyes for Neuronal Tract Tracing**

Monitoring diffusion distance using NeuroVue® dye absorbance in murine head (lateral view) embryonic day 12.5

NeuroVue Dye Filters are useful tools in several different areas of research including neuronal tract tracing studies of up to 3 – 4 weeks and are spectrally compatible with most fluorescent light-absorbing tags.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Burgundy   HAZARD CODE: U2g   Em. Max 707nm Ex. Max 683nm	1 filter	24838-1
Jade   HAZARD CODE: U2g   Em. Max 507nm Ex. Max 494nm	1 filter	24837-1
Jade Solid   HAZARD CODE: U2g   Em. Max 508nm Ex. Max 478nm	1 mg	25687-1
Maroon   HAZARD CODE: U2g   Em. Max 667nm Ex. Max 687nm	1 filter	24834-1
Orange   HAZARD CODE: U2g   Em. Max 570nm Ex. Max 550nm	1 filter	24836-1
Red   HAZARD CODE: U2g   Em. Max 588nm Ex. Max 567nm	1 filter	24835-1
Red Plus   HAZARD CODE: U2g   Em. Max 588nm Ex. Max 567nm	1 filter	24906-1
Red Solid   HAZARD CODE: A3a   Em. Max 588nm Ex. Max 567nm	1 mg	24907-1

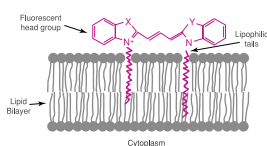
## Fluorescent Dyes &amp; Stains

**True Blue (TB) Diacetate Salt** CAS#: 108321-12-6 |  $C_{20}H_{16}N_4O_2 \cdot 2C_4H_7NO_3$  | HAZARD CODE: A3d**26272**

True Blue (TB) is a fluorescent retrograde tracer used in experimental studies of the peripheral nervous system to determine the number and origin of neurons projecting to a specific area. The retrograde tracing techniques allow for detailed assessment of neuronal connections from a single population of neurons to their various targets throughout the nervous system. These techniques allow the "mapping" of connections between neurons in a particular structure (e.g. the eye) and the target neurons in the brain.

In rats, TB is effectively transported over long distances, from the spinal cord to the cerebral cortex, to produce blue fluorescent labeling of neuronal cell body cytoplasm, nucleolus, proximal dendrites and axons. When combined with Diamidino Yellow (DY), TB is effective in double labeling experiments aimed at demonstrating the existence of divergent axon collaterals. Excitation: 365 nm, Emission: 405 nm

UNIT SIZE	CATALOG #
1 mg	26272-1
5 mg	26272-5

**CellVue® Dyes for Membrane Labeling** | HAZARD CODE: CH7g

Sensitive probes for detecting rapid uniform membrane changes in any cell or bioparticle with a membrane. Suitable for cell tracking and proliferation studies, compatible with flow cytometers, confocal and *in vivo* imaging equipment. CellVue labeled cells are brightly fluorescent, emitting in the long wavelength UV, the far red or the near infrared region of the spectrum and display potential shifts in their excitation and emission. This shift makes it possible to provide sensitive, quantitative methods for monitoring the fate of labeled cells at both macro and micro levels.

**Advantages:**

- Versatility – use with any cell type or bioparticle with a membrane
- Provides stable labeling with minimal transfer from cell to cell
- Provides rapid, uniform membrane labeling
- Combine with fluorescent antibodies or markers of cell function
- Suitable for cell tracking and proliferation studies
- Several colors (UV to NIR) for multi-parameter studies (use with existing fluorochromes for more colors)
- Far-Red and NIR versions can provide greater signal to noise due to reduced background autofluorescence
- Compatible with flow cytometers, confocal and *in vivo* imaging equipment
- Less leakage

CHARACTERISTICS	UNIT SIZE	CATALOG #
Burgundy – Mini Kit	1 kit	24843-1
Burgundy – MIDI Kit	1 kit	24850-1
Claret – Mini Kit	1 kit	24844-1
Claret – MIDI Kit	1 kit	24849-1
Jade – Mini Kit	1 kit	24904-1
Jade – MIDI Kit	1 kit	24905-1
Lavender – Mini Kit	1 kit	24841-1
Lavender – MIDI Kit	1 kit	24851-1
Lilac – Mini Kit	1 kit	25568-1
Maroon – Mini Kit	1 kit	24840-1
Maroon – MIDI Kit	1 kit	24847-1

Continued on next page

CellVue® Dyes for Membrane Labeling, continued

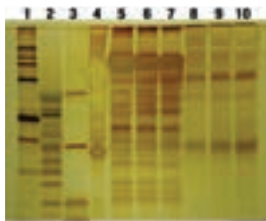
NIR780 – Mini Kit	1 kit	24845-1
NIR780 – MIDI Kit	1 kit	24852-1
NIR815 – Mini Kit	1 kit	24846-1
NIR815 – MIDI Kit	1 kit	24853-1
Plum – Mini Kit	1 kit	24842-1
Plum – MIDI Kit	1 kit	24848-1
Red – Mini Kit	1 kit	25567-1
Red – MIDI Kit	1 kit	25682-1

## METALLIC LABELS

**Blue Platinum EM Stain****26001**

An EM stain that can replace uranyl acetate in many cases for staining TEM thin sections. An excellent alternative to uranyl acetate if your lab cannot use radioactive compounds.

UNIT SIZE	CATALOG #
1 ml	26001-1

**ElectroPure™ Silver Stain Kit** | HAZARD CODE: BHMV7g**16717**

Gel stained with Silver Stain Kit.

Silver staining is a highly sensitive method for detecting proteins in polyacrylamide slab gels. Most silver staining protocols are time-consuming, complicated and dependent upon the purity of the reagents. Polysciences' Silver Stain Kit is simple, stable, controllable and very rapid. Our method is sensitive to proteins in the nanogram range and may be used either before or after Coomassie® blue staining. Staining for proteins is initiated in an alkali environment. Protein amino groups as well as cysteine and methionine sulfur groups are complexed with silver cations.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Sodium Hydroxide, Formaldehyde, Ammonium Hydroxide, Silver Nitrate and Citric acid.	1 kit	16717-1

**Lead Citrate, Powdered Fines Grade (< 5 µm)** CAS#: 512-26-5 | HAZARD CODE: HM5g**25350**

The most popular lead stain for EM applications. Carbonate free material. (For Sale in U.S. only)

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 1,053.8 Appearance: Powdered.	100 g	25350-100

## Metallic Labels

**Osmium ammine-B** CAS#: 48016-91-7 | HAZARD CODE: U5g**21033**

Stable DNA stain.

UNIT SIZE	CATALOG #
100 g	21033-100

**Osmium tetroxide, 2% solution** | HAZARD CODE: BOSV6d**23310**

Post fix and stain for E.M. Microfiltered solution in pre-scored sealed ampoules with each ampoule having its own ampoule cracker. *Requires poison pack.*

UNIT SIZE	CATALOG #
10 x 2 ml	23310-10
10 x 5 ml	23311-10

**Osmium tetroxide, 4% solution** | HAZARD CODE: BH6g**0972**

Post fix and stain for EM. The solution is microfiltered and features exact concentration, no cross contamination, and has excellent stability when kept cold and in the dark. Supplied in pre-scored sealed ampoules with each ampoule having its own ampoule cracker. Used for post staining of DAB/peroxidase to darken and retain stain for long term storage. *Requires poison pack.*

UNIT SIZE	CATALOG #
20 x 2 ml	0972A-20
5 x 10 ml	0972B-5
20 x 10 ml	0972C-20

**Osmium tetroxide, crystalline, 99.95%** CAS#: 20816-12-0 | HAZARD CODE: GPRS7g**0223**

Post fix and stain for EM. Supplied in pre-scored ampoules sealed in plastic bags. The ampoules are label free to avoid cleaning prior to preparation of solutions. Each ampoule is equipped with an ampoule cracker. *Requires poison pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 254.2 mp 39 – 41°C	5 x 1 g	0223A-5
	10 x 1 g	0223B-10
	10 x 1/2 g	0223C-10
	10 x 1/4 g	0223D-10

**Phosphomolybdic acid hydrate, ACS grade** CAS#: 12026-57-2 | HAZARD CODE: BG6d**01021**

Electron-dense metal stain.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(12-Molybdophosphoric acid) MW 3939.45	5 g	01021-5
	25 g	01021-25

**Ruthenium hexamine trichloride** CAS#: 14282-91-8 | HAZARD CODE: H4g**17253**

Electron microscopy stain.

UNIT SIZE	CATALOG #
1 g	17253-1

**Ruthenium tetroxide, 0.5% stabilized aqueous solution** CAS#: 20427-56-9 | HAZARD CODE: U5d**18253**

Useful as a staining agent for electron microscopy of polymers, as well as a fixative for biological samples. Ruthenium tetroxide penetrates tissue very slowly, reacting strongly with proteins, glycogen and monosaccharides. Ruthenium tetroxide can be used as an even more aggressive form of staining for the study of polymers by TEM than osmium tetroxide.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Supplied in pre-scored ampoules each with its own ampoule cracker. Store at 4°C in refrigerator.	5 x 10 ml	18253-5
	25 x 10 ml	18253-25

**Silver Nitrate** CAS#: 7761-88-8 | HAZARD CODE: BG6g**01125**

Equal to or better than ACS specifications. Silver stain techniques are widely used to detect nanogram quantities of proteins following electrophoresis. Silver nitrate is the silver source in most silver stain procedures.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 169.89, Assay: 99.9% min	25 g	01125-25
	100 g	01125-100

**Silver Protein for Histology, Strong (not certified)** CAS#: 9015-51-4 | HAZARD CODE: H2g**25108**

Histological stain for microscopic analysis.

UNIT SIZE	CATALOG #
5 g	25108-5
25 g	25108-25

## Metallic Labels

**Unconjugated Gold Colloid (GC)** | HAZARD CODE: A2dmw

PolyGold reagents are of the highest quality and can be relied upon to give reproducible results. For TEM studies, the most convenient Unit Sizes of gold particles are 5nm, 10nm and 15nm. The long shelf life (12 months when stored at 4°C) makes the use of these reagents economical. Resolution of most SEMs is such that immunolabeling studies require either the use of larger Unit Sized gold particles or enhancement of smaller gold particles using silver enhancement (deposition) technology.

**Benefits:**

- High specificity
- Low clustering – agglomeration of gold particles is minimal, over 85% of particles being singlets
- Discrete particle sizing – narrow particle Unit Size distribution allows double labeling to be achieved

UNIT SIZE	CATALOG #
5 nm	22716-100
10 nm	22717-100
15 nm	22718-100
20 nm	22719-100

**Uranyl Acetate 98%, ACS Reagent** CAS#: 6159-44-0 | HAZARD CODE: HP6g**21447**

Rat skeletal muscle. Stained with Uranyl acetate and lead citrate. Courtesy, Dr. J. Fulthorpe, Dept. Muscular Dystrophy Research, Newcastle General Hospital, UK.

Uranyl acetate improves tissue penetration and contrast without affecting immunolabeling. Useful as positive or negative stain for thin sections.

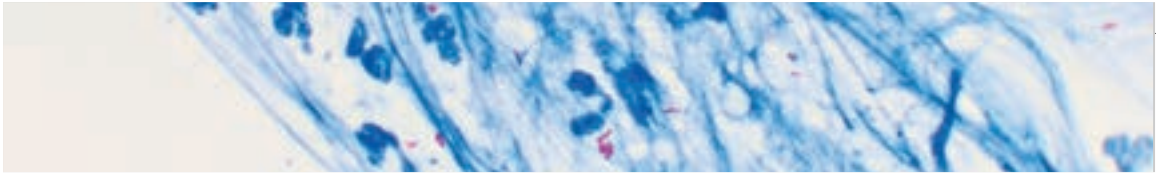
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 424.15	25 g	21447-25

**Uranyl Formate** CAS#: 16984-59-1 |  $\text{UO}_2(\text{CHO}_2)_2 \cdot \text{H}_2\text{O}$  | HAZARD CODE: PS7g (Not for sale in Europe)**24762**

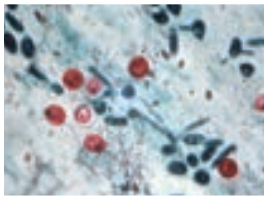
Electron dense, heavy metal compounds of uranium, tungsten and molybdenum have long been utilized for "negative staining" in electron microscopy. As demand for ultra-fine structure in biomolecules has increased, new fine-grain structure materials are required.

Uranyl formate is utilized for negative EM staining. The uranyl formate is made from depleted uranium. The fine grain structure, fast biomedical tissue fixation properties and stability of this material make it unique for many imaging protocols. Radioactivity: approximately 1.11E4 Bq/g.

UNIT SIZE	CATALOG #
1 g	24762-1
5 g	24762-5



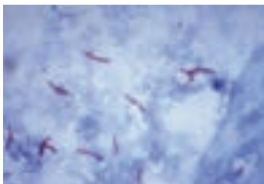
## MICROBIOLOGY

**AFB Kinyoun Kit (Cold Method)** | HAZARD CODE: CHVWX7g**25765**

Direct fecal smear is stained to detect *Cryptosporidium* sp., an intracellular protozoan parasite using a modified cold Kinyoun acid-fast staining technique. Image courtesy of CDC Public Health Library

Method of staining acid-fast microorganisms, specifically *Mycobacterium*. Procedure is similar to Ziehl-Neelson stain, but does not involve heating the slides. Kinyoun staining method uses carbol-fuchsin as a primary stain, followed by decolorization with an acid-alcohol solution and methylene blue as a counterstain. Kinyoun carbol-fuchsin has a greater concentration of phenol and basic fuchsin and does not require heating in order to stain properly. When viewed under a microscope, Kinyoun stained slides will show acid-fast organisms as red and non acid-fast organisms as blue.

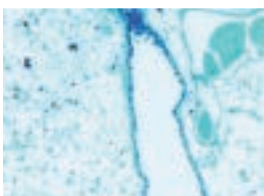
CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 8 oz bottles of Carbol Fuchsin (Kinyoun) and Acid Alcohol & Methylene Blue.	1 kit	25765-1

**AFB Ziehl-Neelson Kit (Hot Method)** | HAZARD CODE: CH6g**24669**

*Mycobacterium tuberculosis* bacteria revealed using acid-fast Ziehl-Neelson stain; Magnified 1000X. Image courtesy of CDC Public Health Library/Dr. George P. Kubica.

Bacteriological stain kit used to identify acid-fast organisms, mainly *Mycobacteria*. Helpful in diagnosing *Mycobacterium tuberculosis* as its lipid rich cell wall makes it resistant to Gram stain. Can also be used to stain other bacteria like *Nocardia*. Kit contains a primary dye (carbol-fuchsin), a decolorizer (acid-alcohol) and a counter stain (methylene blue). Decolorizer is used to decolorize the bacteria that “dislike” the primary stain. Counter stain is used to stain those bacteria that were decolorized by the acid alcohol. Acid-fast bacilli will stain bright red, while non-acid fast organisms will stain blue or green.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 8 oz bottles of Carbol Fuchsin (Ziehl-Neelson) and Acid Alcohol & Methylene Blue.	1 kit	24669-1

**Grocott Methenamine Silver Stain (GMS) for Fungus & PCP** | HAZARD CODE: BCGOPRS3d**25087**

(Room Temperature & Microwave Kit) Chromic acid oxidation forms aldehydes from fungal cell wall polysaccharide components, which are subsequently demonstrated by reduction of an alkaline hexamine-silver complex. The reaction may be compared to that of the Periodic Acid Schiff reaction.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Chromic Acid Soln. Sodium Metabisulfite, 5% Silver Nitrate, Methenamine Soln., 5% Borax, 0.2% Gold Chloride, 2% Sodium Thiosulphate, Light Green stock soln.	1 kit	25087-1

Microbiology

**Gram Stain Set (Stabilized)** | HAZARD CODE: H5g

**25036**



For staining bacteria from cultures or specimens by the differential Gram stain method. Performs 150 tests.

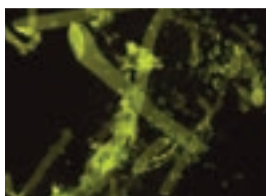
**Benefits:**

- Neat – self-contained foil sealed, pre-filled multi-well containers
- Fast – immerse slides sequentially in each reagent for specified time, air dry and read
- Convenient – additional foils for re-sealing containers

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 6 Reagent packs, plastic stand & 6 reclosure foils.	1 kit	25036-1

**Fungi-Fluor® Kit for Fungal Detection** | HAZARD CODE: A2agm

**17442**



*Aspergillus* culture stained with Fungi-Fluor®, no counterstain, 40X, FITC filter.

Many opportunistic infections develop in the immunosuppressed patient suffering from AIDS. A number of these are caused by various fungal species including *Candida*, *Aspergillus*, *Histoplasma* and *Coccidioides*. Fungi-Fluor Kit for Fungal Detection offers a quick fluorescent stain/counterstain procedure for various fungal organisms. Can be used to screen a variety of specimen types from sputum to skin scrapings for fungal detection.

**Benefits:**

- More accurate than KOH preps
- Rapidly offers greater morphologic detail than PAS or silver stains
- Counterstain greatly reduces background fluorescence
- One kit stains over 500 slides
- FDA approved for *in vitro* diagnostic use in the United States

**Specimen types:**

- Fresh or frozen clinical specimen
- Paraffin or GMA-embedded tissues

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 75ml of staining solution A & 75ml of counterstaining solution B.	1 kit	17442-1
<b>Fungi-Fluor® Kit for Fungal Detection - Europe Only. - For European orders, please call or visit our website.</b>	1 kit	17442-E



**Fungi-Fluor® Pneumocystis Kit** | HAZARD CODE: HU2agm**22363**

*Pneumocystis jiroveci* is an organism that can cause *Pneumocystis carinii* pneumonia (PCP) in severely immune-compromised patients. Early detection allows the introduction of appropriate treatment and may improve the chances of patient survival. The Fungi-Fluor® Pneumocystis Kit offers a fast, fluorescent staining procedure for *Pneumocystis carinii* in bronchial specimens. 100 tests per kit.

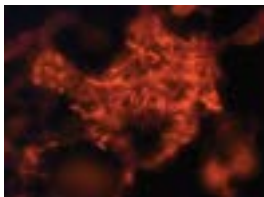
**Benefits:**

- Direct fluorescent stain for *Pneumocystis carinii* cyst
- Unique fluorescent morphology ("double parenthesis" structure) is easy to identify
- 3 minutes to stain and read
- Permanent slides – slides can be reactivated if fluorescence dims
- Minimal prep and clean-up
- Better results than with methenamine silver staining
- FDA approved for *in vitro* diagnostic use in the United States

**Specimen Types:**

- Bronchoalveolar lavage (BAL)
- Bronchial brush or wash
- Touch prep of fresh tissue
- Paraffin section and frozen sections

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 10ml of Fungi-Fluor® staining solution & 10 positive unstained control slides (smears).	1 kit	22363-1
<b>Fungi-Fluor® Pneumocystis Kit is sold in Europe. For European orders, please call or visit our website.</b>	1 kit	22363E-1

**TB Fluorostain Kit** | HAZARD CODE: BCH6g**22422**

Fluorochrome staining of mycobacteria in an acid-fast smear offers several advantages over traditional carbol-fuchsin methods. Lower magnification is required; fluorescent mycobacteria stand out brightly on a darkened background. Smaller numbers of mycobacteria are easily identified with a fluorescent stain. 100 tests per kit.

**Features:**

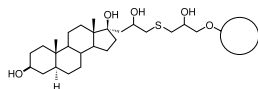
- Less than 12 minutes to perform staining
- Microwave method reduces time and enhances results
- Much less Auramine O and Rhodamine B used, reducing costs and hazards
- Faster, superior counterstain
- FDA approved for *in vitro* diagnostic use in the United States

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 525ml of staining solution A, 500ml of acid solution B & 500ml counterstaining solution C.	1 kit	22422-1

## Affinity Chromatography

## Androstan Sepharose® 6B Novel Immobilized Steroid Beads | HAZARD CODE: CH7d

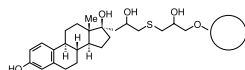
24858



CHARACTERISTICS	UNIT SIZE	CATALOG #
Typical ligand loading 10 – 14 μmoles/ml bead.	1 ml	24858-1

## Estradiol Sepharose® 6B Novel Immobilized Steroid Beads | HAZARD CODE: CH7d

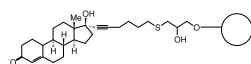
24861



CHARACTERISTICS	UNIT SIZE	CATALOG #
Typical ligand loading 10 – 14 μmoles/mL bead.	1 ml	24861-1

## Nortestosterone Sepharose® 6B Novel Immobilized Steroid Beads | HAZARD CODE: CH7d

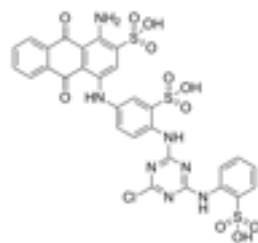
24860



CHARACTERISTICS	UNIT SIZE	CATALOG #
Typical ligand loading 10 – 14 μmoles/ml bead.	1 ml	24860-1

## Cibacron Blue, F3GA, C.I. 61211, Affinity Chromatography Grade CAS#: 84166-13-2 | HAZARD CODE: U5g

25721



Sulfonated triazine dye that can be immobilized on a support matrix and used for affinity chromatography of proteins. Also used for probing nucleotide binding sites in proteins. <sup>1</sup>H NMR and mass spectrometry data are consistent with the structure shown.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Reactive Blue 2), MW 774.16 Appearance: Powder.	1 g	25721-1
	5 g	25721-5
	100 g	25721-100

**Anti-Albumin (human serum) in rabbit, IgG fraction** | HAZARD CODE: H4d**23716**

This polyclonal antibody reacts with all forms of bovine serum albumin and will cross-react with most mammalian albumins. This antibody efficiently precipitates protein and can be used in a variety of detection and capture techniques.

UNIT SIZE	CATALOG #
5 mg	23716-5

**Anti-Biotin in rabbit, IgG fraction, lyophilized** | HAZARD CODE: H4d**23867**

UNIT SIZE	CATALOG #
5 mg	23867-5

**Anti-Esterase (porcine liver) in rabbit, IgG fraction** | HAZARD CODE: A3g**23734**

This antibody reacts with esterase from porcine liver. Cross-reactivity is expected against most mammalian forms of this enzyme. Suitable for: ELISA, Western Blotting

UNIT SIZE	CATALOG #
5 mg	23734-5

**Anti-Human IgG (H&L) in goat**

Enzyme conjugates of affinity purified antibodies are supplied with lot-specific recommended dilutions. Refer to website for more information. *Requires cold pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Biotin conjugate   HAZARD CODE: A2d	2 mg	23774-2
Fluorescein conjugate   HAZARD CODE: H4d	1 mg	23778-1
Rhodamine conjugate   HAZARD CODE: A2d	2 mg	23772-2
Rhodamine conjugate   HAZARD CODE: H4d	1 mg	23779-1
Texas red conjugate   HAZARD CODE: H4d	2 mg	23773-2

**Anti-Goat IgG (H&L) in rabbit** | HAZARD CODE: H4d**23756**

Enzyme conjugates of affinity purified antibodies are supplied with lot-specific recommended dilutions. Refer to website for more information. *Requires cold pack.*

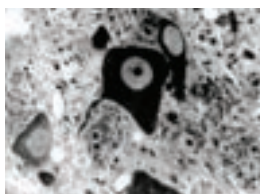
UNIT SIZE	CATALOG #
2 mg	23756-2

## Antibodies

**Anti-Human IgG (H&L) in sheep** | HAZARD CODE: H4d

Enzyme conjugates of affinity purified antibodies are supplied with lot-specific recommended dilutions. Refer to website for more information. *Requires cold pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Affinity purified	2 mg	23784-2
Alkaline phosphatase conjugate	1 mg	23790-1
Biotin conjugate	2 mg	23788-2
Rhodamine conjugate	2 mg	23786-2

**Anti Neuron Specific Enolase (NSE)**

Staining of rat cerebral cortical neurons with anti-rat NSE.

The anti-Human NSE & anti-Rat NSE are both very specific and are the reagents of choice for the visualization of neurons and peptide secreting neuroendocrine cells by immunocytochemistry. These antisera are also useful for the quantification of neurons and peptide secreting neuroendocrine cells by Radio Immuno Assay (RIA). The anti-Human NSE can be used for immunocytochemical staining at dilutions of 1:3,000 to 1:5,000. The anti-Rat NSE can be used at dilutions of 1:2,000 to 1:4,000.

CHARACTERISTICS	UNIT SIZE	CATALOG #
anti-Human Neuron specific enolase (NSE) in rabbit, serum, lyophilized   HAZARD CODE: A3d	100 µl	17437-100
	200 µl	17437-200
anti-Rat Neuron specific enolase (NSE) in rabbit, serum, lyophilized   HAZARD CODE: A3fz	150 µl	16625-150
	350 µl	16625-350

**Anti-Ovalbumin (egg white) in rabbit, IgG fraction** | HAZARD CODE: H4d**23744**

Reacts with ovalbumin from hen egg white showing a 45 kDa band under both non-reducing and reducing conditions of SDS-PAGE.

UNIT SIZE	CATALOG #
5 mg	23744-5

**Anti-Transferrin (human) in rabbit, IgG fraction** | HAZARD CODE: H4d**23753**

Reacts with transferrin from human serum. Strong cross-reactivity will occur with mammalian forms of this protein. Suitable for: ELISA, Western Blotting, Immunoprecipitation.

UNIT SIZE	CATALOG #
5 mg	23753-5

**Bovine serum albumin (fraction V, protease-free), lyophilized** | HAZARD CODE: H4d**23854**

Blocking reagent. Lyophilized.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~66k	10 g	23854-10

**Prionex®** CAS#: 48 896-8**24621**

Prionex is a polypeptide fraction of highly purified dermal collagen of porcine origin with excellent protein stabilizing properties. Prionex is prepared by partial hydrolysis under mild conditions. An extremely pure form of gelatin type A free from cartilage, bone and plasma components. Due to the chemical nature and the standardized quality, Prionex can be used as an inert protein stabilizer in any kind of application and as an additive for cell culture media. No risk of BSE, MCD or HIV infective agents.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Prionex® solution 10% is a clear yellow, sterile solution. pH 6.0-7.5	100 ml	4621-100

## DETERGENTS

**Poly(oxyethylene) sorbitan monolaurate (Tween 20®)** CAS#: 9005-64-5 | HAZARD CODE: A2g**06110**

Water-soluble surfactant.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 1,227.5 d 1.095 n20/D 1.468	100 g	06110-100

**Sodium Dodecyl Sulfate (SDS) Anionic Surfactant** | HAZARD CODE: H03g

SDS is an anionic surfactant, which will decrease polymer bead hydrophobicity and can additionally participate in charge stabilization of the suspension. SDS is a more rigorous surfactant than is commonly used in uncoated polymer bead preparations.

UNIT SIZE	CATALOG #
10 g	BLI3945-10
1 kg	03945-1

## Detergents

## ADDITIONAL REAGENTS &amp; ADDITIVES

**Diatrizoate sodium** CAS#: 737-31-5 | HAZARD CODE: U2abg**18152**

Forms solutions of low viscosity and high density, and can be used along with an aggregating agent like Ficoll® 400 for qualitative *in vitro* isolation of pure lymphocytes from whole blood by gradient centrifugation.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Sodium diatrizoate; 3,5-Diacetamido-2,4,6-triiodobenzoic acid, sodium salt; Hypaque sodium), MW 635.92	100 g	18152-100

**1,4-Diazabicyclo(2,2,2)octane** CAS#: 280-57-9 | HAZARD CODE: H4g**15154**

Stabilizer of dye solutions that have not been oxygen degassed.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 112.18 mp 160°	25 g	15154-25
	100 g	15154-100
	500 g	15154-500

**N-(γ-L-Glutamyl)-4-methoxy-2-naphthylamine** CAS#: 24723-50-0 | C<sub>16</sub>H<sub>18</sub>N<sub>2</sub>O<sub>4</sub> | HAZARD CODE: HM7f**02410**

Used as a substrate for the histochemical demonstration of γ-glutamyl transpeptidase activity. Amino acid and chiral reagent. Purity based on dry form; 98% purity based on water content: 88%.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 302.3, mp 178 – 183°	50 mg	02410-50

**Heparin, sodium salt****(Sodium heparin, from porcine intestinal mucosa)** CAS#: 9041-08-1 | HAZARD CODE: U4d**01491**

Anticoagulant. Heparin binds and activates the plasma protein antithrombin III which inhibits several enzymes in the blood coagulation cascade. Sodium heparin, from porcine intestinal mucosa.

UNIT SIZE	CATALOG #
100M USP Units	01491-100
5 x 100M USP Units	01491-5

**Phen-DC3** CAS#: 929895-45-4 |  $C_{34}H_{26}N_6O_2 \cdot 2CF_3O_3S$ **26000**

Phen-DC3 is a highly selective telomeric G-quadruplex-DNA binding bisquinolinium compound.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 848.75	1 mg	26000-1
	5 mg	26000-5

**TDMAC (Tridodecylmethylammonium chloride)** CAS#: 7173-54-8 | HAZARD CODE: HK4bg**01595**

Used in chloride-selective solvent polymeric membrane electrodes. Also used in the production of TDMAC-heparin that is used as an antithrombogenic coating for catheters and tubing.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 572.49, mp 105 – 114°C	1 g	01595-1
	5 g	01595-5
	25 g	01595-25

**TDMAC-heparin (Tridodecylmethylammonium heparinate)**

Proven to be an effective antithrombogenic coating when applied to a variety of materials used to make catheters and tubing. To provide an antithrombogenic surface that will resist clot formation. For most materials, a simple immersion of the device to be coated, air drying and sterilization are sufficient.

CHARACTERISTICS	UNIT SIZE	CATALOG #
2% (w/w) solution (~1,000 USP units/ml)   HAZARD CODE: CH5d	50 ml	03921-50
7% (w/w) solution (~3,500 USP units/ml)   HAZARD CODE: CHVW7d	25 ml	03813-25

**XTT** CAS#: 11072-31-2 | HAZARD CODE: HU7ad**19661**

Useful in *in vitro* cell growth assays with possible applicability to a variety of problems in cellular pharmacology and biology. An improved colorimetric assay for cell proliferation and viability utilizing XTT has been reported. An XTT-based colorimetric cellular cytotoxicity assay for melanoma and other tumor cells has also been reported.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Tetrazolium XTT; Sodium 3'-[1-phenylamino-carbonyl]-3,4-tetrazolium]-bis[4-methoxy-6-nitro] benzenesulfonic acid hydrate), MW 673.5	100 mg	19661-100
	500 mg	19661-500

## Buffers

## BUFFERS

**0.5M Acetate Buffer, pH 4.6±0.2, 10X Concentrate** | HAZARD CODE: A2d**24075**

Dilute 1 &gt; 10 with deionized water to get buffer at working concentration.

UNIT SIZE	CATALOG #
500 ml	24075-500

**0.5M Borate Buffer, pH 8.5±0.2, 5X Concentrate** | HAZARD CODE: A2d**24092**

Dilute 1 &gt; 5 with deionized water to get buffer at working concentration. Suitable for use in protocols for coupling proteins to polystyrene microspheres.

UNIT SIZE	CATALOG #
500 ml	24092-500
1 L	24092-1

**0.05M Phosphate-Citrate Buffer, pH 5.0±0.2, 1X Powdered Blend****24079**

A commonly used laboratory buffer in a convenient, powdered, single-use pouch format. To reconstitute, dissolve the contents of a single pouch in 1 liter of deionized water to yield a 0.05M Phosphate-Citrate Buffer, pH 5±0.2. Filter if desired and store at room temperature.

UNIT SIZE	CATALOG #
5 pouches	24079-5

**Citrate Buffer Kit, pH 6.0 (for antigen retrieval FFPE and resin)** | HAZARD CODE: A3d

Formalin fixation forms protein cross-links that can mask the antigenic sites in tissue specimens, thereby creating weak or false negative staining for immunohistochemical detection of certain proteins. Polysciences provides AR buffer kits, which include rinses and pH adjustment reagents for the 20X concentration kit. These kits are recommended for formalin fixed paraffin embedded tissues.

CHARACTERISTICS	UNIT SIZE	CATALOG #
1X 10mM	1 kit	25084-1
20X 10mM	1 kit	25079-1

**Cacodylic acid, sodium salt trihydrate** CAS#: 6131-99-3 | HAZARD CODE: H3g**01131**Under a hood, dissolve in distilled or deionized water heated to 60°C. *Requires poison pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Sodium cacodylate), MW 214.03	25 g	01131-25
	100 g	01131-100
	500 g	01131-500



**Cacodylic acid, sodium salt, solution, 0.2M, pH 7.4** | HAZARD CODE: H3g**18661**

Buffer for fixatives for light and electron microscopy; e.g., osmium tetroxide, formaldehyde, glutaraldehyde, Karnovsky's fixative.

UNIT SIZE	CATALOG #
100 ml	18661-100
500 ml	18661-500

**0.5M Citrate-Citric Acid Buffer, pH 4.6±0.2, 10X Concentrate** | HAZARD CODE: A2d**24076**

Dilute 1 > 10 with deionized water to prepare a working concentration of buffer.

UNIT SIZE	CATALOG #
500 ml	24076-500

**Tris-Borate-EDTA Buffer (TBE Buffer) pH 8.3±0.2, 1X Powdered Blend** | HAZARD CODE: H4g**24087**

Dissolve the contents of each pouch in a liter of deionized water to prepare 0.089m Tris/Borate, 0.002m Disodium EDTA.

UNIT SIZE	CATALOG #
10 pouches	24087-10

**Tris-Borate-EDTA Buffer (TBE Buffer), pH 8.3±0.2, 10X Concentrate** | HAZARD CODE: A2d**24086**

Dilute 1 > 10 with deionized water to prepare a working concentration of buffer. Suitable for use in gel electrophoresis for nucleic acid analysis.

UNIT SIZE	CATALOG #
500 ml	24086-500
1 L	24086-1

**Tris-Glycine Buffer (TG Buffer), pH 8.3±0.2, 10X Concentrate** | HAZARD CODE: A2d**24088**

Suitable for use in polyacrylamide gel electrophoresis and Western blotting. Dilute 1 > 10 with deionized water to prepare a working concentration of buffer.

UNIT SIZE	CATALOG #
500 ml	24088-500
1 L	24088-1

## Buffers

**1M Glycine-HCl Buffer, pH 2.7±0.1, 10X Concentrate** | HAZARD CODE: A2d**24074**

Dilute 1 > 10 with deionized water to prepare a working pH 2.7. concentration of buffer after dilution is 0.1M.

UNIT SIZE	CATALOG #
500 ml	24074-500
1 L	24074-1

**PolyTransport Buffer** | HAZARD CODE: A2g**24311**

Used to transport and preserve specimens from surgery to the point of grossing and fixation prior to further processing. Prevents proteins from denaturing or crosslinking and prevents bacterial growth. Also contains a cryoprotectant to prevent ice crystal formation during rapid freezing techniques and a membrane stabilizer to prevent membrane lysis. No washing of specimens necessary prior to placing in fixative or rapid freezing.

UNIT SIZE	CATALOG #
250 ml	24311-250
500 ml	24311-500

**0.1M Sodium Bicarbonate-Sodium Carbonate Buffer, pH 9.6±0.2, 1X Powdered Blend** | HAZARD CODE: H4g**24094**

Dissolve the contents of each pouch in a liter of deionized water.

UNIT SIZE	CATALOG #
10 pouches	24094-10

**StainRITE® May-Grünwald Giemsa Phosphate Buffer pH 7.2** | HAZARD CODE: A2d**25032**

For use as a buffer in May-Grünwald, Wright Stain, Wright-Giemsa, Giemsa and Leishman staining procedures.

UNIT SIZE	CATALOG #
1 L	25032-1
4 L	25032-4

**StainRITE® Wright-Giemsa Stain Phosphate Buffer pH 6.8** | HAZARD CODE: A2g**24984**

Yields satisfactory staining results every time when used with Wright-Giemsa stains. The buffer used in the Wright-Giemsa staining protocol needs to be pH 6.8 or results will be unsatisfactory. If the buffer is too acidic, the stain will be too red and nuclei will be too light; if it is too basic the stain will be too blue, and cytoplasmic detail will be indistinct.

UNIT SIZE	CATALOG #
1 L	24984-1
4 L	24984-4

**StainRITE® Wright Stain Phosphate Buffer pH 6.8** | HAZARD CODE: A2g**24989**

Yields satisfactory staining results every time when used with the Wright staining method. The buffer used in the Wright staining protocol needs to be pH 6.8 or results will be unsatisfactory. If the buffer is too acidic, the stain will be too red and nuclei will be too light; if it is too basic the stain will be too blue, and cytoplasmic detail will be indistinct.

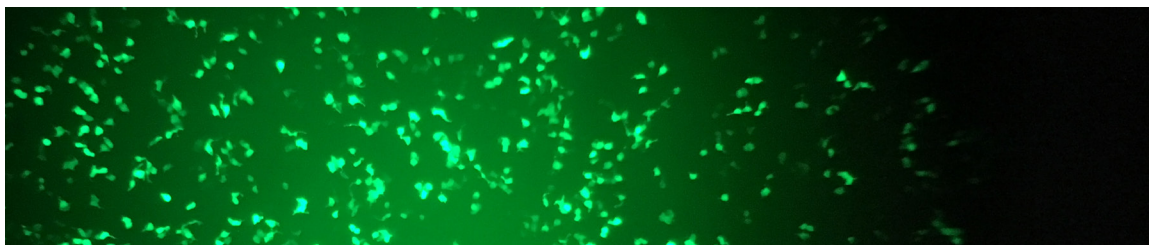
UNIT SIZE	CATALOG #
1 L	24989-1
4 L	24989-4

**Tris Buffered Saline (TBS), pH 8.0±0.2, 10X Concentrate** | HAZARD CODE: A2d**24082**

Dilute 1 > 10 with deionized water prepare a working concentration of buffer.

UNIT SIZE	CATALOG #
500 ml	24082-500
1 L	24082-1

PEI Transfection Reagents



PEI TRANSFECTION REAGENTS

PEI is a polycationic polymer that works by forming a positively charged complex with nucleic acids that readily interacts with cell surfaces leading to endocytosis and transport into the cytoplasm, ultimately leading to delivery of the PEI: nucleic acid complex to the nucleus. PEI-mediated transfection has advantages over other available methods. PEI is well tolerated in many different cell types, including in cell lines commonly used for bioprocessing, with low cytotoxicity and compatibility in both adherent and suspension cell culture systems.

**MAXgene® GMP Transfection Reagent**

**26406**

MAXgene® GMP Transfection Reagent is a cGMP transfection reagent for the development and manufacturing of viral vectors for cell- and gene-based therapies. It is an ideal reagent in HEK293 and CHO systems for the manufacture of AAVs, LVs and recombinant proteins. MAXgene® GMP capitalizes on the efficiency and scalability of Polysciences' PEI MAX® while adding the validation process and regulatory components necessary for moving into clinical and commercial manufacturing. It is manufactured in accordance with cGMP under an ISO 13485 Quality Management System. Please contact us at [info@polysciences.com](mailto:info@polysciences.com) for MAXgene produced in accordance with 21 CFR 210, 211.

**Features:**

- Compatible with different virus production platforms
- High transfection efficiency
- Reliable and scalable performance
- cGMP & ISO 13485
- Validated manufacturing processes
- Fully synthetic, animal-origin-free
- Cost-effective

CHARACTERISTICS	UNIT SIZE	CATALOG #
Ready-to-Use Solution	1 liter	26406-1
Powder	1 g	26435-1

**Transporter 5® Transfection Reagent**

**26008**

Transporter 5 is a ready-to-use solution that is designed for process development to produce high viral titers, it is the R&D grade version of MAXgene.

UNIT SIZE	CATALOG #
1 ml	26008-1A
5 ml	26008-5
50 ml	26008-50

**PEI MAX® - Transfection Grade Linear Polyethylenimine Hydrochloride****24765**

Polyethylenimine “Max” (PEI MAX) is a powerful, trusted, and cost-effective reagent designed for process development that is widely considered a gold standard for both *in vitro* and *in vivo* transfection. PEI MAX has a high density of protonatable amino groups, with amino nitrogen as every third atom. This imparts a high buffering ability at nearly any pH. Hence, once inside the endosome, PEI MAX disrupts the vacuole and releases the genetic material into the cytoplasm. Stable complexation with DNA, efficient entry into the cell and ability to escape the endosome make PEI MAX a highly efficient transfection reagent for a wide range of cell lines/types including HEK293 and CHO cells grown in adherent and suspension cultures. PEI MAX is capable of yielding high efficiency cell lines without compromising cell viability compared to other PEI and liposomal transfection reagents available in the market.

UNIT SIZE	CATALOG #
1 g	24765-1
100 mg	24765-100

**PEI 25K™ (Polyethylenimine, Linear, MW 25000, Transfection Grade)****23966**

PEI 25K is a powerful, trusted, and cost-effective transient transfection reagent. In HEK293 and CHO expression systems, PEI offers high gene expression on a wide scale.

UNIT SIZE	CATALOG #
1 g	23966-1
100 mg	23966-100

Lipids



LIPIDS FOR DRUG DELIVERY, MRNA VACCINES & TRANSFECTION

As a long-term supplier of premium reagents to FDA-regulated industries, we understand the scientific, quality, regulatory and supply needs of biopharmaceutical companies. Our broad array of transfection reagents, with different preparations and regulatory tiers, will support your gene, protein or cellular therapeutics program from discovery through GMP production.

- PEI- and lipid-based for cell line optimization
- Dry and liquid formulations
- Different regulatory tiers, including GMP
- Cost-effective

**DOTAP Chloride**

**14475**

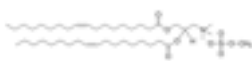


DOTAP Chloride (N-[1-(2,3-Dioleoyloxy)propyl]-N,N,N-trimethylammonium chloride) is a widely used cationic liposome-forming compound for *in vitro* and *in vivo* transfection of DNA, RNA and other negatively charged molecules. DOTAP encapsulates the nucleic acids to form a stable complex spontaneously by means of electrostatic interaction, facilitates cell attachment, internalization by endocytosis as well as endosomal escape by proton sponge. It has been used in the formation of Lipid Nanoparticles (LNP) or Nanostructured Lipid carriers (NLCs) in the development of mRNA vaccines such as COVID-19 vaccine and drug delivery systems. This product is for research use only.

UNIT SIZE	CATALOG #
25 mg	14475-25
100 mg	14475-100
500 mg	14475-500

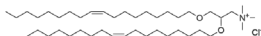
**DOTAP Methyl Sulfate**

**14475MS**



DOTAP MS (N-[1-(2,3-Dioleoyloxy)propyl]-N,N,N-trimethylammonium methyl-sulfate)

UNIT SIZE	CATALOG #
25 mg	14475MS-25
100 mg	14475MS-100
500 mg	14475MS-500

**DOTMA Chloride****14476**

N,N,N-trimethyl-2,3-bis[(9Z)-9-octadecen-1-yloxy]-1-propanaminium, chloride  
 DOTMA is one of the most widely used cationic lipids for gene transfection due to his efficiency in delivering DNA, RNA, oligonucleotides.

UNIT SIZE	CATALOG #
25 mg	14476-25
100 mg	14476-100
500 mg	14476-500

**DSTAP Chloride** CAS#: 220609-41-6 | C<sub>42</sub>H<sub>84</sub>NO<sub>4</sub>Cl**14486**

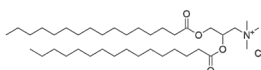
DSTAP chloride (1,2-distearoyl-3-trimethylammonium-propane chloride)



UNIT SIZE	CATALOG #
25 mg	14486-25
100 mg	14486-100
500 mg	14486-500

**DPTAP Chloride** CAS#: 139984-36-4 | C<sub>38</sub>H<sub>76</sub>NO<sub>4</sub>Cl**14487**

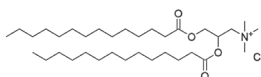
DPTAP chloride (1,2-dipalmitoyl-3-trimethylammonium-propane chloride)



UNIT SIZE	CATALOG #
25 mg	14487-25
100 mg	14487-100
500 mg	14487-500

**DMTAP Chloride** CAS#: 197974-74-6 | C<sub>34</sub>H<sub>68</sub>NO<sub>4</sub>Cl**14488**

DMTAP chloride (1,2-dimyristoyl-3-trimethylammonium-propane chloride)



UNIT SIZE	CATALOG #
25 mg	14488-25
100 mg	14488-100
500 mg	14488-500

## Lipids

## IONIZABLE CATIONIC LIPIDS

**DODMA** CAS#: 104162-47-2 | C<sub>41</sub>H<sub>81</sub>NO<sub>2</sub>**14478**

(1,2-dioleoyloxy-3-dimethylaminopropane)

DODMA is an ionizable cationic lipid with a protonatable tertiary amine head group that exhibits positive charge at low pH. DODMA is highly efficient at encapsulating nucleic acid to form lipoplexes during synthesis by reducing the physiological pH, which readily passes through the cell membrane. These properties make DODMA highly suitable for transfection and drug delivery applications.

**Features:**

- Efficient delivery of plasmid DNA, siRNA/miRNA and CRISPR/Cas9 components
- Cost-effective
- Flexibility and reproducibility

UNIT SIZE	CATALOG #
25 mg	14478-25
100 mg	14478-100
500 mg	14478-500

**DODAP** CAS#: 127512-29-2 | C<sub>41</sub>H<sub>77</sub>NO<sub>4</sub>**14489**

(1,2-dioleoyl-3-dimethylammonium-propane)

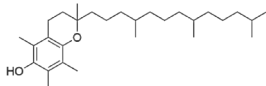
DODAP is an ionizable cationic lipid with lower cytotoxicity and high transfection efficiency. DODAP is neutral at physiological pH, but acquires a positive charge inside the endosome due to the protonation of free amines when pH is lower than its pKa (<7). The electrostatic interactions between DODAP and naturally-occurring anionic lipids in endosomal membranes trigger the release of nucleic acid. These interactions promote membrane-lytic non-bilayer structures to enable the intracellular delivery of nucleic acid. A common application is in nanomedicine as an ionizable lipid component of nanocarriers (lipid-polymer hybrid nanoparticles, LPNs), widely used to encapsulate bioactive molecules, including mRNA, siRNA and plasmid DNA as a treatment for diseases.

**Features:**

- High transfection efficiency and low cytotoxicity
- Efficient delivery of plasmid DNA, siRNA/miRNA and CRISPR/Cas9 components
- Widely-used in nanomedicine
- Flexible and scalable

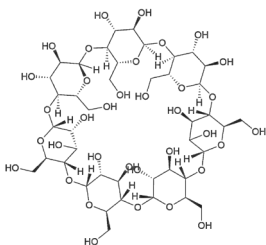
UNIT SIZE	CATALOG #
25 mg	14489-25
100 mg	14489-100
500 mg	14489-500



**$\alpha$ -tocopherol** CAS#: 10191-41-0 |  $C_{29}H_{50}O_2$ **14505**

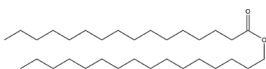
$\alpha$ -tocopherol, an isoform of vitamin E, is a lipid soluble anti-oxidant and a surfactant. Vitamin E isoforms have been used in nanoparticle formulations to enhance the incorporation of drugs with poor water-solubility and improve the overall biocompatibility of the drug carrier.

UNIT SIZE	CATALOG #
1 g	14505-25
100 g	14505-100

 **$\beta$ -Cyclodextrin** CAS#: 7585-39-9 |  $C_{42}H_{70}O_{35}$ **22501**

Beta-cyclodextrin ( $\beta$ -CD) is a cyclic oligosaccharide with a hydrophobic inner cavity and a hydrophilic outer surface. It is used as excipients in drug formulations, such as liposomes, microspheres, microcapsules, and nanoparticles, to improve the solubility and permeability of hydrophobic drugs.  $\beta$ -CD is cross linked with polymers and other reagents to control drug release.

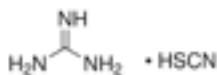
UNIT SIZE	CATALOG #
25 g	22501-25
100g	22501-100

**Cetyl Palmitate** CAS#: 540-10-3 |  $C_{32}H_{64}O_2$ **14502**

Cetyl palmitate, also known as hexadecyl hexadecanoate, is a naturally occurring waxy lipid used to formulate solid lipid nanoparticles (SLNs). SLNs are nano-sized particles composed of certain lipids, like waxes, that are solid at room and body temperature. SLNs are advantageous over other drug delivery systems due to the inherent biocompatibility of the materials used for formulation. Cetyl palmitate, in combination with other two-tailed lipids, has been effectively utilized for transfection as well as other types of drug delivery in a variety of cell lines.

UNIT SIZE	CATALOG #
100 mg	14502-100

## Molecular Biology

**Guanidine Thiocyanate** CAS#: 593-84-0 |**25072**

A common obstacle faced when attempting to extract DNA and RNA from cells of interest is the release of denaturing enzymes like DNase and RNase during cell lysis. Guanidine Thiocyanate is a cost effective chemical tool that prevents these nucleases from degrading precious nucleic acids by irreversibly inhibiting their catalytic activity.

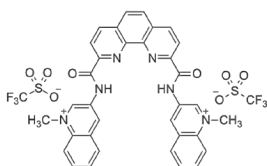
Guanidine Thiocyanate also has the added benefit of being a chaotropic agent. This feature allows it to decrease the action of hydrogen bonds in water as well as disrupts intramolecular interactions within proteins and other macromolecules – further increasing solubility of unwanted cellular components.

UNIT SIZE	CATALOG #
100 g	25072-100
500 g	25072-500

**Osmium ammine-B** CAS#: 48016-91-7**21033**

Stable DNA stain.

UNIT SIZE	CATALOG #
100 mg	21033-100

**Phen-DC3** CAS#: 929895-45-4 |  $C_{34}H_{26}N_6O_2 \cdot 2CF_3O_3S$ **26000**

Phen-DC3 is a highly selective telomeric G-quadruplex-DNA binding bisquinolinium compound.

UNIT SIZE	CATALOG #
1 mg	26000-1
5 mg	26000-5







## LIFE SCIENCES II

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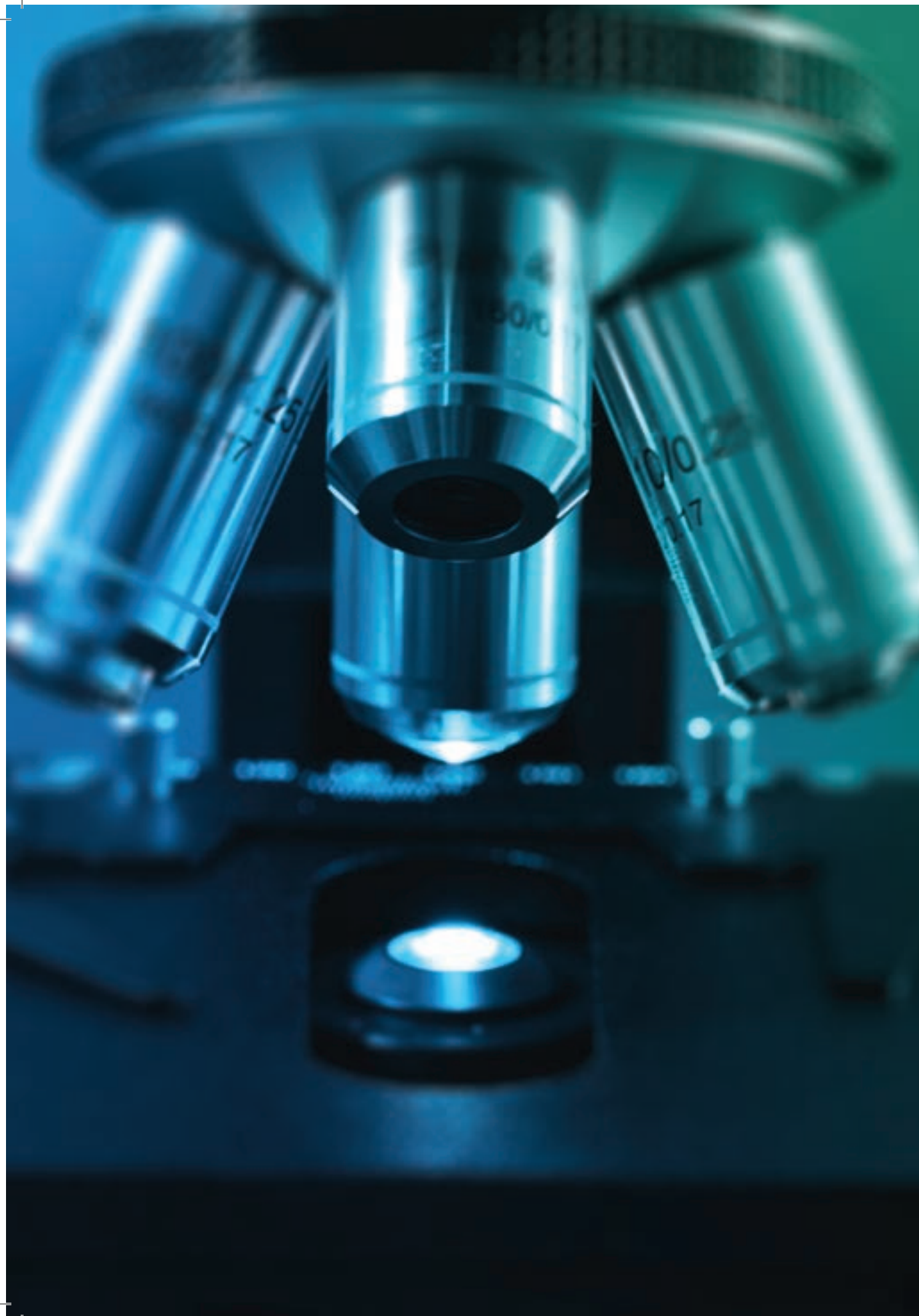
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## Fluorescence Microscopes

### Microscope Features

- EWF10X focusing eyepieces with eyeguards, 22mm field of view
- Siedentopf trinocular viewing head with photo tube; inclined 30°, rotatable 360°
- 48 – 75mm interpupillary distance settings
- AIS Infinity Corrected 10X, 20X, 40X, 100X plan phase contrast and 20X and 40X Plan Fluor objectives
- 0/100 split to photoport or eyepieces
- Variable Koehler 6 volt 30 watt illumination
- FITC / GFP and DAPI with LP emission filter sets included

### Light Source Features

- 200W metal halide lamp with up to 1500 hour life
- Self-aligning lamp is easy to replace
- Reduced heat transfer, giving greater stability
- Higher output than traditional light sources
- Unsurpassed spectral output stability, DC-powered lamp
- 5-position manual light attenuator

### Included Filter Sets

- FITC / GFP Set – eGFP (FITC), Alexa Fluor® 488, Cy™2, DiO, Fluo-4
- DAPI with LP emission Set – DAPI, Hoechst 33342 & 33258, AMCA/AMCA-x, Cascade Blue, Spectrum Red

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Upright Fluorescence Microscope</b> - Right hand controls, low position, scratch-resistant mechanical stage, 185mm x 142mm, movement range 75mm x 55mm. Turret phase condensor; N/A= 1.25	1 unit	25039-1
<b>Inverted Fluorescence Microscope</b> - Fixed plain stage 160mm x 250mm with glass insert and mechanical stage with lower right control. ULWD condenser, N.A. 0.3, working distance 72mm	1 unit	25040-1

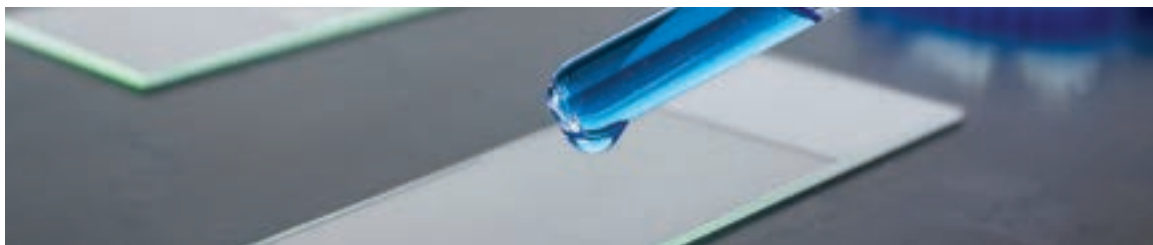
## Lens Tissue, Ross

**00791**

Non-linting, fiberless, non-abrasive lens tissue. This specially prepared lens tissue is great for EM and LM applications. Also works well for eyeglasses.

UNIT SIZE	CATALOG #
1 box	00791-1
5 boxes	00791-5

Microscope Slides & Accessories



Microscope Slide Coverslips, Glass

CHARACTERISTICS	UNIT SIZE	CATALOG #
22mm x 22mm - 156 coverslips	1 box	21913-1
22mm x 30mm - 119 coverslips	1 box	23999-1
24mm x 40mm - 80 coverslips	1 box	24070-1
24mm x 50mm - 67 coverslips	1 box	24071-1
24mm x 60mm - 54 coverslips	1 box	24072-1

Microscope Slide Coverslips, Plastic

16601

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: 22mm x 22mm x 0.157mm thick	1000/box	16601-1

Quartz Coverslips

Made from GE 124 quartz.

CHARACTERISTICS	UNIT SIZE	CATALOG #
1.0" (25.4 mm) Round Diameter, Thickness #2 (0.2 mm)	1 coverslip	24964-1
Square, 1.0" (25.4 mm x 25.4 mm), Thickness #2 (0.2 mm)	1 coverslip	24966-1
Quartz Coverslip, 1.0 (25.4 mm) Square, Thickness #1 (0.15 to 0.18 mm)	1 coverslip	24968-1

PolyGlass Coverslipping Medium | HAZARD CODE: CH6g

22253

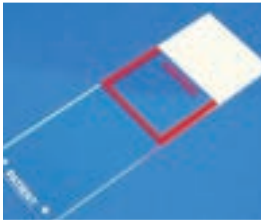
Viscosity 149 cps. Non-water soluble toluene-based liquid coverslipping media designed to eliminate the use of coverslips. Non-yellowing and scratch resistant, PolyGlass simplifies the protection of prepared slides. The refractive index is near 1.48 and medium can be removed if necessary by soaking in toluene or xylene. Ideal for uneven thick sections that cause air bubbles under a coverslip with routine procedures.

UNIT SIZE	CATALOG #
120 ml	22253-120
6 x 120 ml	22253-6



**Microscope Control Slides**

**24012**



A new approach to control slides. This slide allows the control specimen and the patient's specimen to be on the same slide with positive identification of both specimens. Identical patient and control stain procedures. The slide has a frosted end for easy marking and special coating for enhanced sample adhesion to the slide.

UNIT SIZE	CATALOG #
72 slides	24012-1

**Microscope Slides, Micropure**

**22245**



Manufactured with optical quality pure glass, Micropure slides contain 47% less iron than water white slides. This allows visualization of true sample color. Slides have better hydrolytic resistance-resist leaching/clouding and feature increased wettability.

UNIT SIZE	CATALOG #
72 slides	22245-1
1440 slides	22245-20

**Microscope Slides, Plain**

**07441**

Made of high quality glass guaranteed to be precleaned. The slides are ground smooth and free of sharp cutting edges.

UNIT SIZE	CATALOG #
72 slides	07441-1

**Microscope Slides, Immunofluorescence**

**18357**



These slides have a durable teflon coating that is acetone-resistant, autoclavable and hydrophobic. Slides are 1" x 3" (25mm x 75mm), 1mm thick and are useful for all fluorescent materials. These glass slides have ten 6mm wells and are frosted on one end for easy labeling.

UNIT SIZE	CATALOG #
100 slides	18357-1

**Polysine® Coated Microscope Slides**

**26414**



Slides provide superior cell and tissue adhesion due to a permanent bio-adhesive material that electrostatically and chemically attracts tissues and tissue sections. These slides are particularly effective in applications involving frozen and paraffin-embedded sections, cytocentrifuge preparations and cytology smears. Not affected by chemicals, enzyme predigestion or heating.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Size: 25x75mm	1 box (72 slides)	26414-1
	1 case (20 boxes)	26414-20

Microscope Slides & Accessories

Quartz Microscope Slides

High quality, state-of-the-art family of clear fused quartz-based microscope slides. Recommended for most applications involving chemical microscopy in order to be sure that nothing is lost due to absorption in a glass slide. The use of quartz slides and coverslips are also recommended whenever UV microscopy is contemplated, including UV confocal microscopy because of the high UV transparency of quartz.

CHARACTERISTICS	UNIT SIZE	CATALOG #
1" x 1" (25.4 x 25.4 mm) x 1 mm Thick	1 slide	24957-1
1" x 3" (25.4 x 76.2 mm) x 0.5 mm Thin	1 slide	24963-1
1" x 2" (25.4 x 50.8 mm) x 0.5 mm Thin	1 slide	24962-1

Super Frosted Microscope Slides

21912

These slides have a special coating impervious to processing reagents, allowing for more permanent marking.

UNIT SIZE	CATALOG #
72 slides	21912-1

Tissue Tack™ Microscope Slides – Plus (+) Glass

24216



Treated with a specially formulated aminoalkylsilane, Tissue Tack slides provide a positively-charged surface, permitting instant coupling of negatively-charged tissue sections. The resultant bond stands up to the very aggressive solutions used in *in-situ* hybridization procedures. Slides are available with a white label.

UNIT SIZE	CATALOG #
1 box (72 slides)	24216-1
1 case (20 boxes)	24216-20

Glass Scriber, Diamond

03636



Natural Diamond at 90° angle in a metal mounting. It is fitted with a protective cover and pocket clasp. Useful for scoring glass strips prior to hand making glass knives, marking slides and property identification.

UNIT SIZE	CATALOG #
1 unit	03636-1

Microscope Slide Holder Block | HAZARD CODE: A2g

24764



Durable, chemically resistant polyethylene Microscope Slide Holder Block will accommodate up to 40 separate 3" x 1" microscope slides. Angled slide holder slots permit ease of access to individual slides and rapid viewing of slide labels. The polymer composition of the block resists staining and washes clean with ethanol, isopropanol or other organic solvents.

UNIT SIZE	CATALOG #
1 holder	24764-1

## Microscope Slides &amp; Accessories

**Microscope Slide Holder, Peel-A-Way®****19801A**

Microscope slide holders constructed of durable plastic. These grips fit any Coplin jar or our Polyjar (Cat. #08415) 6 grips per case.

**Features:**

- Chemical and solvent resistant
- Capable of withstanding temperatures up to 80°C

UNIT SIZE	CATALOG #
1 case	19801A-1

**Microscope Slide Mailing Tubes****23998**

Polypropylene tubes hold 1 – 4 slides. Can be used to mail slides and to store small numbers of slides. These mailing tubes can also be used as miniature Coplin jars to dip slides in photographic emulsion for autoradiography. The advantage of using these jars with emulsion is that they require only a small amount of emulsion, they are disposable and you don't have to worry about cross-contamination from one batch of emulsion to the next.

UNIT SIZE	CATALOG #
10 tubes	23998-10

**Microscope Slide Storage Cabinet****22352**

A stackable six-drawer cabinet accommodating up to 5000 (3" x 1") glass slides. The base unit (sold separately) has rubber feet to prevent scratching the bench surface. There are removable drawers for easy handling and transport. The rail suspension design prevents accidental pull out and spillage of drawers. Sponge blocks are provided to support slides in partially-filled drawers. The cabinets interlock when stacked. Cabinets may be stacked up to 10 high.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: W x D x H: 15 3/4" x 19" x 5" (40 x 48.3 x 12.7 cm)	1 unit	22352-1

**Microscope Slide Storage Cabinet Base Unit****22353**

Base unit has rubber feet to prevent scratching the bench surface and supports a stackable six-drawer cabinet (sold separately) accommodating up to 5000 (3" x 1") glass slides.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: W x D x H: 15 3/4" x 19" x 5" (40 x 48.3 x 12.7 cm)	1 unit	22353-1

## LIFE SCIENCES II / MICROSCOPY

### Microscope Slides & Accessories

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#### Microscope Slide Storage Box, Plastic small box

**16603**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Holds 25 slides (slide saver).	1 box	16603-1

#### Microscope Slide Storage Box, Plastic large box

**16604**

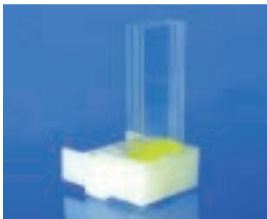


Holds 100 slides (slide saver).

UNIT SIZE	CATALOG #
1 box	16604-1

#### Neat Stain Slide Holder

**25033**



Durable slide holder. Adjusts to hold 2-5 slides for easy processing.

UNIT SIZE	CATALOG #
1 unit	25033-1

**StainTray™ Slide Staining System**

A user-friendly approach to immunohistochemistry staining. This tray is also suitable not only for routine staining requiring a humid chamber, but also ideal for Hematology, Cytology and Microbiology laboratories. Manipulation is made safe and easy by using only one hand.

Black base made of tough ABS plastic withstanding a wide range of chemicals (avoid chlorinated hydrocarbons). Accepts 10 or 20 slides on four plastic rails covered with a polymer strip to perfectly hold slides even if tray is held at an angle. When humidity is needed, wells between rails will hold up to 1 ml of water securely without splashing. Middle wells will hold up to 2 ml each. Rails are raised not only to avoid water touching the slides but to make them more easily retrievable. Base will also hold excess stain solution dripping from the slides. Four rubber feet ensure greater base stability. Units are stackable for space saving purposes. Two cover styles are available: Clear, allowing for visual examination. Made of PETG with a temperature range of -20°C – 60°C. Black, for fluorescent work. Made of ABS with a temperature range of -80°C – 80°C.

**Dimensions with cover:**

- 10 Slide – 24 x 24 x 4.5 cm H (9 3/8 x 9 3/8 x 1 3/4 in. H)
- 20 Slide – 38 x 24 x 4.5 cm H (15 x 9 3/8 x 1 3/4 in. H)

CHARACTERISTICS	UNIT SIZE	CATALOG #
Black Lid for StainTray™ Slide Staining System (10 Slide Capacity)	1 unit	25500-1
StainTray™ Slide Staining System - Base with Black Lid (10 Slide Capacity)	1 unit	25498-1
StainTray™ Slide Staining System - Base with Black Lid (20 Slide Capacity)	1 unit	25502-1
StainTray™ Slide Staining System - Base with Clear Lid (20 Slide Capacity)	1 unit	25501-1

## MICROBIOLOGY CONTROL SLIDES

**Acid Fast Control Slides****25410**

This quality control slide provides two air-dried and methanol-fixed droplets within two etched circles. The circle nearest the label contains a droplet of an Acid Fast-Positive *Mycobacterium gordonae*, a derivative of ATCC® 14470™\*. The circle furthest from the label contains a droplet of an Acid Fast-Positive *Cryptosporidium* in a fecal sample and also contains Acid Fast-Negative intestinal bacteria.\*The ATCC Licensed Derivative Emblem, the ATCC Licensed Derivative word mark and the ATCC catalog marks are trademarks of ATCC. Microbiologics, Inc. is licensed to use these trademarks and to sell products derived from ATCC cultures.

UNIT SIZE	CATALOG #
10 slides	25410-1

**Blood Parasite Control Slides****25411**

This quality control slide provides an air-dried, methanol-fixed, thin blood smear containing *Plasmodium*, *Babesia* or *Trypanosoma*.

UNIT SIZE	CATALOG #
10 slides	25411-1

## LIFE SCIENCES II / MICROSCOPY

### Microbiology Control Slides

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#### **Cryptosporidium Control Slides** | HAZARD CODE: A2g

**25408**

This quality control slide provides a single, air-dried and methanol-fixed fecal smear containing Acid Fast-Positive *Cryptosporidium* and Acid Fast-Negative intestinal bacteria.

UNIT SIZE	CATALOG #
10 slides	25408-1

#### **MYC-D Control Slides**

**25419**

This quality control slide provides a single, air-dried and methanol-fixed preparation containing *Candida albicans*, a derivative of ATCC® 10231™\* with leucocytes and erythrocytes.

UNIT SIZE	CATALOG #
10 slides	25419-1

#### **Mycobacterium Control Slides** | HAZARD CODE: A2g

**25409**

This quality control slide provides two air-dried and methanol-fixed droplets within two etched circles. The circle nearest the label contains an Acid Fast-Positive *Mycobacterium gordonae*, a derivative of ATCC® 14470™\* and the circle furthest from the label contains an Acid Fast-Negative *Erysipelothrix rhusiopathiae*, a derivative of ATCC® 19414.™\*

UNIT SIZE	CATALOG #
10 slides	25409-1

#### **Pneumocystis jiroveci Control Slides** | HAZARD CODE: U2g

**22251**

Designed to be used with our Fungi-Fluor® Kit *Pneumocystis* Kit (Cat. #22363), these slides are unstained.

UNIT SIZE	CATALOG #
10 slides	22251-1

#### **Protozoan (Zinc PVA) Control Slides**

**25413**

This quality control slide provides an air-dried, Zinc PVA-preserved, fecal smear containing a representative intestinal protozoa, usually *Giardia lamblia*.

UNIT SIZE	CATALOG #
10 slides	25413-1

#### **Protozoan (SAF) Control Slides** | HAZARD CODE: A2g

**25415**

This quality control slide provides an air-dried, SAF preserved, fecal smear containing a representative intestinal protozoa, usually *Giardia lamblia*.

UNIT SIZE	CATALOG #
10 slides	25415-1

**Aqua-Poly/Mount** | HAZARD CODE: A2d**18606**

Water-soluble, non-fluorescing mounting medium. Formulated for mounting sections from aqueous solutions. Useful for immunofluorescent techniques as it enhances and retains fluorescent stains. Aqua-Poly/Mount can also be used for frozen sections, fat stains and immuno-stains when aqueous mounting media is required. Use Aqua-Poly/Mount with most fluorescent dyes and stains including DAB, Alkaline Phosphatase-Fast Red, AEC (aminoethylcarbozle) and a variety of other chromogens. Can be removed from slides by soaking in water. Supplied in convenient 20ml squeeze bottles.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity 390 cps, n20/D 1.454 – 1.460	20 ml	18606-20
	100 ml	18606-100
	5 x 20 ml	18606-5

**Balsam, Canada, filtered** CAS#: 8007-47-4 | HAZARD CODE: H4bg**01648**

A natural resin used as mounting medium for microscopy.

UNIT SIZE	CATALOG #
100 g	01648-100
500 g	01648-500

**Cedarwood oil** | HAZARD CODE: EH2ag**04851**

Used as immersion oil for light microscopy and for clearing microscope sections.

CHARACTERISTICS	UNIT SIZE	CATALOG #
n20/D approx. 1.519	4 x 100	04851-4

**CitraMount™ Medium** | HAZARD CODE: CH5g**24214**

This butyl acetate and acrylic mixture is the first mounting medium developed that allows coverslipping directly from d-limonene based clearants. Superior results are also obtained with xylene. Recommended for manual coverslipping only as it may cause damage to the valves of automated coverslippers. Get a clear seal and decrease your drying time to less than 24 hours.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity 90 cps, n20/D 1.484	100 ml	24214-100
	500 ml	24214-500

## Mounting Media

**CMCP macroinvertebrate mounting media** | HAZARD CODE: BHX6g

Colorless, non-resinous, water-miscible mounting medium for permanent transparent mounts. It can be used like Canada Balsam, but CMCP resin has the advantage of allowing live or preserved specimens to be mounted directly from water or alcohol. Useful in mounting free living nematodes and live parasitic worms. *Requires poison pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
n20/D 1.41 - CMCP-10, High viscosity mountant	250 ml	16300-250
n20/D 1.41 - CMCP-9, Low viscosity mountant	100 ml	16299-100
n20/D 1.41 - CMCP-9, Low viscosity mountant	500 ml	16299-500

**Mowiol® 4-88** CAS# 9002-89-5 | HAZARD CODE: U5g**17951**

Mowiol® 4-88 is a high quality embedding medium for immunofluorescence and molecular biology applications. When hardened it has the same refractive index as immersion oil. If used for immunofluorescence applications, the addition of glycerin is recommended. Mowiol® 4-88 can be made an anti-fade medium through the addition of p-phenylenediamine.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~31,000, 88% hydrolyzed	500 g	17951-500
	1 kg	17951-1

**Plastic UV Mount Mounting Media** | HAZARD CODE: H05g**16866**

Designed for coverslipping epoxy, methacrylate and deparaffinized sections directly from water or alcohol. Plastic UV Mount matches the refractive index of JB-4® embedded sections, as the JB-4 embedding resin is not removed prior to staining. Methacrylate-based Plastic UV Mount avoids optical distortion and improves the final image. When applied to sections with a small amount of xylene, Plastic UV Mount “hardens” permanently within two minutes with exposure to long UV light, thus obviating leaching of stains. Slides must be coverslipped for viewing.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity 28 cps, n20/D 1.45	100 ml	16866-100

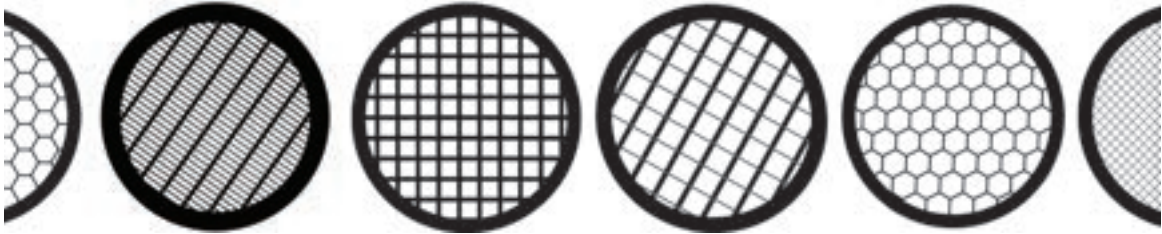
**Poly-Mount® Xylene** | HAZARD CODE: CH6g**24176**

Xylene based routine coverslipping medium for histology and cytology slides. This acrylic medium provides superior optical clarity. Poly-Mount Xylene is recommended for automated coverslipping instruments that use both glass and tape coverslips. It contains an anti-fade agent to prevent fading and yellowing with long term storage. Dries quickly for viewing, storage and filing.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity 107 cps, n20/D 1.48	120 ml	24176-120
	940 ml	24176-940



GRIDS & GRID ACCESSORIES



**Aluminum Grid, 100 mesh**

**22895**

UNIT SIZE	CATALOG #
25 grids	22895-1

**Aluminum Grid, 200 mesh**

**22896**

UNIT SIZE	CATALOG #
25 grids	22896-1

**Carbon Coated Grids**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 200 mesh	25 grids	24918-25
	50 grids	24918-50
Copper 300 mesh	25 grids	24933-25
	50 grids	24933-50
Copper 400 mesh	25 grids	24948-25
	50 grids	24948-50
	100 grids	24948-100

**Grids & Grid Accessories**

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**Formvar Coated Grids**

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 300 mesh	25 grids	24927-25
	50 grids	24927-50
	100 grids	24927-100
Nickel 300 mesh	25 grids	24928-25
	50 grids	24928-50
	100 grids	24928-100

**Formvar/Carbon Coated Grids**

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 200 mesh	25 grids	24915-25
	50 grids	24915-50
Copper 300 mesh	25 grids	24930-25
	50 grids	24930-50
	100 grids	24930-100
Copper 400 mesh	25 grids	24945-25
	50 grids	24945-50
	100 grids	24945-100
Nickel 200 mesh	25 grids	24916-25
	50 grids	24916-50
	100 grids	24916-100
Nickel 300 mesh	25 grids	24931-25
	50 grids	24931-50
	100 grids	24931-100
Nickel 400 mesh	25 grids	24946-25
	50 grids	24946-50
	100 grids	24946-100

### Hexagonal Mesh Grids

CHARACTERISTICS	UNIT SIZE	CATALOG #
Standard – 100 mesh (Nickel)	100 grids	18946N-1
Standard – 150 mesh (Copper/Nickel)	100 grids	18947C-1
	100 grids	18947N-1
Standard – 200 mesh (Copper)	100 grids	18948C-1
Standard – 200 mesh (Nickel)	100 grids	18948N-1
Standard – 300 mesh (Nickel)	100 grids	18949N-1
Standard – 400 mesh (Copper)	100 grids	18950C-1
	10 vials	18950C-10
Standard – 400 mesh (Gold)	100 grids	18950G-1
Thin Bar, High Definition – 200 mesh (Copper/Nickel)	100 grids	7801C-1
	10 vials	7801C-10
	100 grids	7801N-1
Thin Bar, High Definition – 200 mesh (Gold)	100 grids	7801G-1
Thin Bar, High Definition – 300 mesh (Copper/Nickel)	100 grids	7803N-1
Thin Bar, High Definition – 400 mesh (Copper/Nickel)	100 grids	7805C-1
	100 grids	7805N-1
	10 vials	7805N-10
Thin Bar, High Definition – 600 mesh (Copper/Nickel)	100 grids	7806C-1
	10 vials	7806C-10

### Lacey Carbon Coated Grids

CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 200 mesh	25 grids	24924-25
	50 grids	24924-50
Copper 300 mesh	25 grids	24939-25
	50 grids	24939-50

### Parallel Bar Pattern Grids



CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 100/400 mesh	8425C-1	100 grids
Copper 75/300 mesh	8424C-1	100 grids
Nickel 75/300 mesh	8424N-1	100 grids

**Grids & Grid Accessories**

**Slot Grids**

**7563C**

Copper 2 x 1.0mm slot

UNIT SIZE	CATALOG #
100 grids	7563C-1

**Square Mesh Grids, Thin Bar – High Definition**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 1000 mesh	25 grids	7556C-1
Copper 200 mesh	100 grids	7800C-1
Copper 300 mesh	100 grids	7802C-1
Gold 200 mesh	100 grids	7800G-1
	10 vials	7800G-10
Gold 400 mesh	100 grids	7804G-1
Nickel 1000 mesh	25 grids	7556N-1
Nickel 200 mesh	100 grids	7800N-1
	10 vials	7800N-10
Nickel 300 mesh	100 grids	7802N-1

**Square Mesh Grids – Thick Thin Pattern**

3.05mm diameter

CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 200 mesh	100 grids	7779C-1
	10 vials	7779C-10
Copper 600 mesh	100 grids	7780C-1
Nickel 200 mesh	100 grids	7779N-1
Nickel 600 mesh	100 grids	7780N-1

**Grids – Square Mesh – Standard**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Copper 150 mesh	100 grids	7551C-1
	10 vials	7551C-10
Copper 200 mesh	100 grids	7552C-1
Copper 300 mesh	100 grids	7553C-1
Copper 400 mesh	100 grids	7554C-1
Gold 150 mesh	100 grids	7551G-1
Gold 300 mesh	100 grids	7553G-1
Nickel 200 mesh	100 grids	7552N-1
	10 vials	7552N-10
Nickel 300 mesh	100 grids	7553N-1

**Grid Storage Unit - 100 grids****03606**

Specimen grid box for holding 100 grids in numbered positions. Transparent sliding cover has slot for accessing the grid positions.

UNIT SIZE	CATALOG #
1 unit	03606-1
10 units	03606-10

Ilford Photographic Products

**Grid Storage Unit - 50 grids (5 pack)**

**23146**

Specimen grid box for holding 50 grids in numbered positions. Transparent sliding cover has slot for accessing the grid positions.

UNIT SIZE	CATALOG #
5 units	23146-5

**Formvar 15/95 (Poly[vinyl formal])** CAS#: 9003-33-2

**00631**

Powder used to make support films on EM grids for fragile samples. Polymer contains cyclic acetal units with some residual hydroxyl groups.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW: 24,000-40,000 Hydroxyl content 5.0-6.5%; acetate 9.5-13.0 Formal 82%	100 g	00631-100

**Ilford Rapid fixer** | HAZARD CODE: H4g

**21953**

Fast acting, non-hardening ammonium thiosulfate fixer that assures complete fixing of all Ilford papers in as little as 30 seconds. It can also be used to fix film. Ideal for fiber base and resin coated papers. Useful for archival processing and is recommended for Ilford emulsions. Can be used in a 1:3 dilution.

UNIT SIZE	CATALOG #
500 ml	21953-500

**Ilford Universal Stop Bath** | HAZARD CODE: BH6g**21956**

This economical, highly active solution is designed to immediately terminate the action of both black and white films and paper. It prevents fog or stains while maintaining the conditions of the fixer. Recommended for use with Ilford emulsions and films and both resin coated and fiber based papers. Liquid is concentrated and normally used in a 1:9 dilution.

UNIT SIZE	CATALOG #
500 ml	21956-500

**Storage Envelopes, Photographic****07233**

Unprinted polyethylene (holds 3.25" x 4.25" neg. or plates).

UNIT SIZE	CATALOG #
500 env.	07233-500

For decades Polysciences has offered fine tweezers for use in scientific laboratories. We proudly offer Dumont and Rubis tweezers. Both brands are hand-made in Switzerland of stainless steel and enjoy well deserved reputations in the industry. INOX is an alloy that contains chromium added to carbon steel. INOX forceps are magnetic. Tweezers are arranged by numbers 2, 3 and 5, which vary by increasing fineness of tip. Standard tips for general work and extra fine biology grade tips for handling grids and other EM work are available. *Tweezers are offered for research and investigational use only and are not intended for food, drug, cosmetic or household use.*

**Reverse Action Tweezers****08620**

Finer than standard points, but not as fine as biology grade.

CHARACTERISTICS	UNIT SIZE	CATALOG #
115mm in length.	1 pair	08620-1

Tweezers & Tools

Dumont INOX



from left to right: A, B, C, D, E, F, G

CHARACTERISTICS	UNIT SIZE	CATALOG #
3, biology grade, 120mm. (See B)	1 pair	21972-1
	1 dozen	21972-12
3C, biology grade, 120mm. (See B)	1 pair	21973-1
	1 dozen	21973-12
3C, non-magnetic, standard tip, 120mm. (See B)	1 pair	07383-1
	1 dozen	07383-12
3C, standard tip, 120mm. (See B)	1 pair	07377-1
	1 dozen	07377-12
5, biology grade, 110mm. (See A)	1 pair	21974-1
	1 dozen	21974-12
5, standard tip, 110mm. (See A)	1 pair	07379-1
	1 dozen	07379-12
5A, standard oblique grade, 135mm. (See D)	1 pair	23552-1
	1 dozen	23552-12
7, biology grade, 115mm. (See E)	1 pair	21975-1
	1 dozen	21975-12
SS, non-magnetic, standard tip, 135mm. (See C)	1 pair	23553-1
	1 dozen	23553-12

**Tweezers, 7 Dumont INOX, epoxy coated, curved tip**

**26002**

Fine curved tip Dumont antimagnetic tweezers that are 120mm in length. *For research and investigational use only. Not intended for food, drug, cosmetic or household use.*

UNIT SIZE	CATALOG #
1 pair	26002-1
1 dozen	26002-12



**Rubis Tweezers**

from left to right: A, B, C, D, E, F, G

CHARACTERISTICS	UNIT SIZE	CATALOG #
3, standard tip, 120mm (See B)	1 pair	07376-1
	dozen	07376-12
3C, non-magnetic, standard tip, 110mm (See B)	1 pair	07384-1
	dozen	07384-12
General Use, 140mm, 5.5" (See E)	1 pair	25048-1
SS, standard tip, 135mm (See C)	1 pair	23557-1
	dozen	23557-12
Sturdy Strong Pointed, 115mm, 4.5"	1 pair	25046-1
Ultra Fine Pointed Angled, 110mm, 4.33"	1 pair	25047-1
Ultra Fine Pointed Curved, 110mm, 4.33"	1 pair	25049-1
Ultra Fine Pointed Curved, 115mm, 4.5"	1 pair	25050-1
Ultra Fine Straight Pointed Precision Tip, 120mm, 4.75"	1 pair	25045-1

**Microprobes and Picks****07397**

Set of four stainless steel probes for use in inaccessible areas.

UNIT SIZE	CATALOG #
1 set	07397-1

**Brush, Red Sable, Size 00000****08411**

Fine brush for manipulating samples or cleaning delicate items. Natural fiber tip is 1cm long and 2mm thick. Total brush length 17.5cm.

UNIT SIZE	CATALOG #
1 brush	08411-1

**Diamond Knife****08454**

Polysciences has been selling diamond knives to satisfied users for decades. This is the highest quality diamond knife available and can be repeatedly sharpened.

UNIT SIZE	CATALOG #
1 knife	08454-1

**Blades, Knives & Accessories**

**Glass, Ultra Microtome**

**19748**

High quality, clean glass strips cut to close size requirements ensuring they will fit all knife makers. Glass is pre-cleaned and individually wrapped. Available in a variety of sizes and thicknesses for both ultramicrotomy and histology.

CHARACTERISTICS	UNIT SIZE	CATALOG #
100mm x 50mm x 12mm thick	20 strips	19748-1

**Microtome Blades, Disposable – Heavy Duty**

**22380**



Chatterless & compression-free ribbons will become routine for all types of tissue. For use with AO or other high profile blade holders.

UNIT SIZE	CATALOG #
35 blades	22380-1

**Single Edge Razor blades, individually wrapped**

**08410**

UNIT SIZE	CATALOG #
100 blades	08410-1

**Tungsten Carbide Blades, Disposable**

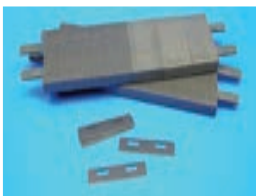
**24234**

100% solid high grade tungsten carbide. Recommended for hard tissue, bone or material embedded in MMA or GMA, frozen.

UNIT SIZE	CATALOG #
3 blades	24234-1

**Vibratome® Injector Blades**

**22370**



Disposable Injector blades for Vibratome®, uncoated carbon.

UNIT SIZE	CATALOG #
1000 blades	22370-1

## INOCULATION LOOPS

**Nichrome Wire 1.5mm Microloop®, 1µl****24660**

Nichrome 5 nickel-chromium wire inoculating loop provides precise volumetric sampling and transfer of material for accurate analysis. Nichrome 5 is the most durable alloy for repeated heating /cooling, with outstanding performance at temperatures up to 1200 °C.

UNIT SIZE	CATALOG #
25 loops	24660-1

**Plastic Microloops®****24650**

Sterile 5µl disposable plastic inoculating loops for precise volumetric sampling and transfer of material for accurate analysis. Individually packed in peel pouch.

UNIT SIZE	CATALOG #
1000 loops	24650-1

## FILTRATION

**Nylon Wool Fiber** | HAZARD CODE: A2g**18369**

Nylon wool fiber can be used to separate leukocytes from peripheral blood and to separate T-cells from B-cells. Granulocytes and B-cells stick to the fibers, while T-cells and other cells do not.

UNIT SIZE	CATALOG #
10 g	18369-10
50 g	18369-50

**Nylon Wool Fiber, Syringe (Gamma Irradiated)** | HAZARD CODE: A2g**21759**

Ready-to-use, 500mg prepacked in sterile 10cc syringes.

UNIT SIZE	CATALOG #
10 syringes	21759-1

Flotation Workstations

FLOTATION WORKSTATIONS

**Tissue Flotation Workstation w/ 8”x 8” x 2 1/4” Deep Dish**

**25389**



Make your tissue preparation easier, safer and more efficient. Removable glass dish waterbath with chemical resistant plastic housing, optimum specimen viewing provided a high contrast background illuminated by an LED light array. The dependability and safety of up-to-date microprocessor-controlled electronics, combined with histo/orientor for flattening sections and a heated slide dryer in one compact unit. See our Wrinkle Out Water Bath Solution (Cat. #25383).

UNIT SIZE	CATALOG #
1 unit	25389-1

**Tissue Flotation Workstation w/ 8”x 8” x 2 1/4” Deep Dish** | HAZARD CODE: A2g

**26012**



Flotation waterbath work station, microprocessor controlled with removable glass dish. Dimensions: 8”x 8”x 2 1/4”.

UNIT SIZE	CATALOG #
1 unit	26012-1

**Tissue Flotation Workstation w/ 8”x 11” x 2” Large Dish, HistoOrientor & Dryer** | HAZARD CODE: A2g

**26011**



Flotation waterbath work station, microprocessor controlled with removable glass dish. Dimensions: 8”x 11”x 2”, slide dryer 2”x 8” and tissue orientor 2”x 2”.

UNIT SIZE	CATALOG #
1 unit	26011-1

**Frozen Tissue Pen****25469**

Designed to prevent frozen sections from falling or lifting off, moving or wrinkling on the slide during routine immunostaining procedures. Provides a sticky membrane when applied to slide onto which the section is placed. Membrane is stable up to 110° C and is suitable for vigorous subsequent applications such as *in situ* hybridization. Can be effective with PAP/PAAP, ABC, LAB-SA and immunofluorescent methods.

UNIT SIZE	CATALOG #
1 pen	25469-1

**Super PAP Pen – Fine Tip, 2.5mm tip****24231**

Fine tip version of our 4mm Super PAP Pen offers the same benefits with a 2.5mm tip for finer drawing. Provides over 400 applications.

UNIT SIZE	CATALOG #
1 pen	24231-1

**Super PAP Pen, 4mm tip****24230**

Provides a thin film-like barrier when a circle is drawn around a specimen. The hydrophobic circle is designed to withstand temperatures up to 120 °C and can be applied directly to wet slides. This barrier creates the proper surface tension to hold antibody solution within the target area on a slide. Effective for immunology staining by PAP methods, ABC method, frozen section methods and fluorescent antibody methods. Provides over 800 applications. 4mm tapered tip.

UNIT SIZE	CATALOG #
1 pen	24230-1

Homogenizers

**BioMasher® I**



Disposable Homogenizer for soft samples with small pore size. Non-sterile, non-autoclavable.

CHARACTERISTICS	UNIT SIZE	CATALOG #
2.0ml Microtube with O-ring, PE filter, soft samples	30 pk	25526-30
	120 pk	25526-120
2.0ml Microtube w/o O-ring, PE filter, hard samples	30 pk	25530-30
	120 pk	25530-120
1.5ml Microtube with O-ring, PP filter, soft samples	30 pk	25529-30
	120 pk	25529-120
1.5ml Microtube with O-ring, PE filter, soft samples	30 pk	25525-30
	120 pk	25525-120
1.5ml Microtube w/o O-ring, PP filter, hard samples	30 pk	25528-30
	120 pk	25528-120
1.5ml Microtube w/o O-ring, PE filter, hard samples	30 pk	25527-30
	120 pk	25527-120

**Biomasher® II**



Disposable closed-system micro tissue homogenizer. The abrasive surfaces on the pestle tip and inner tube area ensure efficient grinding of samples. Ideal for homogenizing animal tissues and organs as well as plant materials, insects, DNA, RNA, proteins, yeasts and enzymes. Tube is clear polypropylene and the pestle is polyacetal. 1.5ml microtube.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Non-sterile	100 pk	25534-100
EOG-sterilized	100 pk	25533-100

**BioMasher® III**

**25535**



Disposable closed-system micro tissue homogenizer. The abrasive surfaces on the pestle tip and inner tube area ensure efficient grinding of samples. Ideal for homogenizing animal tissues and organs as well as plant materials, insects, DNA, RNA, proteins, yeasts and enzymes. Tube is clear polypropylene and the pestle is polyacetal. 2.0ml microtube, non-sterile.

UNIT SIZE	CATALOG #
50 pk	25535-50

**JB-4® Plastic Block Holders****15899**

Easy-to-store plastic block holders for resin. Matte surface for easy marking and a large center hole to prevent bubble formation. Block holders fit securely onto molding cup tray cavities. Attach to Polysciences' reusable chucks designed for commonly used microtomes.

UNIT SIZE	CATALOG #
50 holders	15899-50
100 holders	15899-100

**JBA Aluminum Chuck (11mm shaft, 11mm diameter)****16828**

Reusable aluminum chuck with three-point recessed block holder attachment, supplied complete with Allen screws and hex key. Designed for use with our Plastic Block Holders (Cat. #15899) and molding trays. Compatible with: LKB Histo Range and Reichert Super Cut, Hacker, A/O Reichert rotary and Autocut, JB-4® and JB-4A, LKB Ultratomes and Shandon Hypercut.

UNIT SIZE	CATALOG #
1 unit	16828-1

**LKB Huxley Chuck****16207**

Reusable chucks designed to be used with Plastic Block Holders (Cat. #15899) and molding trays. Available for a range of microtomes.

UNIT SIZE	CATALOG #
1 unit	16207-1

**PolyPress™ Tissue Embedding Tampers, small** | HAZARD CODE: A2g

Aids in the orientation of tissue samples during embedding. The handle height is ideal for use with or without the use of forceps. Dimensions: (small) 10mm x 10mm, (large) 15mm x 15mm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
small	1 each	25960-1
large	1 each	25964-1
combo	2 pk	26013-1

Solutions for Microtomy Problems

**HistoHEME** | HAZARD CODE: A2g

**24774**



Developed to assist histologists with bloody specimens such as placental fragments, bone marrow biopsies, liver, spleen and endometrial curettings, which tend to dry out and harden after processing. These tissues, when set on ice, tend to shatter and flake, leaving blood fragments on the work area, microtome and water bath. They have a high potential for creating extraneous tissue “floaters” on slides. Technicians can cut clean, non-fragmented sections without stopping in-between each block with HistoHEME.

**Benefits:**

- Ammonia-based emollient
- Alleviates problems and mess associated with working with bloody specimens
- Creates long, clean paraffin ribbons without stopping to clean between each block
- Greater morphological staining

UNIT SIZE	CATALOG #
120 ml	24774-120
250 ml	24774-250
500 ml	24774-500

**PolyCut-Ease** | HAZARD CODE: A2g

**18615**

The addition of 1% PolyCut-Ease to any epoxy embedding recipe will enable many stress-free sections to be cut from a single area of a knife. It preserves the life of your diamond knife edge, as it markedly reduces friction of the knife as it cuts through the plastic. The additive will not change the block color or EM image quality. Does not contain silicone.

UNIT SIZE	CATALOG #
100 ml	18615-100

**PolyGuard, Paraffin Repellent** | HAZARD CODE: EH5g

**21168**

Xylene-free paraffin repellent. Used to put a protective coating on surfaces exposed to paraffin as well as to clean adhering paraffin off laboratory countertops and equipment.

UNIT SIZE	CATALOG #
120 ml	21168-120
6 x 120 ml	21168-6



**Soft Block** | HAZARD CODE: A2g**24616**

Unique formula for softening difficult-to-cut tissue in paraffin. Effective on bone, nails and tissue. Easy to use, simply soak pre-trimmed block surface in Soft Block for 5 - 15 minutes (depending on tissue sample size) and cut sections. Soft Block is environmentally safe. Special waste disposal is not required and will not damage equipment.

UNIT SIZE	CATALOG #
120 ml	24616-120
500 ml	24616-500
1 gal	24616-1

**Soft Nail** | HAZARD CODE: AH2g**24775**

Unique formulation to soften keratin. Made for very hard, complex keratinized hair, nail and skin samples common in Mohs Histology laboratories. Hair, nail and skin samples that have been processed tend to flex and turn, becoming difficult to cut and hold on slides for staining. Processing hardens these samples and presents the challenge of cutting complete sections or sections without a "Venetian Blind Effect."

**Benefits:**

- Easy to use – no mixing required
- Keratinized samples cut and stain with greater ease
- Prevents shredding and tearing of samples
- Alleviates samples from folding on slides
- Breaks down the fibrous structural protein of hair, nail, hoof, feathers and skin

UNIT SIZE	CATALOG #
250 ml	24775-250

**Total Cutting Solution Kit****25388**

Our Total Cutting Solution Kit provides you with five tissue cutting solutions to address decalcification issues and difficult tissue blocks and specimens. Reduce bottlenecks in your workflow by using the 10 multi-well tissue block holders provided with the kit right at your cutting station.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> HistoHEME, Soft Block, Soft Nail, Super Decalcifier I: Delicate, Super Decalcifier II: Heavy Duty and 10 multi-well block holders.	1 kit	25388-1

Containers & Storage

**Wrinkle Out Water Bath Solution** | HAZARD CODE: A2d

**25383**



Top: wrinkled and compressed paraffin ribbon placed in normal water bath filled solution. Bottom: paraffin ribbon in Wrinkle Free Water Bath Solution. Wrinkles disappear and compression is gone, allowing the tissue to flatten due to the change in water surface tension.

Use in place of normal or distilled water for water bath when cutting paraffin sections and pick up wrinkle free ribbons and sections on the slide. May be used in place of normal water bath fill solution. Changes the water surface tension so tissue spreads evenly without wrinkles when using paraffin that is of lower quality than the polymer fortified paraffins on the market. For best results, set water bath temperature at 34 - 38°C. (For our Tissue Flotation Water Bath see Cat. #25389).

UNIT SIZE	CATALOG #
1 gal	25383-1
2 x 1 gal	25383-2

CONTAINERS & STORAGE

**Paraffin Block Mailer/Holder**

**25340**



Convenient transport container for up to six paraffin blocks. Made of transparent PVC for easy viewing of contents. Suitable for all regular models of tissue and biopsy cassettes.

UNIT SIZE	CATALOG #
25 units	25340-25
50/pk	25340-50

**Plastic weighing dish**

**19803A**



Peel-A-Way® weighing tray designed for easy pouring. In addition to their intended use of weighing materials, these handy dishes can be used for all sorts of applications in the laboratory.

UNIT SIZE	CATALOG #
1 carton	19803A-1

**Biopsy Bags, Small (Nylon Mesh)** | HAZARD CODE: A2g**25564**

Reduces risk of small specimen loss. Easy peel design allows unrestricted fluid movement around tissue. Bags peel open for quick and easy specimen removal. Material will not disintegrate in processing reagents.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: Width 1.18" (30mm) Length 1.97" (50mm)	100 bags	25564-100
	200 bags	25564-200
	1000 bags	25564-1000

**Coplin Slide Staining Jar****08415**

Unbreakable, translucent plastic that is stain resistant and chemically inert. Larger opening than classic Coplin staining jar for more convenient slide staining.

**Features:**

- Durable polypropylene construction
- Stores up to 10 standard slides
- Microwavable if uncapped
- Steam autoclavable at 121°C (250° F)

UNIT SIZE	CATALOG #
3 jars	08415-3

## GENERAL

**Parafilm®****3989A**

Used for sealing or protecting vessels such as flasks or cuvettes. Molds quickly and seals laboratory vessels with a disposable translucent film. Parafilm is stretchable, moldable, waterproof, odorless, thermoplastic and self-adhering. Can also be used to further seal a lidded container against moisture for long term storage. 4"x 250' Roll.

UNIT SIZE	CATALOG #
1 roll	3989A-1

**Smooth Rack****25063**

Smooth Rack employs uniquely-designed supports that prevent tubes from slipping out of position. Holds a variety of tubes 10-16mm in diameter. Available in blue or white.

UNIT SIZE	CATALOG #
1 unit	25063-1



**Dental wax** | HAZARD CODE: A2g**00403**

Low melting point wax, used for sealing boats onto glass knives. Also used as a contamination-free surface for mincing tissue.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Dimensions: 6"x 3"x 1/16" (150mm x 75mm x 1.5mm)	1 lb	00403-1
	5 lb	00403-5

**SAR-GEL® Water Indicating Paste** | HAZARD CODE: U5g**24615**

Water-indicating paste provides a fast, reliable way to detect water bottoms in storage tanks containing gasoline and gasoline/alcohol blends, diesel, jet fuel, fuel oil, solvents and other materials.

**Benefits:**

- Easy to apply – no messy jars, no need to mix, easy cleanup
- No guessing – complete color change from orange to navy blue
- Faster reaction – immediate detection means less time wasted
- Easy to see water line – does not run
- Useful in detecting water content in laboratory recycled reagents, as well as other stain line reagents and solvents such as xylene and absolute alcohol

UNIT SIZE	CATALOG #
12 x 1 oz tubes	24615-12

## CLEANERS &amp; DISINFECTANTS

**Acrylamide, Chemzymes Ultra Pure®** CAS#: 79-06-1 |  $H_2C=CHCONH_2$  | HAZARD CODE: HMO6d**00019**

Specific conductance of 35% (w/v) solution 2 $\mu$ mho/cm. Used in electrophoresis for separation of nucleic acid fragments and proteins. For introduction of hydrophilic sites, preparation of water-soluble polymers and in electrophoresis.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 71.08, mp 84-85°C uninhibited 165°C	100 g	00019-100
	500 g	00019-500

**BDD™ (Bacdown® Detergent Disinfectant)****26255**

BDD (Bacdown Detergent Disinfectant) will safely and effectively clean and disinfect surfaces in labs, production areas and process equipment. Diluted two (2) ounces per gallon of water (1:64), BDD is a bactericidal, virucidal, fungicidal, effective against HIV-1, HBV and more. Conforms to OSHA's Bloodborne Pathogens Standard. EPA registered.

UNIT SIZE	CATALOG #
4 x 1 gal	26255-4

Cleaners & Disinfectants

**Conflikt®**

**26256**

Conflikt Ready-to-Use disinfectant spray cleans and disinfects hard surfaces that may harbor viruses, bacteria and fungi. Pre-diluted, stable solution of dual quaternary ammonium active ingredients is effective against HIV-1, *E-coli*, and other pathogenic organisms. Conforms to OSHA's Bloodborne Pathogens Standard. Conflikt is effective against a wide range of organisms including TB. EPA registered.

UNIT SIZE	CATALOG #
12 x 16 oz	26256-12
6 x 32 oz	26256-6

**Contrad® 70, soak cleaner from Decon Laboratories** | HAZARD CODE: H5g

**18417**

A top quality soak cleaner for high grade cleaning of all labware. Alkaline. Phosphate-free. Particularly recommended for analytical techniques, tissue culture, RIA, electrophoresis—any application where total cleanliness is essential. Safer replacement for chromic acid.

UNIT SIZE	CATALOG #
1 liters	18417-1
5 liters	18417-5
12 x 1 liters	18417-12
4 x 5 liters	18417-4

**CiDehol® ST Sterile 70% IPA from Decon Laboratories** | HAZARD CODE: CH4g

**25649**

Sterile, ready-to-use 70% isopropyl alcohol (IPA) solution designed especially for cleanroom use. Made with Water-For-Injection (WFI), filtered to 0.2 µm, individually double-bagged and gamma-irradiated to ensure sterility. Made according to USP specifications and packaged in a Class 100 cleanroom. Each lot undergoes a bacterial endotoxin test to ensure that the product meets or exceeds water-for-injection quality in endotoxin limits. Each lot also undergoes a USP 14-day sterility test. Each case is shipped with lot-specific documentation that details QC, irradiation, sterility and bacterial endotoxin limits.

UNIT SIZE	CATALOG #
16 x 12 oz bottles	25649-12
12 x 16 oz bottles	25649-16
4 x 1 gal	25649-1
12 x 32 oz bottles	25649-32

**SaniHol® ST 70%** | HAZARD CODE: CV5g**25769**

Sterile, ready-to-use 70% denatured ethanol (EtOH) solution designed especially for cleanroom use. Filtered to 0.22µm, individually double-bagged and gamma-irradiated to ensure sterility. Made according to USP specifications and packaged in a Class 100 cleanroom. Each lot undergoes a bacterial endotoxin test to ensure that the product meets or exceeds water-for-injection quality in endotoxin limits. Each lot also undergoes a USP 14-day sterility test. Each case is shipped with lot-specific documentation that details QC, irradiation, sterility and bacterial endotoxin limits. Available in both non-aerosol trigger spray bottle and gallon size.

UNIT SIZE	CATALOG #
12 x 16 oz	25769-12
4 x 1 gal	25769-1

**SporGon®** | HAZARD CODE: H4g**25991**

Peracetic acid-based sterilizing and disinfecting solution provides high-level disinfection and is completely effective against spores. Ready-to-use solution is tuberculocidal, bactericidal, virucidal and fungicidal. Completely biodegradable, it decomposes into oxygen, water and acetic acid. FDA 510K clearance. Conforms to OSHA's Bloodborne Pathogens Standards.

UNIT SIZE	CATALOG #
4 x 1 gal	25991-1



HYDROCARBON TEST KITS

**Benzo(a)Pyrene Plate Assay Kit**

**AB530039**

Benzo(a)Pyrene is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format kit with ready to use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB530039-1

**PCBs, Higher Chlorinated, Assay Kit**

**AB530001**

Higher chlorinated PCBs are detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format kit with ready to use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB530001-1

**PCBs, Lower Chlorinated, Assay Kit**

**AB530021**

Lower chlorinated PCBs are detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB530021-1

**Polybrominated Diphenyl Ethers (PBDE), Assay Kit**

**AB500090**

PBDE is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500090-1



**Triclosan Assay Kit****AB530111**

Triclosan is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB530111-1

**Triclosan Assay Plate Kit****AB530114**

Triclosan is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format kit with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB530114-1

## PESTICIDE TEST KITS

**2,4-D Plate Assay Kit****AB54003B**

2,4-D is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB54003B-1

**2,4-D Tube Kit****AB54004B**

Immunological laboratory test for the quantitation of 2,4-D residues in water ranging from 2.0 to 100 ng/ml (parts per billion or ppb). (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB54004B-1

**Alachlor Assay Kit****AB500071**

Alachlor is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500071-1

## LIFE SCIENCES II / ENVIRONMENTAL TEST KITS

### Pesticide Test Kits

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#### Alachlor Plate Assay Kit

**AB500076**

Alachlor is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500076-1

#### Atrazine Assay Kit

**AB500001**

Atrazine is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. EPA/ETV Verified. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500001-1

#### Atrazine High Sensitivity (HS) Assay Kit

**AB500007**

Atrazine is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500007-1

#### Atrazine Plate Assay Kit

**AB520005**

Atrazine is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB520005-1

#### Atrazine Strip Test Kit

**AB500009**

Detects two of the most common pesticides used in the US at or below the EPA Maximum Contaminant Level (atrazine-3ppb and simazine-4 ppb). Dipstick format. (20 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500009-1

#### Cyclodienes Plate Assay Kit

**AB540021**

Cyclodienes are detected using a colorimetric immunoassay (ELISA) procedure. The assay range is between 0.25 ppb and 25.0 ppb. Assay allows the determination of cyclodienes in a range of environmental samples (water, soil, sediment, fish plasma, etc.).

UNIT SIZE	CATALOG #
1 kit	AB540021-1

## Pesticide Test Kits

**DDE/DDT Plate Assay Kit****AB540041**

DDE/DDT are detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB540041-1

**Diuron Plate Assay Kit****AB520001**

Diuron is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB520001-1

**Fluridone Assay Kit****AB500511**

Fluridone is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500511-1

**Glyphosate Assay Kit****AB500081**

Glyphosate is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (120 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500081-1

**Glyphosate Plate Assay Kit****AB500086**

Glyphosate is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500086-1

**Metolachlor Assay Kit****AB500061**

Metolachlor is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500061-1

## LIFE SCIENCES II / ENVIRONMENTAL TEST KITS

### Pesticide Test Kits

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#### Metolachlor Plate Assay Kit

**AB500065**

Metolachlor are detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500065-1

#### Organophosphate (OP)/Carbamate Assay Kit

**AB550051**

Qualitative, colorimetric assay (modification of the Ellman method) for the detection of organophosphates and carbamates, based on a modification of their inhibition of the enzyme Acetyl Cholinesterase (Ach-E). EPA/ETV Verified.

UNIT SIZE	CATALOG #
1 kit	AB550051-1

#### Organophosphate (OP)/Carbamate Plate Assay Kit

**AB550055**

Using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB550055-1

#### Penoxsulam Assay Kit

**AB500501**

Penoxsulam is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500501-1

#### Pyrethroid Assay Kit

**AB500201**

Pyrethroid is detected using a colorimetric immunoassay (ELISA) procedure. Magnetic particle format, with ready-to-use reagents. (100 Tests)

UNIT SIZE	CATALOG #
1 kit	AB500201-1

**Spinosyn Assay Tube Kit****AB50020B**

Spinosyn is detected using a colorimetric immunoassay (ELISA) procedure. Coated tube format. (40 tests)

UNIT SIZE	CATALOG #
1 kit	AB50020B-1

**Triazine Metabolite Plate Assay Kit****AB520006**

Triazine Metabolite is detected using a colorimetric immunoassay (ELISA) procedure. Microtiter plate format with ready-to-use reagents. Enables faster assay kinetics, high sensitivity and the simultaneous measurement of multiple samples. (96 Tests)

UNIT SIZE	CATALOG #
1 kit	AB520006-1

The first part of the document discusses the importance of maintaining accurate records of all transactions. This is essential for ensuring the integrity of the financial statements and for providing a clear audit trail. The second part of the document outlines the various methods used to collect and analyze data, including interviews, focus groups, and surveys. The third part of the document describes the results of the study, highlighting the key findings and the implications for practice. The final part of the document provides a conclusion and a list of references.

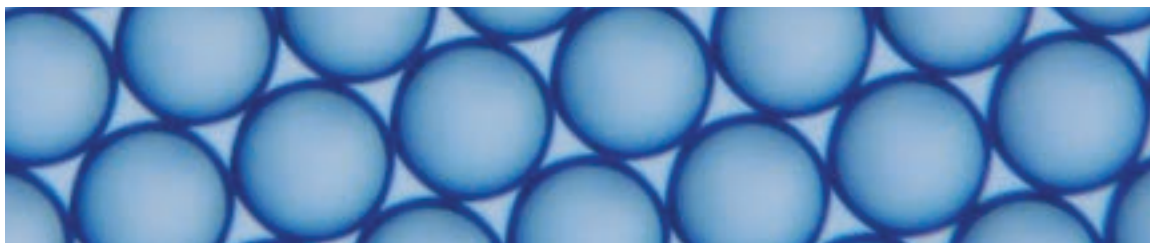
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## POLYBEAD® MICROSPHERES

Polybead Microspheres are monodisperse polystyrene microspheres, available in unit sizes with nominal diameters from 50nm to 90µm. Diameters 4.5µm and larger are crosslinked with divinylbenzene (DVB)\*. Our experienced chemists control the synthesis to provide precise monodisperse particle unit size distributions. These particles contain a slight anionic charge from sulfate ester.

Most of our Polybead microspheres are packaged in economical 2.5% solids (25mg/mL) aqueous suspensions with minimal surfactant in the final preparation. Polybead microspheres are ideally suited for protein binding using passive adsorption techniques, and surfactant-free formulations are available on a custom basis.

**Polybead® Non-functionalized Microspheres** | HAZARD CODE: A2dmw

Technical Data Sheet 788 & 238E.

NOMINAL DIAMETER	CV%	UNIT SIZE	CATALOG #
0.05µm	≤15	10 ml	08691-10
0.10µm	≤15	15 ml	00876-15
0.20µm	≤8	15 ml	07304-15
0.35µm	≤5	15 ml	07306-15
0.50µm	≤3	15 ml	07307-15
0.75µm	≤3	15 ml	07309-15
1.00µm	≤3	15 ml	07310-15
1.50µm	≤5	15 ml	17133-15
2.00µm	≤5	15 ml	19814-15
3.00µm	≤5	15 ml	17134-15
*4.50µm	≤7	5 ml	17135-5
*6.00µm	≤10	5 ml	07312-5
*10.0µm	≤10	5 ml	17136-5
*15.0µm	≤10	5 ml	18328-5
*20.0µm	≤10	5 ml	18329-5
*25.0µm	≤10	5 ml	07313-5
*45.0µm	≤10	5 ml	07314-5
*75.0µm	≤10	5 ml	24049-5
*90.0µm	≤10	5 ml	07315-5

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Polymer Microspheres

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#### **Polybead® Microspheres, Dry Form** | HAZARD CODE: A2g

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Our freeze-drying technique reduces the aggregation usually associated with dried beads. Dry material allows for the buffer of choice to be easily added.

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
1.00µm	500 mg	19518-500
1.50µm	500 mg	19519-500
3.00µm	500 mg	19520-500

#### **Polybead® Sampler Kit I** | HAZARD CODE: A2dmw

**19822**

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*Technical Data Sheets 788 & 238E.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 5ml of standard monodisperse polystyrene microspheres (2.5% solids, 25mg/mL) in water for each of these nominal sizes: 0.5µm, 0.75µm, 1.0µm, 2.0µm and 3.0µm.	1 kit	19822-1

#### **Polybead® Sampler Kit III** | HAZARD CODE: A2dmw

**16905**

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*Technical Data Sheets 788 & 238E.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml of standard monodisperse polystyrene microspheres (2.5% solids, 25mg/mL) in water for each of these nominal sizes: 0.05µm, 0.20µm, 0.50µm, 1.0µm, 45.0µm and 90.0µm.	1 kit	16905-1

*For additional Non-functionalized Polystyrene Microspheres, see our Polyballs collection.*

## POLYBEAD® FUNCTIONALIZED MICROSPHERES

Our carboxylate-modified polystyrene latex microspheres are suitable for the covalent immobilization of proteins, peptides and nucleic acids.

**Polybead® Carboxylate Microspheres** | HAZARD CODE: A2dmw

Polybead Carboxylate Microspheres are monodisperse polystyrene microspheres that contain surface carboxyl groups. This allows for covalent binding of proteins to the bead surface. Packaged as 2.5% solids (w / v) aqueous suspensions. *Technical Data Sheets 644, 1002, & 238C.*

NOMINAL DIAMETER	CV%	UNIT SIZE	CATALOG #
0.05µm	≤15	10 ml	15913-10
0.10µm	≤15	15 ml	16688-15
0.20µm	≤8	15 ml	08216-15
0.35µm	≤5	15 ml	21753-15
0.50µm	≤3	15 ml	09836-15
0.75µm	≤3	15 ml	07759-15
1.00µm	≤3	15 ml	08226-15
2.00µm	≤5	10 ml	18327-10
3.00µm	≤5	5 ml	09850-5
4.50µm	≤7	5 ml	17140-5
6.00µm	≤10	5 ml	17141-5
10.00µm	≤10	2 ml	18133-2
20.00µm	≤15	2 ml	24811-2

**Polybead® Carboxylate Sampler Kit I** | HAZARD CODE: A2dmw**19819**

*Technical Data Sheets 644, 1002, & 238C.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 5ml of carboxylate polystyrene monodisperse microspheres (2.5% solids in water) for each of these nominal sizes: 0.5µm, 0.75µm, 1.0µm, 2.0µm and 3.0µm.	1 kit	19819-1

*See PolyLink Protein Coupling Kit for Carboxylate Microspheres (Cat. #24350).*

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Polymer Microspheres

#### Polybead® Amino Microspheres | HAZARD CODE: A2dmw

Polybead Amino Microspheres are monodisperse polystyrene microspheres that contain surface primary amine groups. Protein coupling using glutaraldehyde as a coupling agent will result in protein binding 11-12 carbon atoms from the surface of the bead. Packaged as 2.5% solids (w / v) aqueous suspensions. *Technical Data Sheets 1002 & 238D.*

NOMINAL DIAMETER	CV%	UNIT SIZE	CATALOG #
0.10µm	≤25	5 ml	16586-5
0.20µm	≤20	5 ml	15699-5
0.50µm	≤11	5 ml	07763-5
0.75µm	≤8	5 ml	17144-5
1.00µm	≤6	5 ml	17010-5
3.00µm	≤8	5 ml	17145-5
6.00µm	≤10	2 ml	19118-2

#### Polybead® Amino Sampler Kit | HAZARD CODE: A2dmw

**19820**

*Technical Data Sheets 1002 & 238D.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 5ml of monodisperse amino polystyrene microspheres (2.5% solids in water) for each of these nominal sizes: 0.5µm, 0.75µm, 1.0µm and 3.0µm.	1 kit	19820-1

#### Polybead® Carboxy-Sulfate Microspheres | HAZARD CODE: A2dmw

**19406**

Polybead Carboxy-Sulfate Microspheres are monodisperse, surfactant-free polystyrene microspheres. We manufacture these particles to have sulfate charge groups in addition to carboxyl groups. *Technical Data Sheet 1002.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Packaged as 2.5% solids (w / v) aqueous suspensions. Nom. Dia.: 1.00µm	15 ml	19406-15

#### Polybead® Sulfate Microspheres | HAZARD CODE: A2dmw

Polybead Sulfate Microspheres are monodisperse polystyrene particles that offer a higher level of surface sulfate groups than our standard polystyrene microspheres. Packaged as 2.5% aqueous suspensions. *Technical Data Sheet 1002.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	19402-15
0.50µm	15 ml	19403-15
1.00µm	15 ml	19404-15
2.00µm	10 ml	19405-10

**Polybead® Hydroxylate Microspheres** | HAZARD CODE: A2dmw

Polybead Hydroxylate Microspheres are monodisperse particles that contain surface hydroxyl groups. These particles are packaged in an economical suspension of 2.5% solids in water. *Technical Data Sheet 1002.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	15717-15
0.50µm	15 ml	07762-15
0.75µm	15 ml	19128-15
1.00µm	15 ml	17142-15
3.00µm	5 ml	17143-5

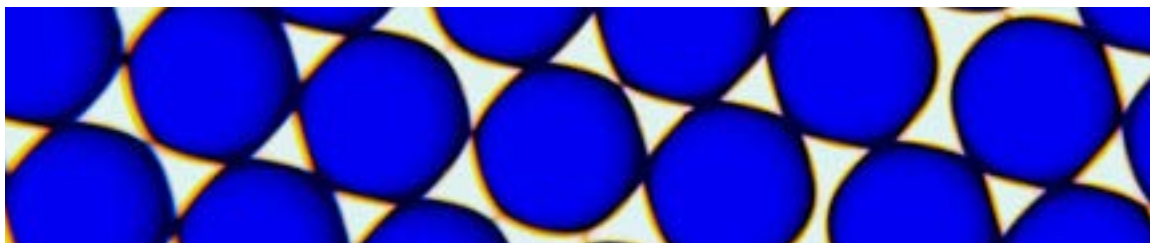
**Polybead® Acrylate Microspheres** | HAZARD CODE: A2dmw**18602**

Polybead Acrylate Microspheres are monodisperse microspheres (2.5% solids in water) with surfaces that contain copolymers of styrene and an acrylic ester. The reactive ester sites on the polymer will furnish points for further organic reactions, which may lead to innovative forms of activation (e.g. reaction with ammonia may lead to amide formation, which may then undergo Beckmann rearrangement). *Technical Data Sheet 1002.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
1.00µm	15 ml	18602-15

### Polymer Microspheres

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#### POLYBEAD® DYED MICROSPHERES

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Polysciences is the leading supplier of visibly dyed polystyrene microspheres to the latex diagnostic marketplace. Diagnostic manufacturers rely on our precisely-controlled particle synthesis to ensure reproducibility in both assay design and performance. Packaged as 2.5% solids (w / v) aqueous suspensions, they are available in a variety of nominal mean diameters and colors. *Technical Data Sheets 808 & 238E.*

#### **Polybead® Black Dyed Microspheres** | HAZARD CODE: A2dmw

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NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	24290-15
0.50µm	15 ml	24291-15
1.00µm	15 ml	24287-15
3.00µm	15 ml	24292-15
6.00µm	5 ml	24293-5
10.0µm	2 ml	24294-2

#### **Polybead® Polystyrene Blue Dyed Microspheres** | HAZARD CODE: A2dmw

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Blue Dyed Microspheres have amine groups and can be used for covalent coupling procedures using glutaraldehyde. *Technical Data Sheets 808 & 238D.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	15706-15
0.50µm	15 ml	15709-15
1.00µm	15 ml	15712-15
3.00µm	15 ml	17138-15
6.00µm	5 ml	15715-5
10.0µm	2 ml	18138-2

**Polybead® Polystyrene Violet Dyed Microspheres** | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.50µm	15 ml	24064-15
0.80µm	15 ml	24065-15
1.00µm	15 ml	18134-15
3.00µm	15 ml	18135-15
6.00µm	5 ml	18136-5
10.0µm	2 ml	18139-2

**Polybead® Polystyrene Red Dyed Microspheres** | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	15705-15
0.50µm	15 ml	15708-15
1.00µm	15 ml	15711-15
3.00µm	15 ml	17137-15
6.00µm	5 ml	15714-5

**Polybead® Polystyrene Yellow Dyed Microspheres** | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	15707-15
0.50µm	15 ml	15710-15
1.00µm	15 ml	15713-15
3.00µm	15 ml	17139-15
6.00µm	5 ml	15716-5
10.0µm	2 ml	18337-2

**Polybead® Blue Dyed Microsphere Sampler Kit** | HAZARD CODE: A2dmw**19821**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 5ml of blue dyed monodisperse polystyrene microspheres (2.5% solids in water) for each of these nominal size: 0.2µm, 0.5µm, 1.0µm and 3.0µm.	4 x 5 ml	19821-1

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Polymer Microspheres

#### Polybead® Dyed Microsphere Kit I | HAZARD CODE: A2dmw

**16906**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml of dyed ~1.0µm monodisperse polystyrene microspheres (2.5% solids in water) for each of these colors: red, blue, yellow, violet and unlabeled.	1 kit	16906-1

#### Polybead® Dyed Microsphere Kit II | HAZARD CODE: A2dmw

**18336**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml of dyed and fluorescent ~1.0µm monodisperse polystyrene microspheres (2.5% solids in water) for each of these colors: red, blue, yellow and violet, as well as Fluoresbrite YG, BB, YO, PC Red and unlabeled.	1 kit	18336-1

### POLYBEAD® CARBOXYLATE DYED MICROSPHERES

Biomolecules may be covalently immobilized to carboxyl-functionalized microspheres. Our dyed carboxyl microspheres are impregnated with vibrant dyes for optimal visualization. *Technical Data Sheets 808, 644 & 238C.*

#### Polybead® Carboxylate Blue Dyed Microspheres | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.30µm	15 ml	11975-15
0.50µm	15 ml	19816-15
1.00µm	15 ml	19120-15
3.00µm	5 ml	19123-5
6.00µm	5 ml	19126-5

#### Polybead® Carboxylate Red Dyed Microspheres | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.30µm	15 ml	24063-15
0.50µm	15 ml	19815-15
1.00µm	15 ml	19119-15
3.00µm	5 ml	19122-5
6.00µm	5 ml	19125-5



**Polybead® Carboxylate Orange Dyed Microspheres** | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	13369-15
1.00µm	15 ml	13368-15

**Polybead® Carboxylate Yellow Dyed Microspheres** | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.50µm	15 ml	19817-15
1.00µm	15 ml	19121-15
3.00µm	5 ml	19124-5
6.00µm	5 ml	19127-5

**Polybead® Carboxylate Green Dyed Microspheres** | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.20µm	15 ml	13371-15
1.00µm	15 ml	13370-15

*If coating is your interest, please see our [Accessory Reagents](#).*

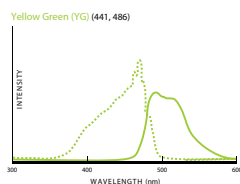
Polymer Microspheres



FLUORESBRITE® FLUORESCENT MICROSPHERES

Instrument manufacturers and major diagnostic companies turn to Polysciences for our consistently superior Fluoresbrite fluorescent polystyrene microspheres. The continued developments by our polymer chemists have resulted in products that lead the market in such applications as diagnostic assays, protein-binding assays, cell tracking and flow cytometry. These microspheres are supplied in sizes with nominal diameters from 50nm to 90µm and packaged as 2.5% solids (w / v) aqueous suspensions. Our dyes match popular filter settings: BB = DAPI, PC RED = Phycoerythrin, YG = FITC, YO = Rhodamine. *Technical Data Sheets 431 & 745.*

Fluoresbrite® Yellow Green (YG) Microspheres | HAZARD CODE: A2dmw



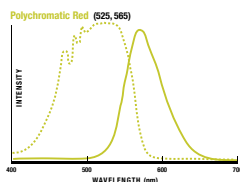
Fluoresbrite Yellow Green (YG) Microspheres have excitation and emission spectra similar to FITC with excitation maxima of 441nm and emission maxima at 485nm. They are one of the brightest microspheres available at this wavelength and are used extensively in phagocytosis studies, flow cytometry and diagnostic assays.

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.05µm	10 ml	17149-10
0.10µm	10 ml	17150-10
0.20µm	10 ml	17151-10
0.50µm	10 ml	17152-10
0.75µm	10 ml	17153-10
1.00µm	10 ml	17154-10
2.00µm	5 ml	18338-5
3.00µm	2 ml	17155-2
6.00µm	2 ml	17156-2
10.0µm	2 ml	18140-2
20.0µm	2 ml	19096-2
25.0µm	2 ml	18241-2
45.0µm	2 ml	18242-2
90.0µm	2 ml	18243-2

**Fluoresbrite® Yellow Green (YG) Microspheres, Calibration Grade** | HAZARD CODE: A2dmw

This special grade of Fluoresbrite Yellow Green (YG) Microspheres has been evaluated both for particle diameter and the uniformity of the fluorescent dye distribution. Instrument manufacturers have demanded these high quality particles for their flow cytometry standards.

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.50µm	1 ml	18859-1
1.00µm	1 ml	18860-1
2.00µm	1 ml	18604-1
3.00µm	1 ml	18861-1
6.00µm	1 ml	18862-1

**Fluoresbrite® Polychromatic Red Microspheres** | HAZARD CODE: A2dmw

Fluoresbrite microspheres are internally dyed fluorescent monodispersed polystyrene microspheres. Internal dyeing produces bright and stable particles, with narrow fluorescence CVs, and leaves the surface available for adsorbing various ligands. Fluoresbrite particles are routinely used in a wide range of applications, including as tracer particles and in phagocytosis assays. Polychromatic Red is a broadly excitable and emissive dye allowing flexibility in use with a variety of optical setups.

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.50µm	5 ml	19507-5
1.00µm	5 ml	18660-5
2.00µm	2 ml	19508-2
6.00µm	2 ml	19111-2

**Fluoresbrite® Multifluorescent Microspheres** | HAZARD CODE: A2dmw

Offered in three sizes, each microsphere is dyed with three different fluorescent dyes with excitation maxima of 377, 517 and 588nm and emission maxima of 479, 546 and 612nm, respectively. Packaged as 2.5% solids (w / v) aqueous suspensions.

NOMINAL DIAMETER	CV%	UNIT SIZE	CATALOG #
0.20µm	5	5 ml	24050-5
0.50µm	3	5 ml	24054-5
1.00µm	3	5 ml	24062-5

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Polymer Microspheres

#### Fluoresbrite® PolyFluor® Microspheres | HAZARD CODE: A2dmw

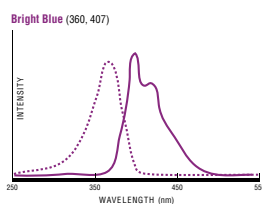
Fluoresbrite PolyFluor Microspheres incorporate a series of polymerizable fluorescent compounds that produce fluorescence at a variety of wavelengths. These microspheres have a nominal diameter of 1.0µm. The fluorescence is uniformly distributed throughout the outer 25% of the radii of the particles. Packaged as 2.5% solids (w / v) aqueous suspensions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
345 Microspheres, 1.0µm. Ex. Max (nm) 285 Em. Max. (nm) 345	10 ml	24055-10
394 Microspheres, 1.0µm. Ex. Max (nm) 339 Em. Max. (nm) 394	10 ml	24056-10
407 Microspheres, 1.0µm. Ex. Max (nm) 362 Em. Max. (nm) 407	10 ml	24057-10
511 Microspheres, 1.0µm. Ex. Max (nm) 470 Em. Max. (nm) 511	10 ml	24059-10
570 Microspheres, 1.0µm. Ex. Max (nm) 548 Em. Max. (nm) 570	10 ml	24061-10

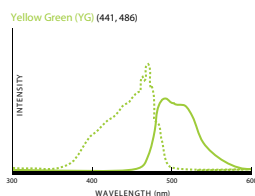
#### FLUORESBRITE® CARBOXYLATE MICROSPHERES

Fluoresbrite Carboxylate Microspheres are fluorescent monodisperse polystyrene microspheres that have carboxylate groups on their surfaces that can be activated for the covalent coupling of proteins. Polysciences' Fluoresbrite particles are used extensively in phagocytosis and neural retrograde transport studies, and as markers for cell-bound antigens. Packaged as 2.5% solids (w / v) aqueous suspensions. *Technical Data Sheets 644 & 238C.*

#### Fluoresbrite® Bright Blue (BB) Carboxylate Microspheres | HAZARD CODE: A2dmw



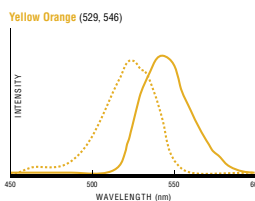
NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.05µm	10 ml	19773-10
0.10µm	10 ml	19774-10
0.50µm	10 ml	18339-10
1.00µm	10 ml	17458-10
1.75µm	5 ml	17686-5
4.50µm	5 ml	18340-5
6.00µm	2 ml	19102-2
10.0µm	2 ml	19103-2

**Fluoresbrite® Yellow Green (YG) Carboxylate Microspheres** | HAZARD CODE: A2dmw

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.05µm	10 ml	16661-10
0.10µm	10 ml	16662-10
0.20µm	10 ml	09834-10
0.30µm	10 ml	24051-10
0.35µm	10 ml	24052-10
0.40µm	10 ml	24053-10
0.50µm	10 ml	15700-10
0.75µm	10 ml	07766-10
1.00µm	10 ml	15702-10
1.50µm	10 ml	09719-10
1.75µm	5 ml	17687-5
2.00µm	5 ml	09847-5
3.00µm	5 ml	17147-5
4.50µm	5 ml	16592-5
6.00µm	2 ml	18141-2
10.0µm	2 ml	18142-2

**Fluoresbrite® Yellow Orange (YO) Carboxylate Microspheres** | HAZARD CODE: A2dmw

*YO has limited water solubility and some leaching may occur with rigorous washing.*

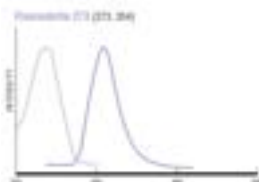


NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.05µm	10 ml	19775-10
0.10µm	10 ml	18719-10
0.20µm	10 ml	19391-10
0.50µm	10 ml	18720-10
1.00µm	10 ml	18449-10
1.75µm	5 ml	19392-5
3.00µm	5 ml	19393-5
4.50µm	5 ml	19394-5
6.00µm	2 ml	19395-2

Polymer Microspheres

**Fluoresbrite® 273 Carboxylate Microspheres 1.75µm**

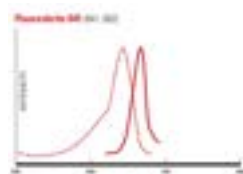
**17685**



UNIT SIZE	CATALOG #
1 ml	17685-1
5 ml	17685-5

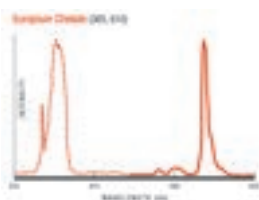
**Fluoresbrite® 641 Carboxylate Microspheres 1.75µm**

**17797**



UNIT SIZE	CATALOG #
1 ml	17797-1

**Fluoresbrite® Europium (Eu) Chelate Carboxylate Microspheres** | HAZARD CODE: A2dmw



Polysciences offers Fluoresbrite Europium (Eu) Chelate Carboxylate Microspheres in diameters of 0.1µm, 0.2µm and 0.3µm to address the needs of individual assays, including immunochromatographic and microwell-based formats. Our Europium products offer extremely bright fluorescence and exceptional stability, in addition to well-functionalized carboxylated surfaces for the covalent attachment of ligand. Ex. max = 365nm Em. max = 610nm. *Technical Data Sheet 915.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.10µm	1 ml	25488-1
0.10µm	5 ml	25488-5
0.10µm	10 ml	25488-10
0.20µm	1 ml	25489-1
0.20µm	5 ml	25489-5
0.20µm	10 ml	25489-10
0.30µm	1 ml	25490-1
0.30µm	5 ml	25490-5
0.30µm	10 ml	25490-10

**Fluoresbrite® Europium (Eu) Chelate Carboxylate Microsphere Sampler Pack** | HAZARD CODE: A2dmw**BLI21960**

Europium (III) nanoparticles offer exceptional stability, in addition to well-functionalized carboxylated surfaces for the covalent attachment of ligand. Our Eu (III) nanoparticles have been used to develop highly sensitive assays (microplate, lateral flow) based on time-resolved (TRF) fluorescence and as particulate labels in chemiluminescence assays.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml each of Nominal Diameter of 0.10µm, 0.20µm, 0.30µm, 0.40µm	1 kit	BLI21960-1

**Fluoresbrite® Carboxylate Color Range Kit II** | HAZARD CODE: A2dmw**19839**

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml each of ~0.50µm Fluoresbrite monodisperse polystyrene microspheres (2.5% solids [w / v] in aqueous suspension) containing dyes with these excitation maxima: 273nm, 360nm, 441nm, 529nm, 641nm and 763nm.	1 kit	19839-1

**Fluoresbrite® Carboxylate UNIT SIZE Range Kit I** | HAZARD CODE: A2dmw**21636**

Polysciences' size Range Kits allow you to evaluate which fluorescent particle unit size performs optimally for your specific application. These yellow green (YG) beads are economically-packaged in 1ml volumes.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml of Fluoresbrite monodisperse microspheres (2.5% solids in water) for each of these nominal sizes: 0.10µm, 0.20µm, 0.50µm, 0.75µm and 1.0µm.	1 kit	21636-1

**Fluoresbrite® Carboxylate UNIT SIZE Range Kit II** | HAZARD CODE: A2dmw**21637**

Polysciences' size Range Kits allow you to evaluate which fluorescent particle unit size performs optimally for your specific application. These yellow green (YG) beads are economically-packaged in 1ml volumes.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml of Fluoresbrite monodisperse microspheres (2.5% solids in water) for each of these nominal sizes: 1.75µm, 2.0µm, 3.0µm, 4.5µm and 6.0µm.	1 kit	21637-1

**Polymer Microspheres**



**PROTEIN CONJUGATED MICROSPHERES**

We offer streptavidin, Protein A and Protein G covalently coupled to fluorescent YG, non-fluorescent and blue dyed polystyrene microspheres. Streptavidin-conjugated microspheres can be used to bind biotinylated ligands. Microspheres coupled with Protein A and Protein G will bind to the Fc portion of antibodies raised in most mammals. *Technical Data Sheet 615.*

Our protein conjugated microspheres have a nominal diameter of 1.0µm and are packaged as 1.25% solids (w / v) aqueous suspensions. Proteins of your choice can be coupled to microspheres on a custom basis.

**Streptavidin Conjugated Microspheres** | HAZARD CODE: A2dmw

Streptavidin is covalently coupled to undyed and Fluoresbrite YG (excitation: 441nm, emission: 486nm) polystyrene microspheres. Packaged as 1.25% solids (w / v) aqueous suspensions. *Technical Data Sheet 616. Requires cold pack.*

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Streptavidin Undyed Microspheres	1.0µm	1 ml	24162-1
	1.0µm	5 ml	24162-5
	2.0µm	1 ml	24160-1
	2.0µm	5 ml	24160-5
	6.0µm	1 ml	24158-1
	6.0µm	5 ml	24158-5
Streptavidin Fluoresbrite YG Microspheres	1.0µm	1 ml	24161-1
	1.0µm	5 ml	24161-5
	2.0µm	1 ml	24159-1
	2.0µm	5 ml	24159-5
	6.0µm	1 ml	24157-1
	6.0µm	5 ml	24157-5



**Biotin Conjugated Microspheres** | HAZARD CODE: A2dmw

Biotin is covalently coupled to undyed and Fluoresbrite® YG (excitation: 441nm, emission: 486nm) polystyrene microspheres. Packaged as 1.25% solids (w / v) aqueous suspensions. *Technical Data Sheet 616.*

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Biotin Undyed Microspheres	2.0µm	1 ml	24172-1
	2.0µm	5 ml	24172-5
Biotin Fluoresbrite YG Microspheres	2.0µm	1 ml	24173-1
	2.0µm	5 ml	24173-5

**Protein G Microspheres** | HAZARD CODE: A2dmx

Requires cold pack. *Technical Data Sheet 615.*

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Protein G Undyed Microspheres	1.0µm	1 ml	21106-1
Protein G Blue Dyed Microspheres	1.0µm	1 ml	21105-1
Protein G Fluoresbrite YG Microspheres	1.0µm	1 ml	21107-1



## SILICA MICROSPHERES

Inorganic supports, such as silica microspheres offer the combined benefits of working with a bead platform and the unique properties of a silica substrate, including: flexibility, large specific surface area, improved binding kinetics over planar surfaces, robust statistics, flexible silanization chemistries, unique refractive index and density, low autofluorescence, low nonspecific binding of many biomolecules, hydrophilicity, and easy manipulation.

**Silica Microspheres, Colloidal** | HAZARD CODE: A2dmx

Colloidal silica products are offered as 5% solids dispersions of amorphous silica particles in water with NaOH as a stabilizer. Like our larger silica microspheres, colloidal silica particles may be functionalized by reaction with organosilanes. *Technical Data Sheet 792.*

CHARACTERISTICS	NOMINAL DIAMETER	% SOLIDS	UNIT SIZE	CATALOG #
Silica Microspheres (broad distribution, colloidal)	0.01µm	5	10 ml	24298-10
Silica Microspheres (colloidal)	0.05µm	5	10 ml	24040-10
	0.10µm	5	10 ml	24041-10

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Silica Microspheres

#### Silica Microspheres, Plain (Hydrophilic) | HAZARD CODE: A2dmx

Uniform, non-porous silica ( $\text{SiO}_2$ ) microspheres are available in diameters of ~150nm - 5 $\mu\text{m}$ . These particles typically have size CVs of 10 - 15%. Inorganic supports such as silica microspheres have become increasingly important for a variety of applications, including isolation of nucleic acids, cell separation and immuno- and DNA-based assays. They offer the combined benefits of a bead platform and the unique properties of a silica substrate such as: flexible silanization chemistries, low autofluorescence and low nonspecific binding of many biomolecules. *Technical Data Sheet 635.*

NOMINAL DIAMETER	% SOLIDS	UNIT SIZE	CATALOG #
0.15 $\mu\text{m}$	10	15 ml	24320-15
0.3 $\mu\text{m}$	10	15 ml	24321-15
0.4 $\mu\text{m}$	10	15 ml	24322-15
0.5 $\mu\text{m}$	10	15 ml	24323-15
0.7 $\mu\text{m}$	10	15 ml	24324-15
0.9 $\mu\text{m}$	10	15 ml	24325-15
1.0 $\mu\text{m}$	10	15 ml	24326-15
1.5 $\mu\text{m}$	10	15 ml	24327-15
2.0 $\mu\text{m}$	10	15 ml	24328-15
2.5 $\mu\text{m}$	10	15 ml	24329-15
3.0 $\mu\text{m}$	10	15 ml	24330-15
4.0 $\mu\text{m}$	10	15 ml	24331-15
5.0 $\mu\text{m}$	10	15 ml	24332-15

#### Silica Microspheres, Dry | HAZARD CODE: A2g

Monodisperse silica microspheres in dry form. Available in nominal diameters ranging from: 0.3 - 5.0 $\mu\text{m}$ .  
*Technical Data Sheet 635.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.3 $\mu\text{m}$	1.5 g	25341-1.5
0.5 $\mu\text{m}$	1.5 g	25342-1.5
1.0 $\mu\text{m}$	1.5 g	25343-1.5
1.5 $\mu\text{m}$	1.5 g	25344-1.5
2.5 $\mu\text{m}$	1.5 g	25345-1.5
3.0 $\mu\text{m}$	1.5 g	25346-1.5
4.0 $\mu\text{m}$	1.5 g	25347-1.5
5.0 $\mu\text{m}$	1.5 g	25348-1.5

**Silica Microspheres, Amine** | HAZARD CODE: A2g

Amine functionalized, 100% solids. Available with nominal diameters from 0.5 - 5.0 $\mu$ m to allow the researcher to tailor their product design for specific assays. *Technical Data Sheet 635.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.5 $\mu$ m	1 g	24756-1
1.0 $\mu$ m	1 g	24757-1
5.0 $\mu$ m	1 g	24758-1

**Silica Microspheres, Carboxyl** | HAZARD CODE: A2g

Carboxylic Acid functionalized, 100% solids. Available with nominal diameters from 0.5 - 5.0 $\mu$ m to allow the researcher to tailor their product design for specific assays. *Technical Data Sheet 635.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.5 $\mu$ m	1 g	24753-1
1.0 $\mu$ m	1 g	24754-1
5.0 $\mu$ m	1 g	24755-1

**Silica Microspheres, Streptavidin** | HAZARD CODE: A2dmwx

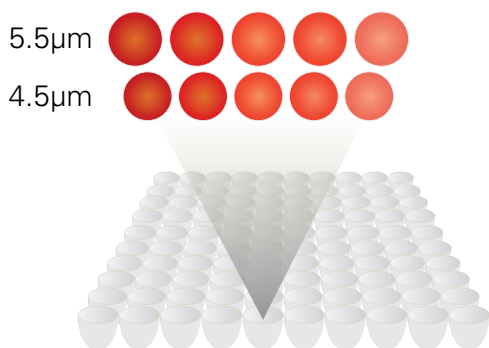
Streptavidin coated, 1% solids. Streptavidin modified microspheres bind biotinylated ligands easily and with great affinity. Offered as a 1% dispersion in water. Available with nominal diameters from 0.5 - 5.0 $\mu$ m. *Requires cold pack. Technical Data Sheet 635.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.5 $\mu$ m	2 ml	24759-2
1.0 $\mu$ m	2 ml	24760-2
5.0 $\mu$ m	2 ml	24761-2

*We also carry a selection of Glass Beads, see Additional Microspheres.*

QuantumPlex™ Multiplexing Platforms

QUANTUMPLEX™ MULTIPLEXING PLATFORMS



The microsphere populations in QuantumPlex™ five-bead kits are encoded with different intensities of Starfire Red™, and microspheres in our ten-bead kits are distinguished by both fluorescence intensity and size. Starfire Red is a fluorescent dye with unique characteristics that make it ideal for multiplexing applications. The dye’s broad excitation band allows it to be excited at a number of wavelengths, and it emits in the red channel (e.g. PE-Cy™5, APC) with very little carryover into lower wavelengths, leaving other detectors available for determination of positive binding events via common reporters such as FITC and PE.

QuantumPlex kits are available with carboxyl or streptavidin surfaces to accommodate the coating strategy of choice. *Technical Data Sheets PDS 215 and PDS 235.*

QuantumPlex™ | HAZARD CODE: A2dmw

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Carboxyl (5 dye intensities)	4.4µm	5 x 1 ml	BLI235A-1
Carboxyl (5 dye intensities)	4.4µm	5 x 5 ml	BLI235B-5
Carboxyl (5 dye intensities)	4.4µm	5 x 10 ml	BLI235C-10
Carboxyl (5 dye intensities)	5.5µm	5 x 1 ml	BLI238A-1
Carboxyl (5 dye intensities)	5.5µm	5 x 5 ml	BLI238B-5
Carboxyl (5 dye intensities)	5.5µm	5 x 10 ml	BLI238C-10
Carboxyl (2 x 5 dye intensities)	4.4 & 5.5µm	10 x 1 ml	BLI239A-2
Carboxyl (2 x 5 dye intensities)	4.4 & 5.5µm	10 x 5 ml	BLI239B-10
Carboxyl (2 x 5 dye intensities)	4.4 & 5.5µm	10 x 10 ml	BLI239C-20
Streptavidin (5 dye intensities)	4.4µm	5 x 1 ml	BLI215A-1
Streptavidin (5 dye intensities)	4.4µm	5 x 5 ml	BLI215B-5
Streptavidin (5 dye intensities)	4.4µm	5 x 10 ml	BLI215C-10
Streptavidin (5 dye intensities)	5.5µm	5 x 1 ml	BLI218A-1
Streptavidin (5 dye intensities)	5.5µm	5 x 5 ml	BLI218B-5
Streptavidin (5 dye intensities)	5.5µm	5 x 10 ml	BLI218C-10
Streptavidin (2 x 5 dye intensities)	4.4 & 5.5µm	10 x 1 ml	BLI219A-2
Streptavidin (2 x 5 dye intensities)	4.4 & 5.5µm	10 x 5 ml	BLI219B-10
Streptavidin (2 x 5 dye intensities)	4.4 & 5.5µm	10 x 10 ml	BLI219C-20

\*Concentration: QuantumPlex COOH, ~1.0e+8 beads/mL; QuantumPlex Streptavidin, ~1.0e+6 beads/mL

**QuantumPlex™ SP** | HAZARD CODE: A2dmw

QuantumPlex SP (Single Population) is useful for the development of simplex flow cytometric assays, or the optimization of attachment chemistry and assay parameters before transitioning to a multiplexed format. The carboxyl populations are at a concentration of  $\sim 1 \times 10^8$  beads/ml, while the streptavidin populations are at a concentration of  $\sim 1 \times 10^6$  beads/ml. *Technical Data Sheets PDS 214 and PDS 234.*

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Carboxyl	4.4µm	1 ml	BLI234A-1
Carboxyl	4.4µm	3 ml	BLI234B-3
Carboxyl	5.5µm	1 ml	BLI237A-1
Carboxyl	5.5µm	3 ml	BLI237B-3
Streptavidin	4.4µm	1 ml	BLI214A-1
Streptavidin	4.4µm	3 ml	BLI214B-3
Streptavidin	5.5µm	1 ml	BLI217A-1
Streptavidin	5.5µm	3 ml	BLI217B-3

**QuantumPlex™M** | HAZARD CODE: A2dmw

QuantumPlexM is an innovative magnetic bead kit for multiple analyte detection research applications in flow cytometry. QuantumPlexM results in flexible, efficient and cost-effective research. The carboxyl populations are at a concentration of  $\sim 1 \times 10^8$  beads/ml, while the streptavidin populations are at a concentration of  $\sim 1 \times 10^6$  beads/ml. *Technical Data Sheets PDS 250 and PDS 252.*

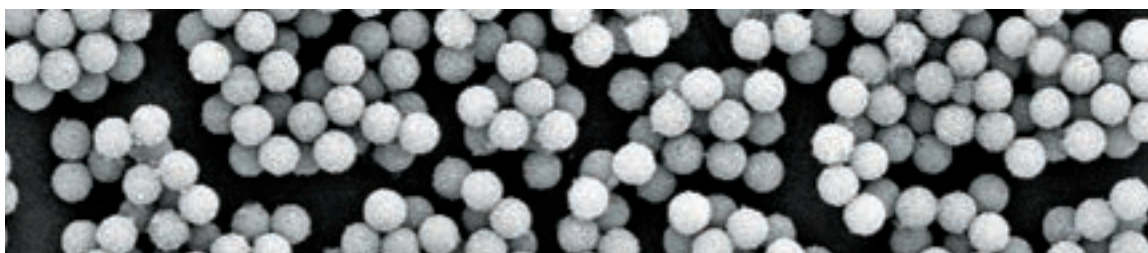
CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Carboxyl (5 dye intensities)	~6µm Magnetic	5 x 1 ml	BLI250A-1
Carboxyl (5 dye intensities)	~6µm Magnetic	5 x 5 ml	BLI250B-5
Carboxyl (5 dye intensities)	~6µm Magnetic	5 x 10 ml	BLI250C-10
Streptavidin (5 dye intensities)	~6µm Magnetic	5 x 1 ml	BLI252A-1
Streptavidin (5 dye intensities)	~6µm Magnetic	5 x 5 ml	BLI252B-5
Streptavidin (5 dye intensities)	~6µm Magnetic	5 x 10 ml	BLI252C-10

**QuantumPlex™M SP** | HAZARD CODE: A2dmw

QuantumPlexM is also available as a Single Population. *Technical Data Sheets PDS 251 and PDS 253.*

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Carboxyl	~6µm Magnetic	1 ml	BLI251A-1
Carboxyl	~6µm Magnetic	3 ml	BLI251B-3
Streptavidin	~6µm Magnetic	1 ml	BLI253A-1
Streptavidin	~6µm Magnetic	3 ml	BLI253B-3

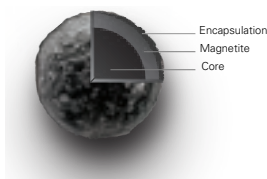
**Magnetic Microspheres & Particles**



**MAGNETIC MICROSPHERES AND PARTICLES**

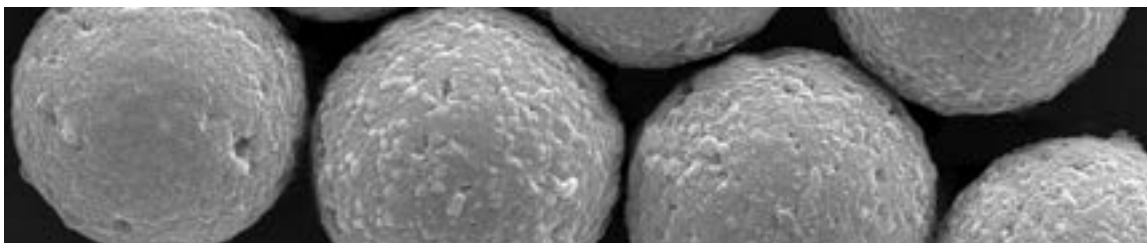
Superparamagnetic particles have been utilized extensively in diagnostic and other research applications for the capture of biomolecules and cells. They confer a number of benefits, including ease of separation and suitability for automation. Our comprehensive magnetic particle offerings allow us to address the unique requirements of specific assay systems, with options for particle diameter, morphology, surface properties, separation profile and other characteristics.

**Magnefy™** | HAZARD CODE: A2dmw



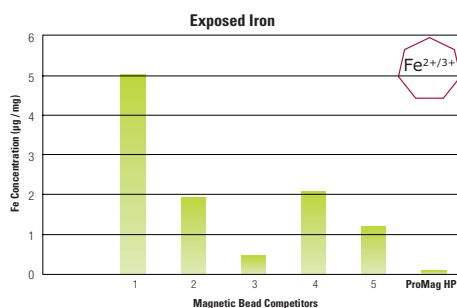
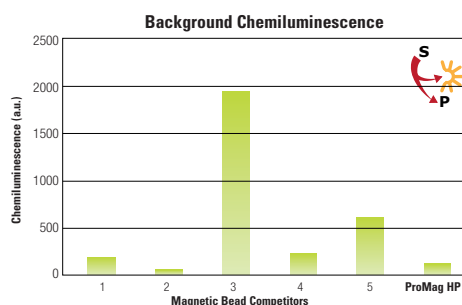
Magnefy are ~1µm high-performance superparamagnetic microspheres. As high surface area / high surface titer microparticles with a rapid separation profile, Magnefy offer a performance-driven solid phase for magnetic particle-based applications, including SPRI-based total DNA isolation (COOH), and molecular- and immunoassays. Contact us today to explore using Magnefy as your OEM magnetic SPRI bead. *Technical Data Sheet 1007.*

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Carboxyl - 5% Solids	1.0µm	5 ml	26410-5
Carboxyl - 5% Solids	1.0µm	10 ml	26410-10
Carboxyl - 5% Solids	1.0µm	25 ml	26410-25
Carboxyl - 5% Solids	1.0µm	100 ml	26410-100
Streptavidin - 1% Solids	1.0µm	1 ml	26444-1
Streptavidin - 1% Solids	1.0µm	2 ml	26444-2
Streptavidin - 1% Solids	1.0µm	5 ml	26444-5
Streptavidin - 1% Solids	1.0µm	10 ml	26444-10



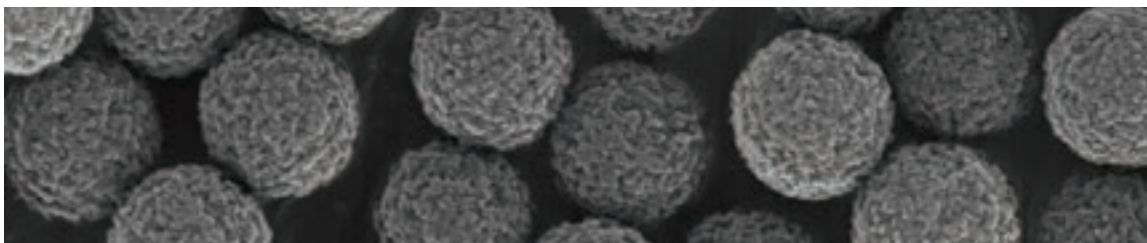
**ProMag® HP** | HAZARD CODE: A2dmw

ProMag High Performance (HP) are magnetic microspheres engineered for use in your most sensitive assays. In addition to superior handling and coating characteristics, ProMag HP possess the exceptionally low background chemiluminescence and stringent iron sequestration needed to achieve highest signal-to-noise ratios. *Technical Data Sheet 1003.*



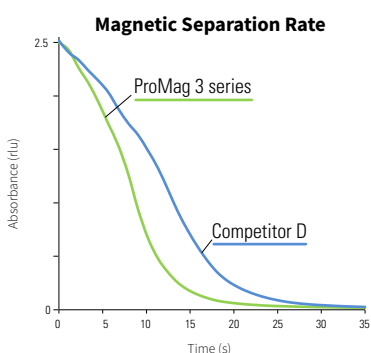
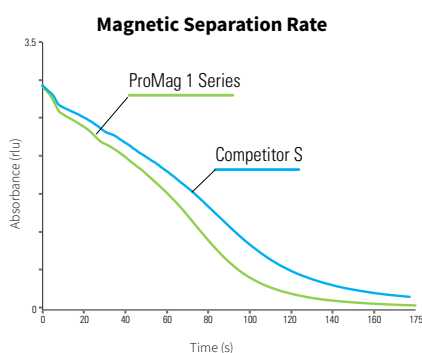
CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Carboxyl - 2.5% Solids	3µm	5 ml	25509-5
Carboxyl - 2.5% Solids	3µm	25 ml	25509-25
Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	1 ml	25508-1
Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	2 ml	25508-2
Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	5 ml	25508-5
Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	10 ml	25508-10

Magnetic Microspheres & Particles



ProMag® | HAZARD CODE: A2dmw

Offered in 1µm and 3µm diameters, ProMag are polymer-based magnetic spheres that support diagnostic applications requiring highly uniform, high-binding beads and fast separation times. ProMag also have a proprietary surface to reduce nonspecific binding in protein-based systems. *Technical Data Sheet 755.*



CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
1 Series • Carboxyl - 2.5% Solids	1µm	5 ml	25029-5
1 Series • Carboxyl - 2.5% Solids	1µm	25 ml	25029-25
3 Series • Carboxyl - 2.5% Solids	3µm	5 ml	86055-5
3 Series • Carboxyl - 2.5% Solids	3µm	25 ml	86055-25
3 Series • Amine - 2.5% Solids	3µm	5 ml	25510-5
3 Series • Amine - 2.5% Solids	3µm	25 ml	25510-25
1 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	1µm	1 ml	25031-1
1 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	1µm	2 ml	25031-2
1 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	1µm	5 ml	25031-5
1 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	1µm	10 ml	25031-10
3 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	1 ml	86056-1
3 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	2 ml	86056-2
3 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	5 ml	86056-5
3 Series • Streptavidin - 1% Solids - <i>Requires cold pack.</i>	3µm	10 ml	86056-10



**ProMag® Protein G** | HAZARD CODE: A2dmwx

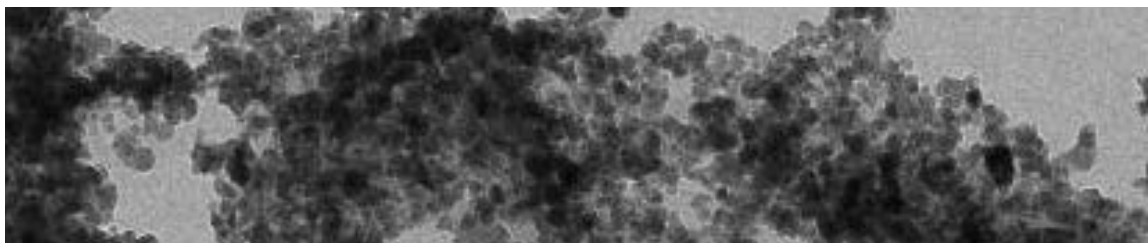
CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Protein G 3 Series • 1% Solids - <i>Requires cold pack.</i>	3µm	1 ml	25512-1
Protein G 3 Series • 1% Solids - <i>Requires cold pack.</i>	3µm	2 ml	25512-2
Protein G 3 Series • 1% Solids - <i>Requires cold pack.</i>	3µm	5 ml	25512-5
Protein G 3 Series • 1% Solids - <i>Requires cold pack.</i>	3µm	10 ml	25512-10

**Magnetic Sampler Packs**

Our many magnetic particle products uniquely address a wide range of applications in the life sciences, including cell isolations, affinity purifications, immunoassays, and molecular assays. For development efforts, our Magnetic Particle Sampler Packs allow you to test different particles to find which yield optimal performance characteristics in your specific system. We've taken our popular magnetic particles & packaged them together for your convenience offering, Magnefy™, BioMag®Plus, ProMag® 1 Series and ProMag® HP 3 Series.

CHARACTERISTICS	CATALOG #
Carboxyl Magnetic Sampler Pack, MFY0002, Magnefy™COOH - 5mL (5% solids) 50mg/mL, PMC1N, ProMag Series 1 COOH - 5mL (2.5% solids) 25mg/mL, PMC3HP, ProMag HP 3µm COOH - 5mL (2.5% solids) 25mg/mL, BP618, BioMagPlus COOH - 5mL (2% solids) 20mg/mL	BLI21940-1
Streptavidin Magnetic Sampler Pack, MFYS1N, Magnefy 1µm SA - 1mL (1% solids), PMS1N, ProMag 1 Series SA - 1mL (1% solids) 10mg/mL, PMS3HP, ProMag HP 3µm SA - 1mL (1% solids) 10mg/mL, BP628, BioMagPlus SA - 2mL (0.5% solids) 5mg/mL	BLI21950-1

**Magnetic Microspheres & Particles**



**BIOMAG®, BIOMAG®PLUS AND BIOMAG® MAXI**

BioMag, BioMag Plus and BioMag Maxi are high performance superparamagnetic microparticles widely used for the efficient separation of cells and purification of biomolecules. We offer three BioMag particle types: BioMag, BioMag Plus and BioMag Maxi. BioMag are ~1.5µm, while BioMag Plus are ~1.0µm and BioMag Maxi particles are ~6µm.

**BIOMAG® FUNCTIONALIZED**

**BioMag® Amine Magnetic Immobilization Kit** | HAZARD CODE: A2mw

**84001K**

The BioMag Magnetic Immobilization Kit works with our BioMag Amine particles to conjugate your proteins to magnetic amine particles.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> Unconjugated BioMag Amine particles (Cat. #84100), BioMag Flask Separator (Cat. #84101S) and ultrapure glutaraldehyde for conjugating your protein.	1 kit	84001K-1

**BioMag® Amine** | HAZARD CODE: A2dmw

**84100**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Concentration: 50 mg/ml Stoichiometry: 240 µmol/g	10 ml	84100-10
Concentration: 50 mg/ml Stoichiometry: 240 µmol/g	100 ml	84100-100

**BioMag® Plus Amine** | HAZARD CODE: A2dmw

**86001**

BioMag Plus Amine particles offer a high level of amine functionality on magnetically responsive particles. Covalent attachment of proteins can be done via a reaction with glutaraldehyde. *Technical Data Sheet 617.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Provided as a suspension at 50 mg/ml.	10 ml	86001-10

**BioMag® Plus Amine Protein Coupling Kit** | HAZARD CODE: HOV6d**86000**

The BioMag Plus Amine Protein Coupling Kit provides all reagents necessary for the covalent attachment of proteins to BioMag Plus Amine superparamagnetic particles. Contents of kit are sufficient for five coupling reactions.

*Technical Data Sheet 617.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 25ml BioMag Plus Amine (Cat. #86001), 2 x 10ml glutaraldehyde (EM Grade, 25%), 5 x 50ml conical centrifuge tubes, BioMag MultiSep Magnetic Separator (Cat. #85200-1), 2 x 125ml Pyridine Wash Buffer (PWB), 2 x 125ml Quenching Solution (1M Glycine, pH 8.0) and 125ml Wash Buffer.	1 kit	86000-1

**BioMag® Carboxyl** | HAZARD CODE: A2dmw**84125**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Concentration: 20 mg/ml Stoichiometry: 240 µmol/g	10 ml	84125-10
Concentration: 20 mg/ml Stoichiometry: 240 µmol/g	100 ml	84125-100

**BioMag® Plus Carboxyl** | HAZARD CODE: A2dmw**86011**

BioMag Plus Carboxyl superparamagnetic particles are provided for the covalent attachment of proteins using carbodiimide (EDAC method). *Technical Data Sheet 618.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Provided as a suspension at 20 mg/ml	10 ml	86011-10

**BioMag® Plus Carboxyl Protein Coupling Kit** | HAZARD CODE: HO6bd**86010**

The BioMag Plus Carboxyl Protein Coupling Kit includes all of the reagents necessary for the covalent attachment of proteins to BioMag Plus Carboxyl superparamagnetic particles. Contents of kit are sufficient for five coupling reactions.

*Technical Data Sheet 618.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 2.5ml BioMag Plus Carboxyl (Cat. #86011), 0.10g EDAC (1-ethyl-3-(3-dimethylaminopropyl) carbodiimide), 5 x 15ml conical centrifuge tubes, BioMag MultiSep Magnetic Separator (Cat. #85200-1), 2 x 175ml 0.05M MES buffer (pH 5.2), 25ml Quenching Solution (1.0M Glycine, pH 8.0) and 125ml Wash Buffer.	1 kit	86010-1

**BioMag® Maxi, ~6µm** | HAZARD CODE: A2dmw

BioMag Maxi are irregularly-shaped iron oxide particles of ~6µm in size. It has been shown that larger, denser particles are more efficient in immunomagnetic capture assays, particularly in viscous solutions. *Technical Data Sheet #722.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Amine (Concentration 50 mg/ml)	10 ml	84140-10
Carboxyl (Concentration 20 mg/ml)	10 ml	84130-10

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Magnetic Microspheres & Particles

#### BIOMAG® BINDING PROTEINS

#### BioMag® Streptavidin | HAZARD CODE: A2dmw

**84660**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Concentration: 5 mg/ml - <i>Requires cold pack.</i>	5 ml	84660-5
Concentration: 5 mg/ml - <i>Requires cold pack.</i>	50 ml	84660-50

#### BioMag® Plus Streptavidin | HAZARD CODE: A2dmw

**86031**

BioMag Plus Streptavidin Particles are a suspension of superparamagnetic particles approximately 1µm in size, covalently attached to streptavidin. BioMag Plus Streptavidin allows for capture of biotinylated oligonucleotides, proteins, dNTPs and other molecules. *Technical Data Sheet 621. Requires cold pack*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Provided as a suspension at ~5mg per ml.	10 ml	86031-10

#### BioMag® Plus Streptavidin / Biotin Binding Starter Kit | HAZARD CODE: A2dmw

**86030**

This kit contains all reagents needed for the attachment of biotinylated proteins to BioMag Plus superparamagnetic particles. Contents of kit are sufficient for five coupling reactions. *Technical Data Sheet #621*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 5ml of BioMag Plus Streptavidin (Cat. #86031), 250ml Coupling / Wash Buffer, BioMag MultiSep Magnetic Separator (Cat. #85200-1) and 5 x 15ml conical centrifuge tubes. - <i>Requires cold pack.</i>	1 kit	86030-1

#### BioMag® Streptavidin, Nuclease-Free | HAZARD CODE: A2dmw

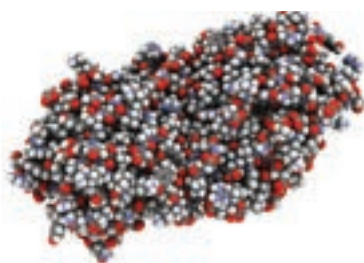
**8MB4804**

BioMag Streptavidin, Nuclease-Free is a suspension of BioMag Streptavidin particles for immobilizing biotinylated nucleic acids. *Requires cold pack.*

UNIT SIZE	CATALOG #
10 ml	8MB4804-10
25 ml	8MB4804-25
100 ml	8MB4804-1

**BioMag® Proteins A & G** | HAZARD CODE: A2dm

CHARACTERISTICS	UNIT SIZE	CATALOG #
Protein A Concentration: 5 mg/ml - <i>Requires cold pack.</i>	2 ml	84600-2
Protein A Concentration: 5 mg/ml - <i>Requires cold pack.</i>	10 ml	84600-10
Protein G Concentration: 5 mg/ml - <i>Requires cold pack.</i>	2 ml	84605-2
Protein G Concentration: 5 mg/ml - <i>Requires cold pack.</i>	10 ml	84605-10

**BioMag® Plus Concanavalin A** | HAZARD CODE: A2dmw**86057**

Con A- and WGA coated BioMag Plus microparticles provide a convenient means for isolating glycoproteins from serum or cell lysate, and for investigating other lectin/glycan-mediated processes. The BioMag Plus magnetic particle format provides high surface area, and permits easy and efficient separations.

BioMag Plus Concanavalin A (Con A) coated microparticles provide a convenient means for isolating mannosyl and glucosyl-containing glycoproteins and polysaccharides from serum or cell lysate, or for investigating other lectin / glycan-mediated processes. The BioMag Plus magnetic particle format provides high surface area and permits easy and efficient separations. BioMag Con A is used to adhere magnetic particles to cell nuclei for CUT&RUN, a chromatin profiling protocol that has several key advantages over chromatin immunoprecipitation (ChIP). *Technical Data Sheet 766. Requires cold pack.*

UNIT SIZE	CATALOG #
3 ml	86057-3
10 ml	86057-10

**BioMag® Plus Wheat Germ Agglutinin** | HAZARD CODE: A2dmw**86054**

The unique saccharide-binding properties of plant lectins, such as wheat germ agglutinin (WGA), have made them useful for the study of glycosylated proteins. Lectins have been used in cell adhesion studies, to effect lymphocyte activation, and to explore carbohydrate-based therapeutics.

Our WGA coated BioMag Plus microparticles provide a convenient means for isolating N-acetylglucosamine-containing glycoproteins from cell lysate or to explore other lectin / glycan-mediated processes. The BioMag Plus magnetic particle format provides high surface area, and permits easy and efficient separations. *Technical Data Sheet 759. Requires cold pack.*

UNIT SIZE	CATALOG #
3 ml	86054-3
10 ml	86054-10

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Magnetic Microspheres & Particles

#### BioMag® Secondary Antibody Particles | HAZARD CODE: A2dmw

CHARACTERISTICS	CONCENTRATION	BINDING CAPACITY	UNIT SIZE	CATALOG #
Goat anti-Human IgG - <i>Requires cold pack.</i>	1 mg/ml	>0.10 mg/ml	50 ml	84320-50
Goat anti-Human IgG (Fc Specific) - <i>Requires cold pack.</i>	5 mg/ml	>0.20 mg/ml	50 ml	84324-50
Goat anti-Human IgM - <i>Requires cold pack.</i>	1 mg/ml	>0.15 mg/ml	50 ml	84325-50
Goat anti-Mouse IgG - <i>Requires cold pack.</i>	1 mg/ml	>0.20 mg/ml	50 ml	84340-50
Goat anti-Mouse IgG - <i>Requires cold pack.</i>	1 mg/ml	>0.20 mg/ml	500 ml	84340-500
Goat anti-Mouse IgG (Fc Specific) - <i>Requires cold pack.</i>	5 mg/ml	>0.15 mg/ml	50 ml	84344-50
Goat anti-Mouse IgG (Fc Specific) - <i>Requires cold pack.</i>	5 mg/ml	>0.15 mg/ml	500 ml	84344-500
Goat anti-Mouse IgM - <i>Requires cold pack.</i>	1 mg/ml	>0.20 mg/ml	50 ml	84350-50
Goat anti-Mouse IgM - <i>Requires cold pack.</i>	1 mg/ml	>0.20 mg/ml	500 ml	84350-500
Goat anti-Rabbit IgG - <i>Requires cold pack.</i>	1 mg/ml	>0.20 mg/ml	50 ml	84300-50
Goat anti-Rabbit IgG - <i>Requires cold pack.</i>	1 mg/ml	>0.20 mg/ml	500 ml	84300-500
Goat anti-Rat IgG - <i>Requires cold pack.</i>	1 mg/ml	>0.15 mg/ml	50 ml	84330-50
Goat anti-Rat IgG - <i>Requires cold pack.</i>	1 mg/ml	>0.15 mg/ml	500 ml	84330-500
Goat anti-Rat IgG (Fc Specific) - <i>Requires cold pack.</i>	5 mg/ml	>0.20 mg/ml	50 ml	84334-50
Goat anti-Rat IgG (Fc Specific) - <i>Requires cold pack.</i>	5 mg/ml	>0.20 mg/ml	500 ml	84334-500

#### BioMag® Plus Goat anti-Mouse IgG Secondary Antibody Particles | HAZARD CODE: A2dmw

**86021**

*Technical Data Sheet 619.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Concentration: 1 mg/ml Binding Capacity: >0.20 mg/ml - <i>Requires cold pack.</i>	50 ml	86021-50

#### BioMag® Plus Goat anti-Mouse IgG Particle Antibody Coupling Starter Kit | HAZARD CODE: A2dmw

**86020**

This kit includes all of the reagents for the attachment of antibodies to BioMag Plus superparamagnetic particles. Contents of the kit are sufficient for five binding reactions. *Technical Data Sheet #619.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 25ml BioMag Plus anti-Mouse IgG (Cat. #86021), 250ml Coupling / Wash Buffer, 5 x 15ml conical centrifuge tubes and BioMag MultiSep Magnetic Separator (Cat. #85200-1). - <i>Requires cold pack.</i>	1 kit	86020-1

## ADDITIONAL BIOMAG

**BioMag® Dextran-coated Charcoal** | HAZARD CODE: A2dmw

BioMag® Superparamagnetic Iron Oxide may be used for applications in which an iron oxide particle is required. Particles are ~10µm irregularly-shaped iron oxide clusters, and are non-functionalized. The suspension is supplied in deionized water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Charcoal (Concentration: 5 mg/ml)	100 ml	84510-100
Charcoal Concentrate (Concentration: 50 mg/ml)	1000 ml	84555-1

**BioMag® Superparamagnetic Iron Oxide, ~10µm** | HAZARD CODE: A2dmw**84200**

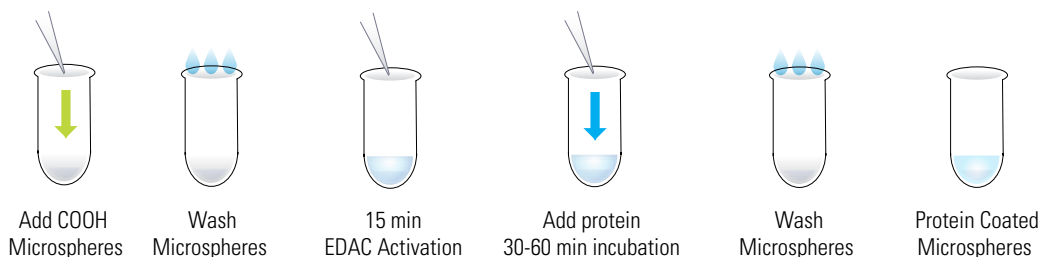
This is a suspension of non-functionalized iron oxide magnetic particles approximately 10µm in size.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Suspension is supplied in deionized water. Magnetization: 25 - 35 EMU / gram (EMU=electromagnetic units) measured at a field of 1000 gauss. (Concentration: 50 mg/ml)	10 ml	84200-10





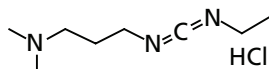
## PROTEIN COUPLING KITS

**PolyLink Protein Coupling Kit** | HAZARD CODE: H06bf**24350**

The PolyLink Protein Coupling Kit enables researchers to quickly couple proteins to carboxylated microspheres in two hours or less. The procedure provided with the kit has been optimized for polymer microspheres 1 $\mu$ m or larger. *Technical Data Sheet 644.*

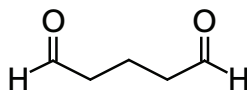
CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 55ml Coupling Buffer, 45ml Wash / Storage Buffer and 0.75g EDAC. Each kit is sufficient for 50 coupling reactions of 200-500g of protein per reaction. <i>(No beads are included in this kit.)</i>	1 kit	24350-1

## MICROSPHERE COATING REAGENTS

**DEPC-Carbodiimide (EDAC)** | HAZARD CODE: H06bf**BLI5288**

EDAC is a zero-length crosslinker that is routinely used for the covalent binding of amine-containing ligands to carboxylated microspheres. *Technical Data Sheet 911.*

UNIT SIZE	CATALOG #
1 g	BLI5288-1
5 g	BLI5288-5

**Glutaraldehyde, EM Grade, 25%** CAS #: 111-30-8 | HAZARD CODE: HOV6d**BLI1909**

Glutaraldehyde, EM Grade, 25%, is a homobifunctional linker that is suitable for binding amine-containing ligands to amine-modified beads. We supply EM (electron microscopy) grade glutaraldehyde in ampoules to ensure the highest activity. Each ampoule is fitted with an ampoule cracker for added safety. *Technical Data Sheet 911.*

UNIT SIZE	CATALOG #
10 x 10 ml	BLI1909-10

**Accessory Reagents & Companion Products**

**BUFFERS & SOLUTIONS**

**Bead Solution** | HAZARD CODE: Ad

**24973**

Polysciences' Bead Solution is a ready-to-use aqueous suspending solution for the dilution and/or storage of your uncoated plain, dyed or functionalized polymer microspheres (both carboxylated or aminated). An antimicrobial agent deters microbial contamination, and stabilizers promote suspension dispersity, peace of mind and harmonious accord in the laboratory. *Technical Data Sheet 793.*

UNIT SIZE	CATALOG #
500 ml	24973-500
1000 ml	24973-1000
2000 ml	24973-2000

**Bead Coupling & Storage Buffers** | HAZARD CODE: Ad

Polysciences' Bead Coupling and Storage Buffers are ready-to-use buffers that are available in a variety of pH levels (4.5 to 9.0). They can be used as coupling or wash buffers for plain, dyed or functionalized polymer microspheres. *Technical Data Sheet 794.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Coupling Buffer - pH 4.5	250 ml	24976-250
Coupling Buffer - pH 4.5	500 ml	24976-500
Coupling Buffer - pH 4.5	1000 ml	24976-1000
Coupling Buffer - pH 4.5	2000 ml	24976-2000
Coupling Buffer - pH 6.0	250 ml	24977-250
Coupling Buffer - pH 6.0	500 ml	24977-500
Coupling Buffer - pH 6.0	1000 ml	24977-1000
Coupling Buffer - pH 6.0	2000 ml	24977-2000
Coupling Buffer - pH 7.4	250 ml	24974-250
Coupling Buffer - pH 7.4	500 ml	24974-500
Coupling Buffer - pH 7.4	1000 ml	24974-1000
Coupling Buffer - pH 7.4	2000 ml	24974-2000
Coupling Buffer - pH 9.0	250 ml	24978-250
Coupling Buffer - pH 9.0	500 ml	24978-500
Coupling Buffer - pH 9.0	1000 ml	24978-1000
Coupling Buffer - pH 9.0	2000 ml	24978-2000
Storage Buffer - pH 7.4	250 ml	24979-250
Storage Buffer - pH 7.4	500 ml	24979-500
Storage Buffer - pH 7.4	1000 ml	24979-1000
Storage Buffer - pH 7.4	2000 ml	24979-2000

**Bead Coupling & Storage Buffers *continued***

CHARACTERISTICS	UNIT SIZE	CATALOG #
Storage Buffer - pH 8.5	250 ml	24975-250
Storage Buffer - pH 8.5	500 ml	24975-500
Storage Buffer - pH 8.5	1000 ml	24975-1000
Storage Buffer - pH 8.5	2000 ml	24975-2000

## SURFACTANTS

**Tween® 20 Nonionic Surfactant** | HAZARD CODE: A2g**BLI6110**

A nonionic surfactant, Tween® 20 is often used in the storage buffers of coated bead suspensions. Very low concentrations may be used in wash or binding buffers if needed (e.g. 0.0005%). *Technical Data Sheet 912.*

UNIT SIZE	CATALOG #
10 g	BLI6110-10

**Sodium Dodecyl Sulfate (SDS) Anionic Surfactant****BLI3945**

SDS is an anionic surfactant, which will decrease polymer bead hydrophobicity and can additionally participate in charge stabilization of the suspension. SDS is a more rigorous surfactant than is commonly used in uncoated polymer bead preparations. *Technical Data Sheet 912.*

UNIT SIZE	CATALOG #
10 g	BLI3945-10

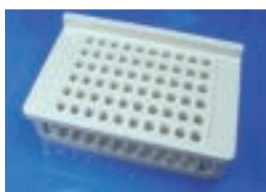
## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Magnetic Separators

#### MAGNETIC SEPARATORS

#### BioMag® 12 x 75mm Test Tube Separator

84104S



The BioMag 12 x 75mm Test Tube Separator holds sixty 12 x 75mm tubes for radio-immunoassays or other applications. BioMag particles pellet at the bottom of the test tube. *Technical Data Sheets 573 and 796.*

UNIT SIZE	CATALOG #
1 unit	84104S-1

#### BioMag® 15ml / 50ml Tube Separator

84102S



BioMag 15ml / 50ml Tube Separator holds five 15ml tubes and three 50ml tubes for cell sorting, small-scale ligand attachment and other applications. *Technical Data Sheets 572 and 796.*

UNIT SIZE	CATALOG #
1 unit	84102S-1

#### BioMag® Flask Separator

84101S



For use with tissue culture flasks, each BioMag Flask Separator measures 12.5 x 6cm. For more concentrated solutions of BioMag particles, two units are recommended, one on each side of the flask. *Technical Data Sheets 571 and 796.*

UNIT SIZE	CATALOG #
1 unit	84101S-1

#### BioMag® MultiSep Magnetic Separator

85200



The BioMag MultiSep Magnetic Separator is well suited for labs that do not need to perform simultaneous multiple magnetic particle separations and is a convenient and economical alternative to having a specific magnetic separator for each tube size. The MultiSep can be used with 50ml, 15ml or 1.5ml centrifuge tubes. *Technical Data Sheets 791 and 796.*

UNIT SIZE	CATALOG #
1 unit	85200-1

**BioMag® Multi-6 Microcentrifuge Tube Separator****8MB4111S**

This separator holds six 1.5ml microcentrifuge tubes for separations of 20 - 500 $\mu$ l. *Technical Data Sheets 576 and 796.*

UNIT SIZE	CATALOG #
1 unit	8MB4111S-1

**BioMag® Multi-32 Microcentrifuge Tube Separator****84106S**

The BioMag Multi-32 Microcentrifuge Tube Separator is suitable for molecular biology applications of 0.5 - 1.5ml. Sixteen tubes in the inner row are magnetically separated while the sixteen in the outer row are held outside the field for mixing and pipetting. *Technical Data Sheets 574 and 796.*

UNIT SIZE	CATALOG #
1 unit	84106S-1

**BioMag® Solo-Sep Microcentrifuge Tube Separator****8MB4112S**

The BioMag Solo-Sep Microcentrifuge Tube Separator holds one 1.5ml microcentrifuge tube for molecular biology separations of 20 - 500 $\mu$ l. *Technical Data Sheets 577 and 796.*

UNIT SIZE	CATALOG #
1 unit	8MB4112S-1

**BioMag® 96-Well Plate Separator****8MB4109S**

The BioMag 96-Well Plate Separator is suitable for most 96-well plate applications. Particles pellet at the bottom of the plate. *Technical Data Sheets 575 and 796.*

UNIT SIZE	CATALOG #
1 unit	8MB4109S-1

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Magnetic Separators

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#### BioMag® 96-Well Plate Side Pull Magnetic Separator

**85072S**



The BioMag 96-Well Plate Side Pull Magnetic Separator is designed to work with plates that allow magnetic pins to fit between the wells. This allows BioMag and BioMag Plus superparamagnetic particles to be pulled to the side of the wells, giving better access to the bottom of the wells for more complete fluid removal and less chance of particle aspiration. Consists of 24 permanent Neodymium-Iron-Boron rod magnets. Each magnet addresses four wells of a 96-well plate. *Technical Data Sheets 575 and 796.*

UNIT SIZE	CATALOG #
1 unit	85072S-1

#### Neodymium Iron Magnet

**19772**

This rare earth magnet is a Neodymium-Iron-Boron (NdFeB) block magnet. It measures 1" square and 0.5" thick.

UNIT SIZE	CATALOG #
1 unit	19772-1

### OTHER EQUIPMENT

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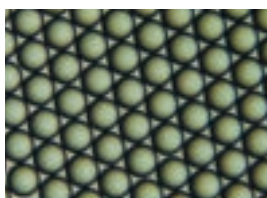
#### Vivaspin® Ultrafiltration Device

**BLIAA022**



Vivaspin Concentrators are disposable ultrafiltration devices that may be utilized for the washing and concentration of submicron (20 nm - 0.5  $\mu$ m) microspheres. *PDSA022.*

UNIT SIZE	CATALOG #
5 units	BLIAA022-5

**Poly(Lactic Acid-co-Glycolic Acid) Uniform Dry Microspheres** | HAZARD CODE: HK5cd**Contact us.**

Polysciences' synthesis capabilities include PLGA microspheres with discrete diameters in the range of ~100µm. PLGA formulations may be customized to your specifications for controlled degradation rate measurements, or prototype scaffolds or devices. Contact us to learn more.

**Polystyrene Beads, Large** | HAZARD CODE: A2g

Our crosslinked Polystyrene Beads are larger than Polybeads yet smaller than Polyballs. We offer a full size range of polystyrene beads and can offer particles of intermediate sizes on a custom basis. *Technical Data Sheet 856.*

UNIT SIZE RANGE	UNIT SIZE	CATALOG #
200 - 300µm	1 g	19825-1
355 - 425µm	1 g	19826-1
500 - 600µm	1 g	21392-1

**Polyballs** | HAZARD CODE: A2g

Uniform spheres with a smooth surface unless noted otherwise. *Technical Data Sheet 404.*

CHARACTERISTICS	DENSITY	UNIT SIZE	CATALOG #
Polyamide 6/6 (Nylon), 1/16" Diameter	~1.19 g/cc	100 balls	08295-100
Polyethylene, 3/8" Diameter, Hollow	~0.53 g/cc	100 balls	19529-100
Polypropylene, 1/4" Diameter	~0.92 g/cc	100 balls	16026-100
Polystyrene, 1/8" Diameter, Etched Surface	~1.05 g/cc	100 balls	17175-100
Polystyrene, 1/8" Diameter, for Biological Applications	~1.05 g/cc	100 balls	18547-100
Polystyrene, 1/4" Diameter	~1.05 g/cc	100 balls	19827-100
Polystyrene, 1/4" Diameter, Etched Surface	~1.05 g/cc	100 balls	16730-100
Polystyrene, 1/4" Diameter, Etched Surface	~1.05 g/cc	500 balls	16730-500
Polystyrene, 1/4" Diameter, for Biological Applications	~1.05 g/cc	100 balls	18548-100

**Polyballs, Modified** | HAZARD CODE: A2g

Our high quality Polyball polymer spheres are offered with modified surfaces to allow covalent coupling of biomolecules. One version is blue dyed for easier visualization. *Technical Data Sheet 404.*

CHARACTERISTICS	DENSITY	UNIT SIZE	CATALOG #
Polystyrene 1/8" Diameter, Carboxylate	~1.05 g/cc	100 balls	19841-50
Polystyrene 1/4" Diameter, Carboxylate	~1.05 g/cc	100 balls	19840-50
Polystyrene 1/4" Diameter, Blue Dyed	~1.05 g/cc	100 balls	19842-50

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Additional Microparticles

#### Polybead® Hollow Microspheres | HAZARD CODE: A2dm

Polybead Hollow Microspheres are spherical styrene / acrylic beads supplied in suspension. A relatively dense shell of a polystyrene-based copolymer is formed around a void in the particle. Sphere voids are water-filled in the as-supplied 5% aqueous suspension, and the water-filled particle will have an effective density near 1.0 g/cm<sup>3</sup>. Water is lost from the void upon drying since the particles are slightly porous. This results in a hollow particle with a shell approximately 0.10µm thick. Surfactants on the surface of the microspheres help stabilize the particles.

*Technical Data Sheet 784.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.40µm	10 ml	23567-10
0.55µm	10 ml	23568-10
1.00µm	10 ml	23569-10

#### Polybead® Poly(methyl methacrylate) Microspheres | HAZARD CODE: A2dm

Poly(methyl methacrylate) or PMMA is less hydrophobic than polystyrene and should show reduced nonspecific protein and peptide binding. The density of these beads, 1.19 g/cc, is considerably higher than that of polystyrene beads, making them easier to concentrate by centrifugation. The beads are not free of surfactant and contain surface carboxylic acid groups at higher concentration than the standard Polybead Polystyrene Carboxylate Microspheres.

*Technical Data Sheet 1001.*

CHARACTERISTICS	% SOLIDS	SIZE RANGE	UNIT SIZE	CATALOG #
Monodisperse	2.5	0.30 µm	10 ml	12083-10
Broad Distribution	5	1 - 10 µm	10 ml	19130-10
PMMA Anionic Surfactant	5	0.08 - 0.09 µm	10 ml	23570-10

#### Polybead® Crosslinked Melamine Particles | HAZARD CODE: A2dm

**23579**

Crosslinked by acid-catalyzed reaction with formaldehyde, the Polybead Crosslinked Melamine Particles have a much higher density (1.51 g/cc) than polystyrene, are hydrophilic with amine and methylolamine groups and, being crosslinked, are not noticeably swelled by organic solvents. They can be lyophilized and then redispersed in water.

*Technical Data Sheet 920.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Supplied as a suspension of 2.5% solids in water. Nom. Dia.: 1µm	5 ml	23579-5

#### Phenolic Beads, Hollow

**17806**

Hollow Phenolic Beads are excellent for use in a variety of industrial applications. They are lightweight, chemically inert and mechanically strong. They can be excellent adhesives, gap filling formulations, sandable putties, syntactic foams and molded and laminated structures that must be lightweight and strong. *Technical Data Sheet 783.*

UNIT SIZE	CATALOG #
100 g	17806-100



**Poly(ethyl methacrylate) Beads** CAS# 9003-42-3 | HAZARD CODE: A2g**03197**

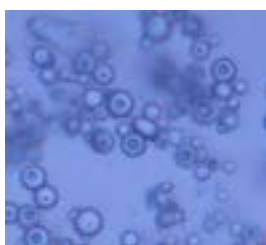
These Poly(ethyl methacrylate) Beads are made of a tough methacrylate resin and are available in a size range of 140 - 220 $\mu$ m. *Technical Data Sheet 920.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 50,000, T <sub>g</sub> 65°C	250 g	03197-250

**Polypropylene, Chromatographic Grade** CAS#: 9003-07-0 | [-CH<sub>2</sub>CH(CH<sub>3</sub>)-]<sub>n</sub> | HAZARD CODE: A2g**04342**

Widely used polyolefin and soluble in chlorinated hydrocarbons, aromatic hydrocarbons and isoamyl acetate. *Technical Data Sheet 920.*

CHARACTERISTICS	UNIT SIZE RANGE	UNIT SIZE	CATALOG #
Chromatographic Grade 25 - 85 $\mu$ m, mp 165°, T <sub>g</sub> -13°	25 - 85 $\mu$ m	100 g	04342-100

**Glass Beads** | HAZARD CODE: A2g

Polysciences has a full size range of glass beads that are manufactured from specially selected soda lime glass with a density of ~2.48 g/cm<sup>3</sup>. Glass beads are supplied dry. *Technical Data Sheets 758 and 857.*

SIZE RANGE	UNIT SIZE	CATALOG #
3 - 10 $\mu$ m	1 g	07666-1
10 - 30 $\mu$ m	1 g	07668-1
30 - 50 $\mu$ m	100 g	18901-100
50 - 100 $\mu$ m	100 g	15926-100
105 - 150 $\mu$ m	100 g	15927-100
150 - 210 $\mu$ m	250 g	05483-250
210 - 250 $\mu$ m	100 g	18902-100
250 - 300 $\mu$ m	100 g	18903-100
355 - 420 $\mu$ m	100 g	18905-100
420 - 500 $\mu$ m	100 g	18906-100
500 - 850 $\mu$ m	250 g	17596-250

**Glass Beads, Hollow** | HAZARD CODE: A2g**19823**

Our hollow glass beads offer the strength and stability of glass at 1.1 g/cc nominal density. *Technical Data Sheet 744.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Size Range: 2 - 20 $\mu$ m.	5 g	19823-5

## MICROSPHERES & PARTICLES / TEST DEVELOPER

### Additional Microspheres

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#### Glass Beads, Functionalized | HAZARD CODE: H3g

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These are high surface area soda lime glass beads that have been functionalized by reaction with the appropriate organosilane. Prior to organosilane treatment, the surfaces of the glass particles are etched to increase the surface area. They are capable of coupling with peptides, dyes and other compounds, the amine-functional beads as supplied and the glycidyl-functional beads after periodate oxidation. Additional sizes are available on a custom basis. *Technical Data Sheet 758.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Amine (Size Range: 30 - 50 $\mu$ m.)	10 g	23584-10
Glycidyl (Size Range: 30 - 50 $\mu$ m.)	10 g	23585-10

#### Red Iron Oxide Particles | HAZARD CODE: A2g

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**07674**

*Technical Data Sheet #607.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.3 - 0.8 $\mu$ m	1 g	07674-1

#### Spherical Ferromagnetic Iron Powder | HAZARD CODE: H2bg

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**19844**

*Technical Data Sheet 604.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
~2 - 3 $\mu$ m.	1 g	19844-1

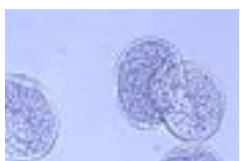
## BIOLOGIC PARTICLES

**Corn Pollen** | HAZARD CODE: A2g**07664***Technical Data Sheet 919.*

SIZE RANGE	UNIT SIZE	CATALOG #
85 - 90µm	1 g	07664-1

**Paper Mulberry Pollen** | HAZARD CODE: A2g**07670***Technical Data Sheet 919.*

SIZE RANGE	UNIT SIZE	CATALOG #
12 - 13µm	1 g	07670-1

**Pecan Pollen** | HAZARD CODE: A2g**07671***Technical Data Sheet 919.*

SIZE RANGE	UNIT SIZE	CATALOG #
45 - 52µm	1 g	07671-1

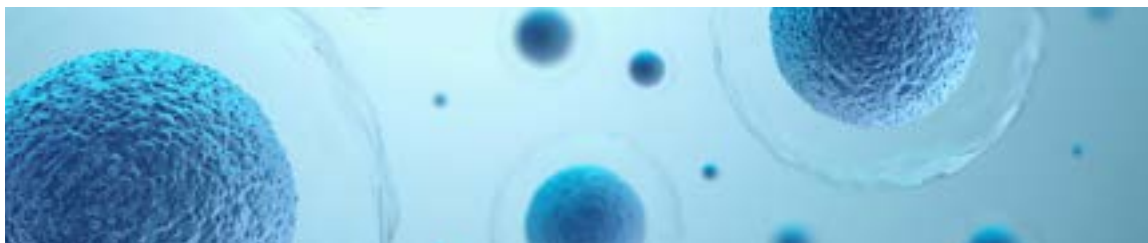
**Ragweed Pollen** | HAZARD CODE: A2g**07673***Technical Data Sheet 919.*

SIZE RANGE	UNIT SIZE	CATALOG #
19 - 20µm	1 g	07673-1

**Lycopodium** | HAZARD CODE: A4g**16867***Technical Data Sheet 281.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
28µm	1 g	16867-1

**Cell Separations**



CELL SEPARATIONS

**BioMag® SelectaPure™ anti-Human Leukocyte Particles** | HAZARD CODE: A2dm

BioMag SelectaPure anti-Human CD IgG-coated particles are produced by covalently attaching murine monoclonal antibodies to BioMag particles. The antibodies were prepared against human leukocyte differentiation antigens. Each product is supplied in phosphate-buffered saline with EDTA and sodium azide added as stabilizers, and should be washed in sterile media prior to use to remove the preservative. *Requires cold pack.*

CHARACTERISTICS	CONCENTRATION	CELLULAR DISTRIBUTION	UNIT SIZE	CATALOG #
SelectaPure anti-Human CD2	~4 mg/ml	Thymocytes, T cells	5 ml	85002-5
SelectaPure anti-Human CD8	~1.5 mg/ml	Suppressor Cytotoxic T cells	5 ml	85008-5
SelectaPure anti-Human CD11b	~1 mg/ml	Activated Lymphocytes, Monocytes	5 ml	85011-5
SelectaPure anti-Human CD14	~1.5 mg/ml	Monocytes	5 ml	85014-5
SelectaPure anti-Human CD34	~4 mg/ml	Myeloid cells	5 ml	85034-5
SelectaPure anti-Human CD45	~4 mg/ml	Common Leukocyte cells	5 ml	85045-5
SelectaPure anti-Human CD56	~4 mg/ml	NK cells, Neuroectodermal cells	5 ml	85056-5
SelectaPure anti-Human CD71	~4 mg/ml	Proliferating Neoplastic cells	5 ml	85071-5

**BioMag® SelectaPure™ anti-Mouse Leukocyte Particles** | HAZARD CODE: A2dm

BioMag SelectaPure anti-Mouse particles are available for the isolation of CD4+, CD8a+ and CD45R murine lymphocytes. *Requires cold pack.*

CHARACTERISTICS	CONCENTRATION	CELLULAR DISTRIBUTION	UNIT SIZE	CATALOG #
anti-Mouse CD4	~1 mg/ml	T Helper	5 ml	85104-5
anti-Mouse CD8a	~1 mg/ml	Suppressor Cytotoxic T cells	5 ml	85108-5
anti-Mouse CD45R	~1 mg/ml	Restricted Leukocyte cells	5 ml	85145-5

**BioMag® Secondary Antibody Particles** | HAZARD CODE: A2dmw

Requires cold pack.

CHARACTERISTICS	CONCENTRATION	BINDING CAPACITY	UNIT SIZE	CATALOG #
Goat anti-Human IgG	1 mg/ml	>0.10 mg/ml	50 ml	84320-50
Goat anti-Human IgG (Fc Specific)	5 mg/ml	>0.20 mg/ml	50 ml	84324-50
Goat anti-Human IgM	1 mg/ml	>0.15 mg/ml	50 ml	84325-50
Goat anti-Mouse IgG	1 mg/ml	>0.20 mg/ml	50 ml	84340-50
Goat anti-Mouse IgG	1 mg/ml	>0.20 mg/ml	500 ml	84340-500
Goat anti-Mouse IgG (Fc Specific)	5 mg/ml	>0.15 mg/ml	50 ml	84344-50
Goat anti-Mouse IgG (Fc Specific)	5 mg/ml	>0.15 mg/ml	500 ml	84344-500
Goat anti-Mouse IgM	1 mg/ml	>0.20 mg/ml	50 ml	84350-50
Goat anti-Mouse IgM	1 mg/ml	>0.20 mg/ml	500 ml	84350-500
Goat anti-Rabbit IgG	1 mg/ml	>0.20 mg/ml	50 ml	84300-50
Goat anti-Rabbit IgG	1 mg/ml	>0.20 mg/ml	500 ml	84300-500
Goat anti-Rat IgG	1 mg/ml	>0.15 mg/ml	50 ml	84330-50
Goat anti-Rat IgG	1 mg/ml	>0.15 mg/ml	500 ml	84330-500
Goat anti-Rat IgG (Fc Specific)	5 mg/ml	>0.20 mg/ml	50 ml	84334-50
Goat anti-Rat IgG (Fc Specific)	5 mg/ml	>0.20 mg/ml	500 ml	84334-500

**BioMag® Plus Goat anti-Mouse IgG Secondary Antibody Particles** | HAZARD CODE: A2dmw

**86021**

Technical Data Sheet 619. Requires cold pack.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Concentration: 1 mg/ml Binding Capacity: >0.20 mg/ml.	50 ml	86021-50

**BioMag® Plus Goat anti-Mouse IgG Particle Antibody Coupling Starter Kit** | HAZARD CODE: A2dmw

**86020**

Technical Data Sheet 619. Requires cold pack.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 25ml BioMag Plus anti-Mouse IgG (Cat. #86021), 250ml Coupling / Wash Buffer, 5 x 15ml conical centrifuge tubes and BioMag MultiSep Magnetic Separator (Cat. #85200-1).	1 kit	86020-1

## MICROSPHERES & PARTICLES / MAGNETIC BIOSEPARATIONS

### Cell Separations

#### BioMag® Plus Mouse anti-Fluorescein IgG | HAZARD CODE: A2dm

86053

BioMag Plus Mouse anti-Fluorescein IgG particles are a suspension of superparamagnetic particles covalently coupled to Mouse anti-Fluorescein IgG antibodies. They are supplied at 1 mg/ml in Phosphate Buffered Saline (pH 7.4) with EDTA and sodium azide added as stabilizers and are used for the magnetic separation of fluoresceinated cells, components or complexes from solution. *Technical Data Sheet 692. Requires cold pack.*

UNIT SIZE	CATALOG #
50 ml	86053-50

### ANTIBODY ISOLATIONS

#### BioMag® Proteins A & G | HAZARD CODE: A2dm

CHARACTERISTICS	UNIT SIZE	CATALOG #
Protein A Concentration: 5 mg/ml - <i>Requires cold pack.</i>	2 ml	84600-2
Protein A Concentration: 5 mg/ml - <i>Requires cold pack.</i>	10 ml	84600-10
Protein G Concentration: 5 mg/ml - <i>Requires cold pack.</i>	2 ml	84605-2
Protein G Concentration: 5 mg/ml - <i>Requires cold pack.</i>	10 ml	84605-10

#### BioMag® Plus Protein A | HAZARD CODE: A2dm

86041

BioMag Plus Protein A Particles are superparamagnetic particles approximately 1µm in size with Protein A covalently attached. Isolation of immunoglobulins using BioMag Plus Protein A Particles allows isolation from small samples (50 microliters or less), as well as the option to easily scale up to larger samples. *Technical Data Sheet 620. Requires cold pack.*

UNIT SIZE	CATALOG #
2 ml	86041-2
10 ml	86041-10

#### BioMag® Plus Protein G | HAZARD CODE: A2dm

86051

BioMagPlus Protein G Particles are superparamagnetic particles approximately 1µm in size that have Protein G covalently attached. Isolation of immunoglobulins using BioMag Plus Protein G particles allows isolation from small samples (50 microliters or less), as well as the option to easily scale up to larger samples. *Technical Data Sheet 620. Requires cold pack.*

UNIT SIZE	CATALOG #
2 ml	86051-2
10 ml	86051-10

**BioMag® Plus Protein A Antibody Isolation Starter Kit** | HAZARD CODE: A2dm

**86040**

The kit contains all the reagents necessary for the isolation of antibodies from serum and cell culture supernatants. Contents of the kit are sufficient for five binding reactions. *Technical Data Sheet 620.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 2.5ml BioMag Plus Protein A (Cat. #86041), 10 x 1.5ml microcentrifuge tubes, 50ml Protein A Binding / Wash Buffer, BioMag SoloSep Microcentrifuge Tube Separator (Cat. #8MB4112S-1), 5ml Protein A Elution Buffer and 1ml Protein A Neutralization Buffer. <i>Requires cold pack.</i>	1 kit	86040-1

**BioMag® Plus Protein G Antibody Isolation Starter Kit** | HAZARD CODE: A2dm

**86050**

The kit contains all the reagents necessary for the isolation of antibodies from serum and cell culture supernatants. Contents of the kit are sufficient for five binding reactions. *Technical Data Sheet 620.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 2.5ml BioMag Plus Protein G (Cat. #86051), 10 x 1.5ml microcentrifuge tubes, 50ml Protein G Binding / Wash Buffer, BioMag SoloSep Microcentrifuge Tube Separator (Cat. #8MB4112S-1), 5ml Protein G Elution Buffer and 1ml Protein G Neutralization Buffer. <i>Requires cold pack.</i>	1 kit	86050-1

PROTEIN REMOVAL

**BioMag® ProMax Albumin Removal Kit** | HAZARD CODE: A2dm

**24351**

Based on patented BioMag® superparamagnetic particle technology, the ProMax Albumin Removal Kit depletes albumin from human serum samples in 30 minutes or less. ProMax Albumin Removal particles, along with optimized buffers, allow the binding and release of the less abundant proteins in serum while minimizing the binding of albumin, so that it may be washed away. The kit is supplied with all components needed for carrying out 25 procedures. *Technical Data Sheet 658.*

UNIT SIZE	CATALOG #
1 kit	24351-1

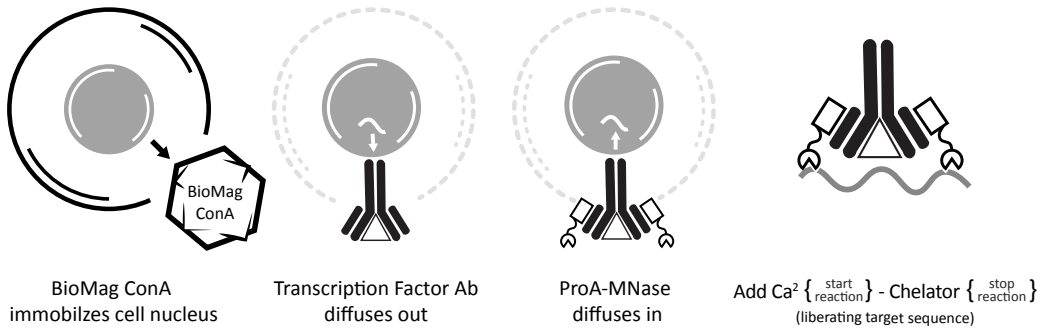
**BioMag® ProMax Serum IgG Removal Kit** | HAZARD CODE: A2dm

**24352**

Reveal biomarkers in four easy steps. Based on patented BioMag superparamagnetic particle technology, the ProMax Serum IgG Removal Kit selectively removes IgG from human serum samples in less than 30 minutes. The kit contains enough ProMax IgG Removal particles and optimized buffers for 10 reactions. Remove serum albumin from your IgG depleted samples with the ProMax Albumin Removal Kit. *Technical Data Sheet 659. Requires cold pack.*

UNIT SIZE	CATALOG #
1 kit	24352-1

Glycan / Glycoprotein Capture



*BioMag Con A used in CUT&RUN*

**BioMag® Plus Concanavalin A** | HAZARD CODE: A2dmw

**86057**

BioMag Plus Concanavalin A (Con A) coated microparticles provide a convenient means for isolating mannosyl and glucosyl-containing glycoproteins and polysaccharides from serum or cell lysate, or for investigating other lectin / glycan-mediated processes. The BioMag Plus magnetic particle format provides high surface area and permits easy and efficient separations. BioMag® Concanavalin A (BP531) is used to adhere magnetic particles to cell nuclei for CUT&RUN, a chromatin profiling protocol that has several key advantages over chromatin immunoprecipitation (ChIP). *Technical Data Sheet 766. Requires cold pack.*

UNIT SIZE	CATALOG #
3 ml	86057-3
10 ml	86057-10

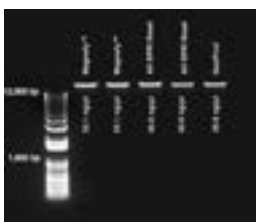
**BioMag® Plus Wheat Germ Agglutinin** | HAZARD CODE: A2dmw

**86054**

The unique saccharide-binding properties of plant lectins, such as wheat germ agglutinin (WGA), have made them useful for the study of glycosylated proteins. Lectins have been used in cell adhesion studies, to effect lymphocyte activation and to explore carbohydrate-based therapeutics. *Requires cold pack.*

UNIT SIZE	CATALOG #
3 ml	86054-3
10 ml	86054-10



**Magnefy™** | HAZARD CODE: A2dmw

Magnefy are ~1µm high-performance superparamagnetic microspheres. As high surface area / high surface titer microparticles with a rapid separation profile, Magnefy offer a performance-driven solid phase for magnetic particle-based applications, including SPRI-based total DNA isolation (COOH), and biotinylated nucleic acid for molecular isolations and assays. Contact us to explore using Magnefy as your OEM magnetic SPRI bead.

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Carboxyl - 5% Solids	1.0µm	5 ml	26410-5
Carboxyl - 5% Solids	1.0µm	10 ml	26410-10
Carboxyl - 5% Solids	1.0µm	25 ml	26410-25
Carboxyl - 5% Solids	1.0µm	100 ml	26410-100
Streptavidin - 1% Solids	1.0µm	1 ml	26444-1
Streptavidin - 1% Solids	1.0µm	2 ml	26444-2
Streptavidin - 1% Solids	1.0µm	5 ml	26444-5
Streptavidin - 1% Solids	1.0µm	10 ml	26444-10

**BioMag® Streptavidin** | HAZARD CODE: A2dmw**84660**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Concentration: 5 mg/ml - <i>Requires cold pack.</i>	5 ml	84660-5
Concentration: 5 mg/ml - <i>Requires cold pack.</i>	50 ml	84660-50

**BioMag® Plus Streptavidin** | HAZARD CODE: A2dmw**86031**

BioMag Plus Streptavidin Particles are a suspension of superparamagnetic particles approximately 1µm in size, covalently attached to streptavidin. BioMag Plus Streptavidin allows for capture of biotinylated oligonucleotides, proteins, dNTPs and other molecules. Provided as a suspension at ~5mg per ml. *Technical Data Sheet 621.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Provided as a suspension at ~5mg per ml. - <i>Requires cold pack.</i>	10 ml	86031-10

## MICROSPHERES & PARTICLES / MAGNETIC BIOSEPARATIONS

### Nucleic Acid Isolation

#### **BioMag® Plus Streptavidin / Biotin Binding Starter Kit** | HAZARD CODE: A2dmw

**86030**

This kit contains all reagents needed for the attachment of biotinylated proteins to BioMag Plus superparamagnetic particles. Contents of kit are sufficient for five coupling reactions. *Technical Data Sheet #621 Requires cold pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 5ml of BioMag Plus Streptavidin (Cat. #86031), 250ml Coupling / Wash Buffer, BioMag MultiSep Magnetic Separator (Cat. #85200-1) and 5 x 15ml conical centrifuge tubes.	1 kit	86030-1

#### **BioMag® Streptavidin, Nuclease-Free** | HAZARD CODE: A2dmw

**8MB4804**

BioMag Streptavidin, Nuclease-Free is a suspension of BioMag Streptavidin particles for immobilizing biotinylated nucleic acids. *Requires cold pack.*

UNIT SIZE	CATALOG #
10 ml	8MB4804-10
25 ml	8MB4804-25
100 ml	8MB4804-1

#### **BioMag® Oligo (dT)20 Particles** | HAZARD CODE: A2dm

**8MB4803**

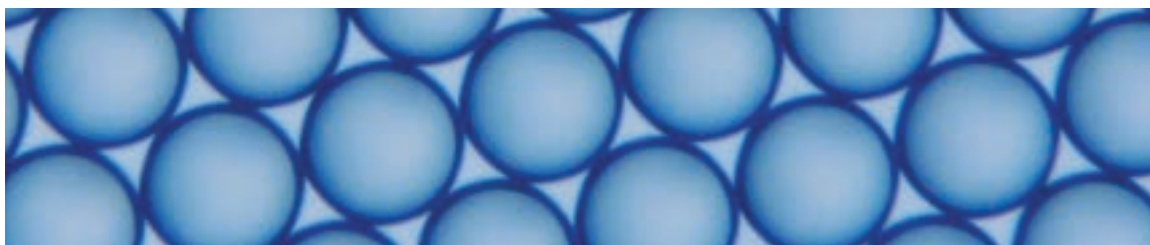
Nuclease-free BioMag Oligo (dT)20 particles purify mRNA from total RNA, tissue and cells in 15 - 45 minutes depending upon sample. *Requires cold pack.*

UNIT SIZE	CATALOG #
1 kit	8MB4803-2



## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Size Standards



Precision Size Standards are offered in three size groupings: Nanobead, Microbead and Megabead. They are measured on in-house instruments calibrated with NIST Standard Reference Materials. Each product is supplied with a Certificate of Traceability. The size, standard deviation, coefficient of variation and lot number are printed on the label for easy reference.

#### **Nanobead NIST Traceable Particle Size Standards** | HAZARD CODE: A2dm

Nanobead NIST Traceable Particle Size Standards are monodisperse polystyrene microspheres ranging from 40nm to 950nm. They are packaged in convenient, easy-to-use 15ml dropper bottles at 1% solids (w / v) in an aqueous suspension. *Technical Data Sheet 623.*

NOMINAL DIAMETER	MEAN DIAMETER SIZE RANGE	UNIT SIZE	CATALOG #
40nm	36 - 44nm	15 ml	64004-15
50nm	45 - 55nm	15 ml	64005-15
60nm	54 - 66nm	15 ml	64006-15
70nm	65 - 74nm	15 ml	64007-15
80nm	75 - 84nm	15 ml	64008-15
90nm	85 - 94nm	15 ml	64009-15
100nm	95 - 110nm	15 ml	64010-15
125nm	120 - 130nm	15 ml	64011-15
150nm	140 - 160nm	15 ml	64012-15
200nm	190 - 210nm	15 ml	64013-15
250nm	240 - 260nm	15 ml	64014-15
300nm	285 - 315nm	15 ml	64015-15
350nm	335 - 365nm	15 ml	64016-15
400nm	380 - 420nm	15 ml	64017-15
450nm	430 - 470nm	15 ml	64018-15
500nm	480 - 520nm	15 ml	64019-15
550nm	530 - 570nm	15 ml	64020-15
600nm	580 - 620nm	15 ml	64021-15
650nm	630 - 670nm	15 ml	64022-15
700nm	680 - 720nm	15 ml	64023-15
750nm	730 - 770nm	15 ml	64024-15
800nm	780 - 820nm	15 ml	64025-15
850nm	830 - 870nm	15 ml	64026-15
900nm	880 - 920nm	15 ml	64027-15
950nm	930 - 970nm	15 ml	64028-15

**Microbead NIST Traceable Particle Size Standards** | HAZARD CODE: A2dm

Microbead NIST Traceable Particle Size Standards are monodisperse polystyrene microspheres ranging from 1.0 $\mu$ m to 9.0 $\mu$ m. They are packaged in convenient, easy-to-use 15ml dropper bottles at 1% solids (w / v) in an aqueous suspension. *Technical Data Sheet 623.*

NOMINAL DIAMETER	MEAN DIAMETER SIZE RANGE	UNIT SIZE	CATALOG #
1.00 $\mu$ m	0.95 - 1.05 $\mu$ m	15 ml	64030-15
1.25 $\mu$ m	1.20 - 1.30 $\mu$ m	15 ml	64035-15
1.50 $\mu$ m	1.45 - 1.55 $\mu$ m	15 ml	64040-15
1.75 $\mu$ m	1.70 - 1.80 $\mu$ m	15 ml	64045-15
2.00 $\mu$ m	1.90 - 2.10 $\mu$ m	15 ml	64050-15
2.50 $\mu$ m	2.40 - 2.60 $\mu$ m	15 ml	64055-15
3.00 $\mu$ m	2.85 - 3.15 $\mu$ m	15 ml	64060-15
3.50 $\mu$ m	3.30 - 3.70 $\mu$ m	15 ml	64065-15
4.00 $\mu$ m	3.80 - 4.20 $\mu$ m	15 ml	64070-15
5.00 $\mu$ m	4.70 - 5.30 $\mu$ m	15 ml	64080-15
6.00 $\mu$ m	5.70 - 6.30 $\mu$ m	15 ml	64090-15
7.00 $\mu$ m	6.60 - 7.40 $\mu$ m	15 ml	64100-15
8.00 $\mu$ m	7.60 - 8.40 $\mu$ m	15 ml	64110-15
9.00 $\mu$ m	8.10 - 9.90 $\mu$ m	15 ml	64120-15

**Megabead NIST Traceable Particle Size Standards** | HAZARD CODE: A2dm

Megabead NIST Traceable Particle Size Standards are monodisperse polystyrene microspheres ranging from 10.0 $\mu$ m to 175.0 $\mu$ m. They are packaged in convenient, easy-to-use 15ml dropper bottles at 1% solids (w / v) in an aqueous suspension. *Technical Data Sheet 623.*

NOMINAL DIAMETER	MEAN DIAMETER SIZE RANGE	UNIT SIZE	CATALOG #
10.0 $\mu$ m	9.50 - 10.50 $\mu$ m	15 ml	64130-15
12.0 $\mu$ m	11.50 - 12.50 $\mu$ m	15 ml	64140-15
15.0 $\mu$ m	14.00 - 16.00 $\mu$ m	15 ml	64155-15
20.0 $\mu$ m	19.00 - 21.00 $\mu$ m	15 ml	64160-15
25.0 $\mu$ m	24.00 - 26.00 $\mu$ m	15 ml	64165-15
30.0 $\mu$ m	28.00 - 32.00 $\mu$ m	15 ml	64170-15
40.0 $\mu$ m	36.00 - 44.00 $\mu$ m	15 ml	64180-15
50.0 $\mu$ m	48.00 - 52.00 $\mu$ m	15 ml	64190-15
60.0 $\mu$ m	57.00 - 63.00 $\mu$ m	15 ml	64200-15
80.0 $\mu$ m	75.00 - 85.00 $\mu$ m	15 ml	64210-15
100.0 $\mu$ m	90.00 - 110.00 $\mu$ m	15 ml	64220-15
125.0 $\mu$ m	115.00 - 135.00 $\mu$ m	15 ml	64225-15
150.0 $\mu$ m	140.00 - 160.00 $\mu$ m	15 ml	64230-15
175.0 $\mu$ m	165.00 - 185.00 $\mu$ m	15 ml	64235-15

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Count Standards

#### SureCount™ Particle Count Standards | HAZARD CODE: A2dmw

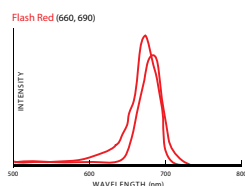
SureCount Particle Count Standards are suspensions of polymer microspheres intended for the validation and monitoring of particle counters and supporting sample preparation processes. SureCount standards are available in diameters of 3µm, 5µm, 10µm and 15µm. Diameters are traceable to NIST Standard Reference Materials. The standards are supplied as ~1x10<sup>6</sup> microspheres/ml aqueous suspensions in 10ml volumes and each bottle is provided with a Certificate of Traceability. *Technical Data Sheet 852.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
3µm	10 ml	25379-10
5µm	10 ml	25380-10
10µm	10 ml	25381-10
15µm	10 ml	25382-10

### FLUORESCENCE STANDARDS

#### Flash Red Intensity Standard | HAZARD CODE: A2dm

**BLIFR06M**

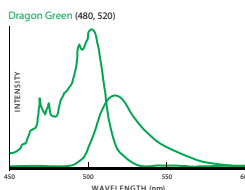


The Flash Red Intensity Standard kit consists of five populations of ~8µm microspheres dyed with increasing amounts of our Flash Red fluorophore. The different intensity populations may serve as relative intensity standards for fluorescence-based applications in microscopy or flow cytometry, and as internally-dyed beads, they will stand up to the rigors of imaging. As Flash Red is spectrally similar to Cy™5, traditional red fluorophore filter sets (e.g. Cy™5 / microscope; PE-Cy™5 or APC / cytometer) may be used with the standard. The beads may also serve as very bright relative intensity or linearity standards for flow cytometry; ask about the Bangs Laboratories, Inc. QuickCal® Linearity Template if this is your interest. *Technical Data Sheet PDS 704*

UNIT SIZE	CATALOG #
1 kit	BLIFR06M-1

#### Dragon Green Intensity Standard | HAZARD CODE: A2dm

**BLIDG06M**



This kit consists of five populations of ~8µm microspheres dyed with increasing amounts of our Dragon Green fluorophore. The different intensity populations may serve as relative intensity standards in fluorescent microscopy and, as internally-dyed beads, they will stand up to the rigors of imaging. Dragon Green is an excellent spectral surrogate for fluorescein and is suitable for use with fluorescein filter sets. The beads may also serve as very bright relative intensity or linearity standards for flow cytometry; ask about the Bangs Laboratories QuickCal® Linearity Template if this is your interest. *Technical Data Sheet PDS 704.*

UNIT SIZE	CATALOG #
1 kit	BLIDG06M-1



### StarLight™ Calibration Individual Slides | HAZARD CODE: abg

Our StarLight Calibration Slides feature vibrant ~6 $\mu$ m fluorescent microspheres dyed with your choice of fluorophore below for basic calibration and imaging checks.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Glacial Blue	1 slide	25442-1
Dragon Green	1 slide	25441-1
Envy Green	1 slide	25443-1
Flash Red	1 slide	25444-1

### StarLight™ Collection, Slide 4-Pack | HAZARD CODE: abg

**25445**

Our StarLight Collection includes one of each of our StarLight Calibration slides, which feature vibrant ~6 $\mu$ m fluorescent microspheres dyed with a single fluorophore for basic calibration and imaging checks.  
*Technical Data Sheet 913.*

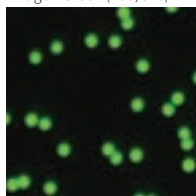
The four slides are appropriate for use with common microscope filter sets:

Glacial Blue (360, 450)

Dragon Green (480, 520)

Envy Green (525, 565)

Flash Red (660, 690)



UNIT SIZE	CATALOG #
4 slides	25445-1

Cell Viability Standards



**Trypan Blue 0.4% Solution** | HAZARD CODE: HM4g

**25561**

The dye exclusion test is used to determine the number of viable cells present in a cell suspension. It is based on the principle that live cells possess intact cell membranes that exclude certain dyes, such as trypan blue, Eosin or propidium iodide, whereas dead cells do not. In this test, a cell suspension is simply mixed with dye and then visually examined to determine whether cells take up or exclude dye. In the protocol presented here, a viable cell will have a clear cytoplasm whereas a nonviable cell will have a blue cytoplasm. This product is for research use only and is not intended for use in humans or for *in vitro* diagnostic use.

UNIT SIZE	CATALOG #
125 ml	25561-125
250 ml	25561-250

**ViaCheck™ Viability and Concentration Standards**

ViaCheck Viability and Concentration Standards are part of our extensive line of microsphere standards for instrument QC. ViaCheck standards mimic the light scattering characteristics of “live” and “dead” cells in the trypan blue dye exclusion method, and may be used to confirm the capabilities and verify the performance of image-based cell viability instruments. The standards are available in a range of common concentrations and live/dead ratios. *Technical Data Sheets 729 & 734.*

CHARACTERISTICS	CONCENTRATION (BEADS/ML)	UNIT SIZE	CATALOG #
ViaCheck 0% Viability Control	1 x 10 <sup>6</sup>	20 ml	24622-20
ViaCheck 25% Viability Control	1 x 10 <sup>6</sup>	20 ml	25997-20
ViaCheck 50% Viability Control	1 x 10 <sup>6</sup>	20 ml	24623-20
ViaCheck 75% Viability Control	1 x 10 <sup>6</sup>	20 ml	24624-20
ViaCheck 90% Viability Control	1 x 10 <sup>6</sup>	20 ml	24625-20
ViaCheck 100% Viability Control	1 x 10 <sup>6</sup>	20 ml	24626-20
ViaCheck Concentration Controls	0.5 x 10 <sup>6</sup>	20 ml	26409-20
ViaCheck Concentration Controls	1 x 10 <sup>6</sup>	20 ml	24627-20
ViaCheck Concentration Controls	4 x 10 <sup>6</sup>	20 ml	24628-20
ViaCheck Concentration Controls	8 x 10 <sup>6</sup>	20 ml	24629-20

See *ViaCheck™ SingleShots™* on next page





### ViaCheck™ Viability and Concentration Standards SingleShots™

ViaCheck SingleShots contain ~0.5ml for single-use QC. Mix, dispense and run for confirmation of live/dead ratios and counts. ViaCheck SingleShots minimize error and maximize efficiency by circumventing potential human error from repeated bottle resuspension and pipetting steps.

CHARACTERISTICS	CONCENTRATION (BEADS/ML)	UNIT SIZE	CATALOG #
ViaCheck 0% Viability Control	1 x 10 <sup>6</sup>	25 Units	BLI10BS-25
ViaCheck 0% Viability Control	1 x 10 <sup>6</sup>	75 Units	BLI10BS-75
ViaCheck 25% Viability Control	1 x 10 <sup>6</sup>	25 Units	BLI25BS-25
ViaCheck 25% Viability Control	1 x 10 <sup>6</sup>	75 Units	BLI25BS-75
ViaCheck 50% Viability Control	1 x 10 <sup>6</sup>	25 Units	BLI20BS-25
ViaCheck 50% Viability Control	1 x 10 <sup>6</sup>	75 Units	BLI20BS-75
ViaCheck 75% Viability Control	1 x 10 <sup>6</sup>	25 Units	BLI30BS-25
ViaCheck 75% Viability Control	1 x 10 <sup>6</sup>	75 Units	BLI30BS-75
ViaCheck 90% Viability Control	1 x 10 <sup>6</sup>	25 Units	BLI40BS-25
ViaCheck 90% Viability Control	1 x 10 <sup>6</sup>	75 Units	BLI40BS-75
ViaCheck 100% Viability Control	1 x 10 <sup>6</sup>	25 Units	BLI50BS-25
ViaCheck 100% Viability Control	1 x 10 <sup>6</sup>	75 Units	BLI50BS-75
ViaCheck Concentration Controls	0.5 x 10 <sup>6</sup>	25 Units	BLIVC50NSS-25
ViaCheck Concentration Controls	0.5 x 10 <sup>6</sup>	75 Units	BLIVC50NSS-75
ViaCheck Concentration Controls	1 x 10 <sup>6</sup>	25 Units	BLI60NS-25
ViaCheck Concentration Controls	1 x 10 <sup>6</sup>	75 Units	BLI60NS-75
ViaCheck Concentration Controls	4 x 10 <sup>6</sup>	25 Units	BLI70NS-25
ViaCheck Concentration Controls	4 x 10 <sup>6</sup>	75 Units	BLI70NS-75
ViaCheck Concentration Controls	8 x 10 <sup>6</sup>	25 Units	BLI80NS-25
ViaCheck Concentration Controls	8 x 10 <sup>6</sup>	75 Units	BLI80NS-75

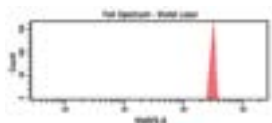
## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Flow Cytometry Standards

#### ROUTINE FLOW CYTOMETRY QUALITY CONTROL

#### Full Spectrum™ | HAZARD CODE: adm

**BLI885**



Multi-color Reference Standards are highly uniform microspheres that fluoresce over a broad range of the spectrum to provide several reference positions in multi-detector analysis. Used to properly align flow cytometers excited from UV to near IR, this standard emits over the entire spectrum. *Technical Data Sheet PDS 885.*

TESTS	UNIT SIZE	CATALOG #
20	1 ml	BLI885A-1
100	5 ml	BLI885B-5
280	14 ml	BLI885C-14

#### Quantum™ QC

**BLI725**

Quantum QC is a multi-intensity, multi-fluorescent standard that is intended for use as an in-depth tool for daily cytometer QC, and is appropriate for use with all lasers and detectors. It may be used to determine detection thresholds, understand resolution and assess and track linearity of detectors. It can aid in providing confidence that the system is suitable for use, or alert operators to potential problems before samples are run. Quantum QC may also be used for instrument set-up to achieve standardized PMT settings and define the window of analysis for relevant detectors. Quantum QC is comprised of a blank and 7 (mixed) intensity populations. Quantum QC is used with a QuickCal-Linearity template that is downloaded from our website with an Access Code provided with the product at the time of shipping. *Technical Data Sheet PDS 725 & 725A.*

UNIT SIZE	CATALOG #
5 ml	BLI725-5

#### Ultra Rainbow Fluorescent Particles | HAZARD CODE: adm

Ultra Rainbow Fluorescent Particles are internally labeled with a mixture of fluorophores, which enables them to be excited at wavelengths from 365nm to 650nm. *Technical Data Sheet PDS 612.*

NOMINAL DIAMETER	TESTS	UNIT SIZE	CATALOG #
~3.8µm	20	1 ml	BLI610A-1
~3.8µm	100	5 ml	BLI610B-5
~3.8µm	280	14 ml	BLI610C-14
~10.2µm	20	1 ml	BLI611A-1
~10.2µm	100	5 ml	BLI611B-5
~10.2µm	280	14 ml	BLI611C-14

**Fluorescence Reference Standards** | HAZARD CODE: adm

Fluorescence Reference Standards are labeled with specific fluorochromes so that they give rise to the same fluorescence spectra as cells labeled with the same fluorochromes. Fluorescence intensity is similar to biological samples. *Technical Data Sheets PDS 890*

Visible Spectrum



CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
Acridine Orange	20	1 ml	BLI897A-1
	100	5 ml	BLI897B-5
	280	14 ml	BLI897C-14
Alexa Fluor® 488	20	1 ml	BLI886A-1
	100	5 ml	BLI886B-5
	280	14 ml	BLI886C-14
Alexa Fluor® 647	20	1 ml	BLI887A-1
	100	5 ml	BLI887B-5
	280	14 ml	BLI887C-14
Allophycocyanine (APC)	20	1 ml	BLI901A-1
	100	5 ml	BLI901B-5
	280	14 ml	BLI901C-14
Certified Blank™ (no label)	20	1 ml	BLI890A-1
	100	5 ml	BLI890B-5
	280	14 ml	BLI890C-14
Chlorophyll	20	1 ml	BLI898A-1
	100	5 ml	BLI898B-5
	280	14 ml	BLI898C-14
Cy™5	20	1 ml	BLI895A-1
	100	5 ml	BLI895B-5
	280	14 ml	BLI895C-14
DAPI	20	1 ml	BLI906A-1
	100	5 ml	BLI906B-5
	280	14 ml	BLI906C-14
Fluorescein	20	1 ml	BLI891A-1
	100	5 ml	BLI891B-5
	280	14 ml	BLI891C-14
Hoechst 33342	20	1 ml	BLI894A-1
	100	5 ml	BLI894B-5
	280	14 ml	BLI894C-14
Pacific Blue™	20	1 ml	BLI916A-1
	100	5 ml	BLI916B-5
	280	14 ml	BLI916C-14
PE-Cy™5	20	1 ml	BLI908A-1
	100	5 ml	BLI908B-5
	280	14 ml	BLI908C-14

Fluorescence Reference Standards continued next page

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Flow Cytometry Standards

#### Fluorescence Reference Standards *continued*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
Propidium Iodide	20	1 ml	BLI892A-1
	100	5 ml	BLI892B-5
	280	14 ml	BLI892C-14
R-Phycoerythrin	20	1 ml	BLI899A-1
	100	5 ml	BLI899B-5
	280	14 ml	BLI899C-14
T.M. Rhodamine	20	1 ml	BLI905A-1
	100	5 ml	BLI905B-5
	280	14 ml	BLI905C-14
Texas Red®	20	1 ml	BLI893A-1
	100	5 ml	BLI893B-5
	280	14 ml	BLI893C-14
Violet Laser	20	1 ml	BLI915A-1
	100	5 ml	BLI915B-5
	280	14 ml	BLI915C-14

#### Fluoresbrite® Yellow Green (YG) Microspheres, Calibration Grade | HAZARD CODE: A2dmw

This special grade of Fluoresbrite Yellow Green (YG) Microspheres has been evaluated both for particle diameter and the uniformity of the fluorescent dye distribution. Instrument manufacturers have demanded these high quality particles for their flow cytometry standards.

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
0.50µm	1 ml	18859-1
1.00µm	1 ml	18860-1
2.00µm	1 ml	18604-1
3.00µm	1 ml	18861-1
6.00µm	1 ml	18862-1

#### Fluoresbrite® Calibration Grade Size Range Kit | HAZARD CODE: A2dmw

**18132**

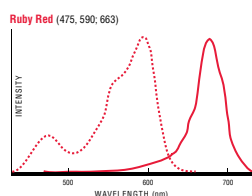
Our unique synthesis methods routinely result in particles with fluorescence CVs less than 5% and often as low as 1%. This kit guarantees that our discriminating customer will have the finest particles with the lowest fluorescence CV currently available from our stock. A range of five sizes of Fluoresbrite YG microspheres can be used to calibrate the green channel.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Kit Contains: 1ml at 2.5% solids for each nominal size: 0.5µm, 1.0µm, 2.0µm, 3.0µm and 6.0µm.	1 kit	18132-1

**Time Delay Calibration Standard** | HAZARD CODE: ad**BLI830**

Our Time Delay Calibration Standard is intended for use in assessing the delay between blue and red lasers. It features ~6µm microspheres dyed with a fluorophore that is excited with 488nm or 635nm excitation, and exhibits red / far-red emission. *Technical Data Sheet PDS 831.*

TESTS	UNIT SIZE	CATALOG #
20	1 ml	BLI830A-1
100	5 ml	BLI830B-5
280	14 ml	BLI830C-14

**Flow Check™ Ruby Red Fluorescent Microspheres** | HAZARD CODE: A2dm**24288**

Flow Check Ruby Red Fluorescent Microspheres are ~6µm narrow distribution polystyrene particles that can be used for flow cytometry applications where fluorescence emission in the range of 600nm to 710nm is needed. Suitable for 488nm and 663nm excitation with detection in PE-Cy™5 or APC channels. Supplied as a 5ml suspension (~5 x 10<sup>6</sup> beads/ml) in a convenient dropper bottle. Ex. max: 475nm, Em. max: 663nm. *Technical Data Sheet 624.*

UNIT SIZE	CATALOG #
5 ml	24288-5

## ALIGNMENT

**Right Reference Standard™** | HAZARD CODE: adm

Each Right Reference Standard consists of a single population of particles labeled with a single fluorochrome at a given reference intensity range which will provide a unified fluorescence range for a particular fluorescence channel. A test requires one drop (50µl) of particle suspension, which is equivalent to ~100,000 particles. Bangs Flow Cytometry Standards are 7 - 9µm in diameter (unless otherwise noted) to approximate the size of human lymphocytes. *Technical Data Sheet PDS 510.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
APC High	100	5 ml	BLI521-5
Fluorescein High	100	5 ml	BLI512-5
PE-Cy™5 High	100	5 ml	BLI518-5
Phycoerythrin High	100	5 ml	BLI515-5

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Flow Cytometry Standards

#### Flow Check™ High Intensity Alignment Grade Particles | HAZARD CODE: A2dm

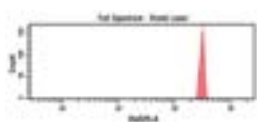
Technical Data Sheet 508.

CHARACTERISTICS	NOMINAL DIAMETER	UNIT SIZE	CATALOG #
Bright Blue (BB)	0.50µm	10 ml	23520-10
Yellow Green (YG)	1.00µm	10 ml	23517-10
Yellow Green (YG)	2.00µm	10 ml	23518-10
Yellow Green (YG)	6.00µm	10 ml	23519-10

### GENERAL INSTRUMENT SET-UP

#### Full Spectrum™ | HAZARD CODE: adm

**BLI885**

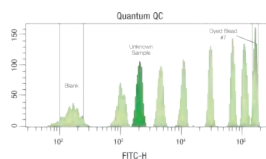


Multi-color Reference Standards are highly uniform microspheres which fluoresce over a broad range of the spectrum to provide several reference positions in multi-detector analysis. Used to properly align flow cytometers excited from UV to near IR, this standard emits over the entire spectrum. *Technical Data Sheet PDS 885.*

TESTS	UNIT SIZE	CATALOG #
20	1 ml	BLI885A-1
100	5 ml	BLI885B-5
280	14 ml	BLI885C-14

#### Quantum™ QC

**BLI725**



Quantum QC is a multi-intensity, multi-fluorescent standard that is intended for use as an in-depth tool for daily cytometer QC, and is appropriate for use with all lasers and detectors. It may be used to determine detection thresholds, understand resolution and assess and track linearity of detectors. It can aid in providing confidence that the system is suitable for use, or alert operators to potential problems before samples are run. Quantum QC may also be used for instrument set-up to achieve standardized PMT settings and define the window of analysis for relevant detectors. Quantum QC is comprised of a blank and 7 (mixed) intensity populations. Quantum QC is used with a QuickCal-Linearity template that is downloaded from BangsLabs.com with an Access Code provided with the product at the time of shipping. *Technical Data Sheet PDS 725 and 725A.*

UNIT SIZE	CATALOG #
5 ml	BLI725-5

**Ultra Rainbow Fluorescent Particles** | HAZARD CODE: adm

Ultra Rainbow Fluorescent Particles are internally labeled with a mixture of fluorophores that enables them to be excited at wavelengths from 365nm to 650nm. *Technical Data Sheet PDS 612.*

NOMINAL DIAMETER	TESTS	UNIT SIZE	CATALOG #
~3.8µm	20	1 ml	BLI610A-1
~3.8µm	100	5 ml	BLI610B-5
~3.8µm	280	14 ml	BLI610C-14
~10.2µm	20	1 ml	BLI611A-1
~10.2µm	100	5 ml	BLI611B-5
~10.2µm	280	14 ml	BLI611C-14

## COMPENSATION

**FITC / PE Compensation Standard** | HAZARD CODE: adm**BLI820**

The FITC / PE Compensation Standard is a convenient means of setting two color compensation on a flow cytometer. Each kit contains an Autofluor™ bead, as well as a bead labeled with FITC, a bead labeled with PE and one labeled with both FITC and PE. *Technical Data Sheet PDS 820.*

TESTS	UNIT SIZE	CATALOG #
20	1 ml	BLI820A-1
100	5 ml	BLI820B-5
280	14 ml	BLI820C-14

**Simply Cellular® Compensation Standards** | HAZARD CODE: adm

The Simply Cellular Compensation Standard is a mixture of two Simply Cellular antibody coated particle populations capable of binding high and low levels of the monoclonal antibody used in your assay. Ideal for performing compensation in multicolor (2, 3, 4 or more) analysis. Kits are specific for mouse, rat or human monoclonal antibodies. *Technical Data Sheets PDS 850, PDS 851 and PDS 852.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
anti-Mouse IgG	100	5 ml	BLI550-5
anti-Rat IgG	100	5 ml	BLI551-5
anti-Human IgG	100	5 ml	BLI552-5

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Flow Cytometry Standards

#### Simply Cellular® anti-Mouse for Violet Laser

**BLI835**

The Simply Cellular anti-Mouse for Violet Laser standard features microspheres comprised of a proprietary matrix that exhibits low autofluorescence with violet excitation. Beads are suitable for labeling with mouse antibodies conjugated with violet fluorochromes, and for use as a compensation or general reference standard for detectors off of the violet laser. Beads are also suitable for use with other fluorochromes / detectors, e.g. 488nm, 633nm. The Simply Cellular anti-Mouse for Violet Laser standard is supplied as 2 populations: 1 blank and 1 high-binding anti-Mouse IgG (Fc specific) population. Supplied in an aqueous suspension containing ProClin®. *Technical Data Sheet PDS 835.*

TESTS	UNIT SIZE	CATALOG #
20	1 ml	BLI835A-1
100	5 ml	BLI835B-5

#### Flow Cytometry Protein A Antibody Binding Beads | HAZARD CODE: adm

**BLI553**

Single population Protein A microspheres are suitable for labeling with conjugated antibodies from a range of hosts. Labeled microspheres may be used as single-population reference standards or in conjunction with an unlabeled population for compensation purposes. *Technical Data Sheet PDS 854.*

UNIT SIZE	CATALOG #
1 ml	BLI553-1
5 ml	BLI553-5
14 ml	BLI553-14

#### Flow Cytometry Protein G Antibody Binding Beads | HAZARD CODE: adm

**BLI554**

Single population Protein G microspheres are suitable for labeling with conjugated antibodies from a range of hosts. Labeled microspheres may be used as single-population reference standards or in conjunction with an unlabeled population for compensation purposes. *Technical Data Sheet PDS 854.*

UNIT SIZE	CATALOG #
1 ml	BLI554-1
5 ml	BLI554-5
14 ml	BLI554-14

#### Viability Dye Compensation Standard | HAZARD CODE: adm

Viability Dye Compensation Standards are suitable for labeling with LIVE / DEAD® stains or similarly reactive dyes to generate compensation standards for flow cytometric analyses. Beads are not suitable for labeling with DNA stains such as propidium iodide, DAPI or SYTOX®, and users should contact Technical Service for discussion if uncertain as to the compatibility of a specific dye or stain. *Technical Data Sheet PDS 853.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
4µm	3 ml	BLI450-3
8µm	3 ml	BLI451-3



## FLUORESCENCE REFERENCE

**Flow Check™ Yellow Green (YG) 2µm High Intensity Alignment Grade** | HAZARD CODE: a2dm**23518**

A bright alignment grade bead population for flow cytometry with low size and CV.

We use our own proprietary dyes to ensure long term stability. *Technical Data Sheet 508.*

UNIT SIZE	CATALOG #
10 ml	23518-10

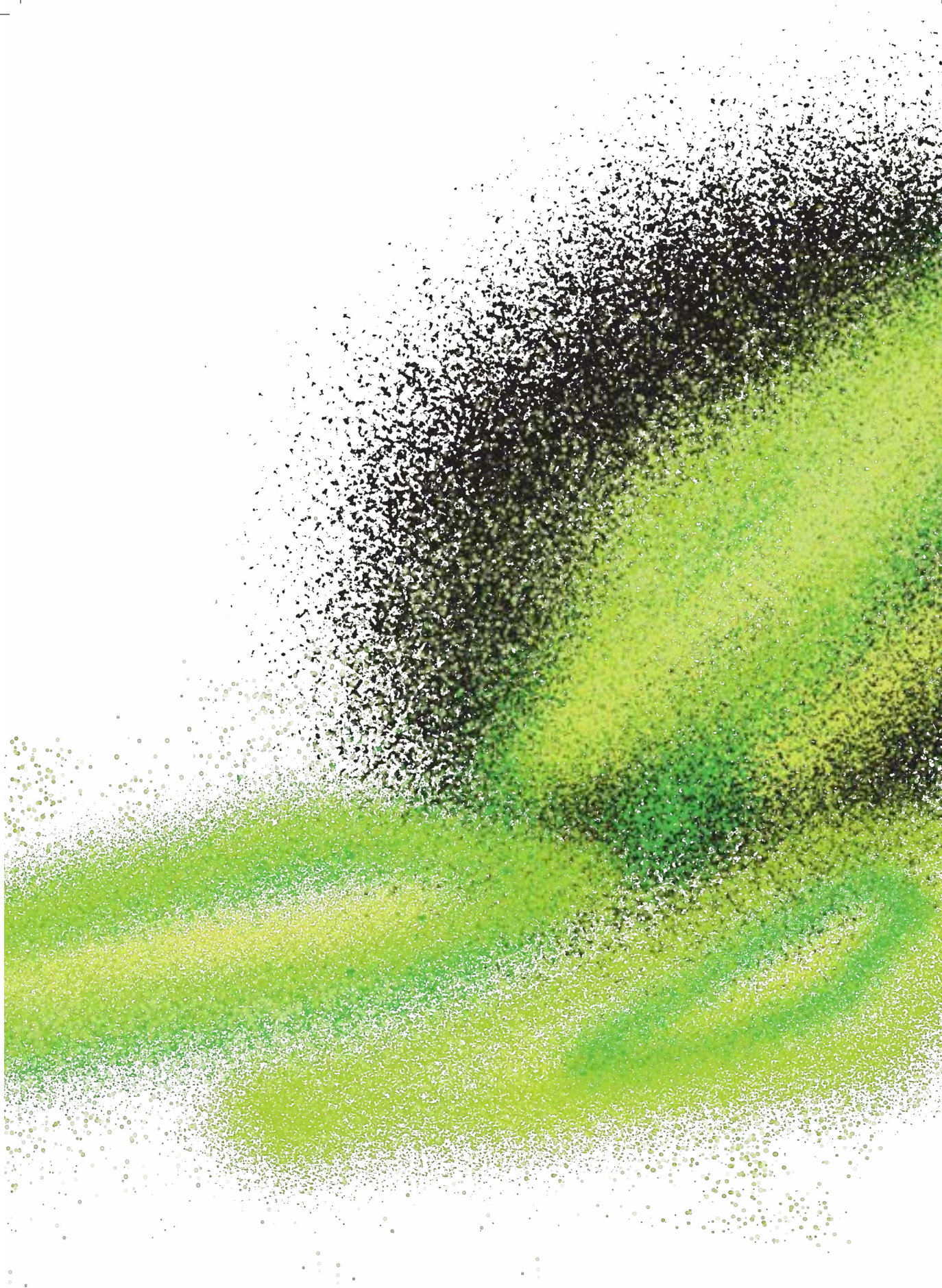
**Flow Check™ YG Kit 6µm** | HAZARD CODE: a2dm

The particles in this kit allow comparison of various levels of green fluorescence. Available individually or in a kit.

*Technical Data Sheet 508.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Flow Check YG Kit 6.0 - <b>Kit Contains:</b> Four components, each packaged with $\sim 2 \times 10^6$ particles/ml: a full intensity bead, two intermediate intensity beads and a blank bead.	1 kit	23512-1
Flow Check Yellow Green (YG) 6.0 High Intensity Alignment Grade	10 ml	23519-10
Flow Check Yellow Green (YG) Low Intensity Level 1	10 ml	23522-10
Flow Check Yellow Green (YG) Low Intensity Level 2	10 ml	23523-10
Flow Check Yellow Green (YG) Unlabeled	10 ml	23521-10

*Fluorescence Reference Standards continued next section*



**Fluorescence Reference Standards** | HAZARD CODE: adm

Fluorescence Reference Standards are labeled with specific fluorochromes so that they give rise to the same fluorescence spectra as cells labeled with the same fluorochromes. Fluorescence intensity is similar to biological samples. *Technical Data Sheets PDS 890.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
Acridine Orange	20	1 ml	BLI897A-1
	100	5 ml	BLI897B-5
	280	14 ml	BLI897C-14
Alexa Fluor® 488	20	1 ml	BLI886A-1
	100	5 ml	BLI886B-5
	280	14 ml	BLI886C-14
Alexa Fluor® 647	20	1 ml	BLI887A-1
	100	5 ml	BLI887B-5
	280	14 ml	BLI887C-14
Allophycocyanine (APC)	20	1 ml	BLI901A-1
	100	5 ml	BLI901B-5
	280	14 ml	BLI901C-14
Certified Blank™ (no label)	20	1 ml	BLI890A-1
	100	5 ml	BLI890B-5
	280	14 ml	BLI890C-14
Chlorophyll	20	1 ml	BLI898A-1
	100	5 ml	BLI898B-5
	280	14 ml	BLI898C-14
Cy™5	20	1 ml	BLI895A-1
	100	5 ml	BLI895B-5
	280	14 ml	BLI895C-14
DAPI	20	1 ml	BLI906A-1
	100	5 ml	BLI906B-5
	280	14 ml	BLI906C-14
Fluorescein	20	1 ml	BLI891A-1
	100	5 ml	BLI891B-5
	280	14 ml	BLI891C-14
Hoechst 33342	20	1 ml	BLI894A-1
	100	5 ml	BLI894B-5
	280	14 ml	BLI894C-14
Pacific Blue™	20	1 ml	BLI916A-1
	100	5 ml	BLI916B-5
	280	14 ml	BLI916C-14
PE-Cy™5	20	1 ml	BLI908A-1
	100	5 ml	BLI908B-5
	280	14 ml	BLI908C-14

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

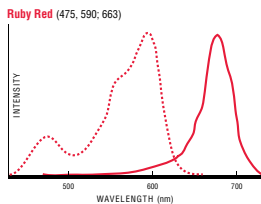
### Flow Cytometry Standards

#### Fluorescence Reference Standards *continued*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
Propidium Iodide	20	1 ml	BLI892A-1
	100	5 ml	BLI892B-5
	280	14 ml	BLI892C-14
R-Phycoerythrin	20	1 ml	BLI899A-1
	100	5 ml	BLI899B-5
	280	14 ml	BLI899C-14
T.M. Rhodamine	20	1 ml	BLI905A-1
	100	5 ml	BLI905B-5
	280	14 ml	BLI905C-14
Texas Red®	20	1 ml	BLI893A-1
	100	5 ml	BLI893B-5
	280	14 ml	BLI893C-14
Violet Laser	20	1 ml	BLI915A-1
	100	5 ml	BLI915B-5
	280	14 ml	BLI915C-14

#### Flow Check™ Ruby Red Fluorescent Microspheres | HAZARD CODE: a2dm

**24288**



Flow Check Ruby Red Fluorescent Microspheres are ~6µm narrow distribution polystyrene particles that can be used for flow cytometry applications where fluorescence emission in the range of 600nm to 710nm is needed. Suitable for 488nm and 663nm excitation with detection in PE-Cy™5 or APC channels. *Technical Data Sheet 624.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Supplied as a 5ml suspension (~5 x 10 <sup>6</sup> beads/ml) in a convenient dropper bottle. Ex. max: 475nm, Em. max: 663nm.	5 ml	24288-5

## FLUORESCENCE QUANTITATION

**Simply Cellular®** | HAZARD CODE: dm

Antibody Binding Standards are particles that have ligands covalently linked to their surfaces to bind specific antibodies (e.g. Mouse IgG antibodies) in calibrated quantities. *Technical Data Sheets PDS 810, PDS 812 and PDS 813.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
anti-Mouse IgG	20	1 ml	BLI810A-1
anti-Mouse IgG	100	5 ml	BLI810B-5
anti-Mouse IgG	280	14 ml	BLI810C-14
anti-Human IgG	20	1 ml	BLI812A-1
anti-Human IgG	100	5 ml	BLI812B-5
anti-Human IgG	280	14 ml	BLI812C-14
anti-Rat IgG	20	1 ml	BLI813A-1
anti-Rat IgG	100	5 ml	BLI813B-5
anti-Rat IgG	280	14 ml	BLI813C-14

**Simply Cellular® Compensation Standards** | HAZARD CODE: adm

The Simply Cellular Compensation Standard is a mixture of two Simply Cellular antibody coated particle populations capable of binding high and low levels of the monoclonal antibody used in your assay. Ideal for performing compensation in multicolor (2, 3, 4 or more) analysis. Kits are specific for mouse, rat or human monoclonal antibodies. *Technical Data Sheet PDS 850, PDS 851 and PDS 852.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
anti-Mouse IgG	100	5 ml	BLI550-5
anti-Human IgG	100	5 ml	BLI552-5
anti-Rat IgG	100	5 ml	BLI551-5

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Flow Cytometry Standards

#### Quantum™ Simply Cellular® | HAZARD CODE: dm

Quantum Simply Cellular Kits contain a mixture of microbeads that bind specific amounts of IgG antibodies. These standards are calibrated in terms of Antibody Binding Capacity (ABC) and can be used to construct calibration plots to determine the ABC of unknown samples and monitor instrument performance. Our FREE Flow Cytometry Data Analysis, QuickCal is designed to work with all Quantum Simply Cellular Kits (*access QuickCal by visiting [www.bangslabs.com](http://www.bangslabs.com) and entering the Access Number provided with your standards*). *Technical Data Sheet PDS 814.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
anti-Mouse IgG	20	1 ml	BLI815A-1
	100	5 ml	BLI815B-5
	280	14 ml	BLI815C-14
anti-Human IgG	20	1 ml	BLI816A-1
	100	5 ml	BLI816B-5
	280	14 ml	BLI816C-14
anti-Rat IgG	20	1 ml	BLI817A-1
	100	5 ml	BLI817B-5
	280	14 ml	BLI817C-14

**Quantum™ MESF** | HAZARD CODE: adm

Quantum MESF Kits consist of a series of reference microbead standards whose intensities have been calibrated in Molecules of Equivalent Soluble Fluorochrome (MESF) units. QuickCal, our Flow Cytometry Data Analysis template, works with all Quantum MESF Kits (*access QuickCal by visiting [www.bangslabs.com](http://www.bangslabs.com) and entering the Access Number provided with your standards*). A test requires one drop (50µl, ~100,000 particles) of each particle suspension. Bangs Flow Cytometry Standards are 7-9µm in diameter (unless otherwise noted) to approximate the size of human lymphocytes. *Technical Data Sheet PDS 821.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
Alexa Fluor® 488 MESF	20	1 ml	BLI488A-1
Alexa Fluor® 488 MESF	100	5 ml	BLI488B-5
Alexa Fluor® 488 MESF	280	14 ml	BLI488C-14
FITC-5 MESF	20	1 ml	BLI555A-1
FITC-5 MESF	100	5 ml	BLI555B-5
FITC-5 MESF	280	14 ml	BLI555C-14
FITC-5 MESF (Premix)	20	1 ml	BLI555PA-1
FITC-5 MESF (Premix)	100	5 ml	BLI555PB-5
FITC-5 MESF (Premix)	280	14 ml	BLI555PC-14
R-PE MESF	20	1 ml	BLI827A-1
R-PE MESF	100	5 ml	BLI827B-5
R-PE MESF	280	14 ml	BLI827C-14
Alexa Fluor® 647 MESF	20	1 ml	BLI647A-1
Alexa Fluor® 647 MESF	100	5 ml	BLI647B-5
Alexa Fluor® 647 MESF	280	14 ml	BLI647C-14
APC MESF	20	1 ml	BLI823A-1
APC MESF	100	5 ml	BLI823B-5
APC MESF	280	14 ml	BLI823C-14

**QuickCal® v. 2.3 Data Analysis Template**

QuickCal constructs a calibration curve associating fluorescence channel values to standardized fluorescence intensity units. Additionally, the channel value corresponding to the kit's blank bead is converted to the appropriate standardized fluorescence intensity unit (MESF or ABC); this will be the instrument's detection threshold for the specific reporter and detector. For instructions regarding QuickCal, please see *Technical Data Sheet PDS 819.*

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Flow Cytometry Standards

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#### CELL CYCLE ANALYSIS

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#### Fluorescence Reference Standards | HAZARD CODE: adm

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Fluorescence Reference Standards are labeled with specific fluorochromes so that they give rise to the same fluorescence spectra as cells labeled with the same fluorochromes. Fluorescence intensity is similar to biological samples. *Technical Data Sheets PDS 890 and PDS 892.*

CHARACTERISTICS	TESTS	UNIT SIZE	CATALOG #
Acridine Orange	20	1 ml	BLI897A-1
Acridine Orange	100	5 ml	BLI897B-5
Acridine Orange	280	14 ml	BLI897C-14
DAPI	20	1 ml	BLI906A-1
DAPI	100	5 ml	BLI906B-5
DAPI	280	14 ml	BLI906C-14
Fluorescein	20	1 ml	BLI891A-1
Fluorescein	100	5 ml	BLI891B-5
Fluorescein	280	14 ml	BLI891C-14
Hoechst 33342	20	1 ml	BLI894A-1
Hoechst 33342	100	5 ml	BLI894B-5
Hoechst 33342	280	14 ml	BLI894C-14
Propidium Iodide	20	1 ml	BLI892A-1
Propidium Iodide	100	5 ml	BLI892B-5
Propidium Iodide	280	14 ml	BLI892C-14

#### Viability Dye Compensation Standard | HAZARD CODE: adm

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Viability Dye Compensation Standards are suitable for labeling with LIVE / DEAD® stains or similarly reactive dyes to generate compensation standards for flow cytometric analyses. Beads are not suitable for labeling with DNA stains such as propidium iodide, DAPI or SYTOX® and users should contact Technical Service for discussion if uncertain as to the compatibility of a specific dye or stain. *Technical Data Sheet PDS 853.*

NOMINAL DIAMETER	UNIT SIZE	CATALOG #
4µm	3 ml	BLI450-3
8µm	3 ml	BLI451-3



CELL UNIT SIZE ESTIMATION

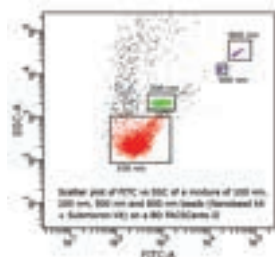
**Size Calibration Standards Kit** | HAZARD CODE: dm

**BLI829**

The Size Calibration Standards Kit includes five highly uniform unlabeled microbead populations of different diameters (~4 - 11µm), which can be used to construct calibration plots for electronic volume and light scatter instrumentation. *Technical Data Sheet 829.*

TESTS	UNIT SIZE	CATALOG #
100	5 ml	BLI829B-5
280	14 ml	BLI829C-14

**Small Bead Calibration Kits** | HAZARD CODE: A2adw



Current applications in flow cytometry extend far beyond traditional lymphocyte immunophenotyping, with some applications involving the analysis of very small particles such as platelet- and endothelial-derived microparticles, microbial species, or extracellular vesicles. Our Small Bead Calibration Kits allow operators to verify the resolution capabilities of the flow cytometer, and to establish appropriate instrument settings for these analyses. Microspheres are dyed with Yellow Green (YG) and are suitable for use with FITC-optics. *Technical Data Sheet 916 or 1006.*

CHARACTERISTICS	PARTICLE CONCENTRATION	UNIT SIZE	CATALOG #
Nanobead Calibration Kit (50nm, 100nm)	~1 x 10 <sup>9</sup> particles/ml	1 kit	BLI834-1
Submicron Bead Calibration Kit (0.2µm, 0.5µm, 0.8µm)	~1 x 10 <sup>8</sup> particles/ml	1 kit	BLI832-1
Micron Bead Calibration Kit (1.0µm, 3.0µm, 6.0µm)	~2 x 10 <sup>6</sup> particles/ml	1 kit	BLI833-1

**Fluoresbrite® Calibration Grade UNIT SIZE Range Kit** | HAZARD CODE: A2dmw

**18132**

Our unique synthesis methods routinely result in particles with fluorescence CV's less than 5% and often as low as 1%. A range of five sizes of Fluoresbrite YG microspheres can be used to calibrate the green channel.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 1ml at 2.5% solids for each nominal size: 0.5µm, 1.0µm, 2.0µm, 3.0µm and 6.0µm.	1 kit	18132-1

## MICROSPHERES & PARTICLES / INSTRUMENT STANDARDS

### Flow Cytometry Standards

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#### CELL COUNTING

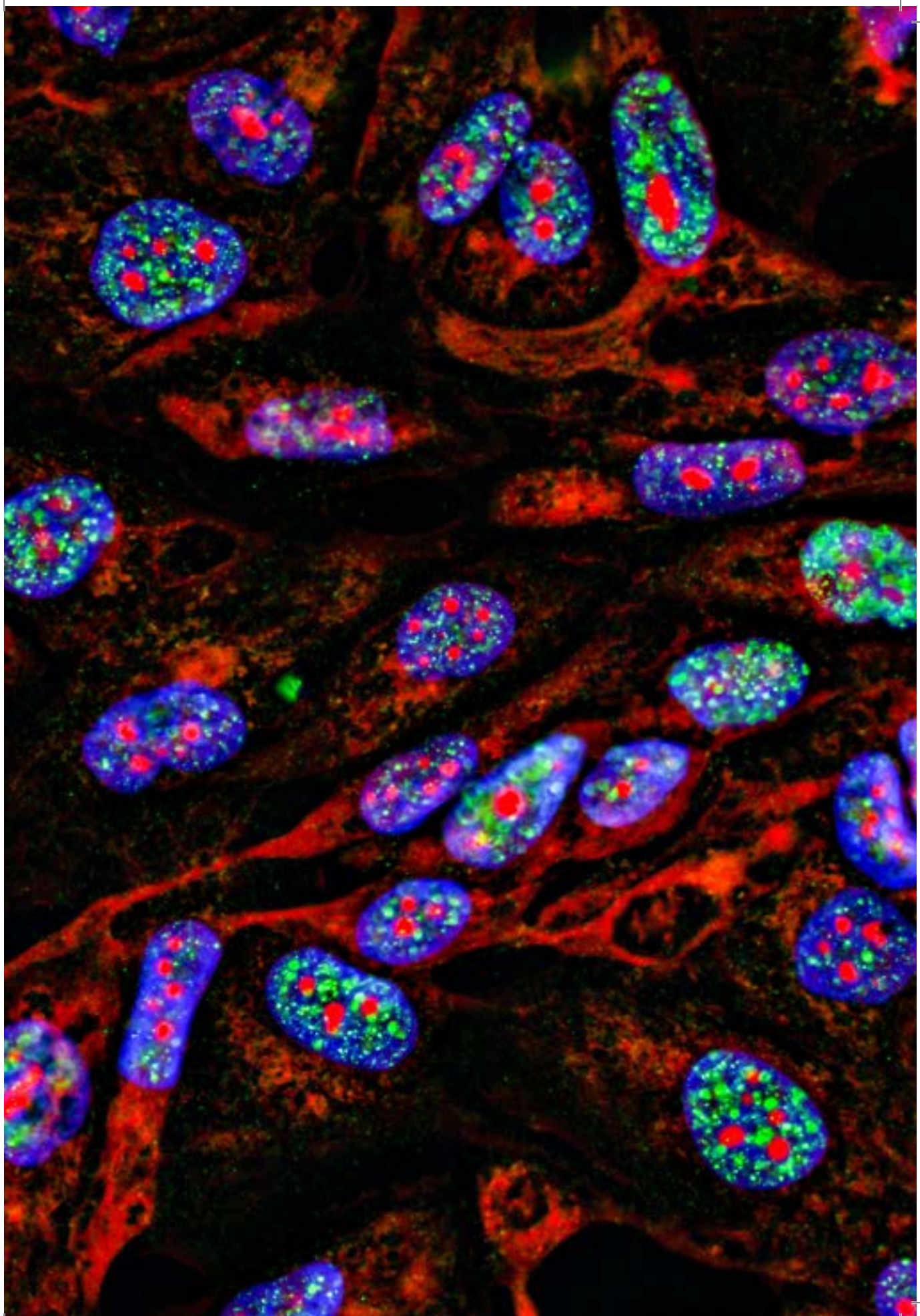
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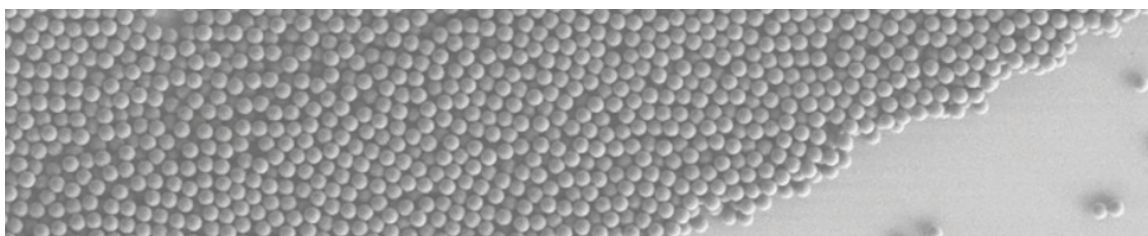
#### Flow Cytometry Absolute Count Standard™ | HAZARD CODE: A2adm

**BLI580**

The Flow Cytometry Absolute Count Standard consists of highly uniform, cell-sized microspheres labeled with a full spectrum dye and provided at a known concentration ( $\sim 1 \times 10^6$ ). These beads fluoresce over a broad range of the spectrum, allowing them to be used as count standards in multiple detectors.

UNIT SIZE	CATALOG #
10 ml	BLI580-10





At Polysciences, we are committed to making the finest microspheres in the world, and providing the highest level of customer and technical service from initial discussions through the product lifecycle and beyond. We hope that you find this catalog to be helpful as you consider products for your work, and invite you to contact us if we may address any questions or be of assistance in formulating solutions to meet your specific needs.

TECHNICAL GUIDE CONTENTS

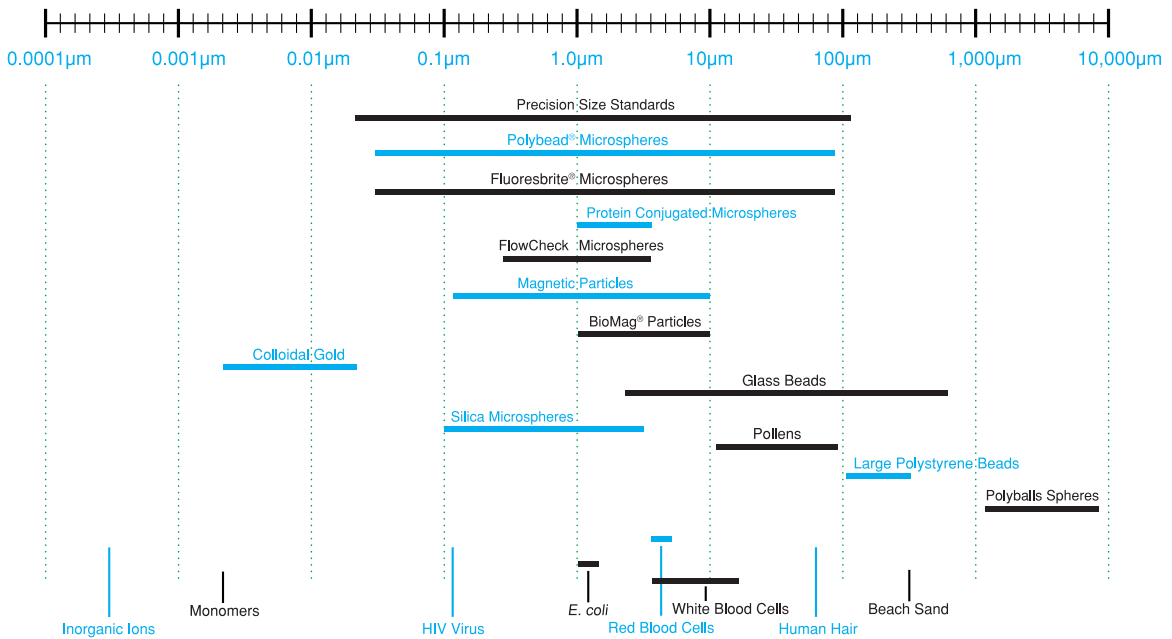
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HOW PARTICLES MEASURE UP

Precision Size Standards	0.04 - 175µm	Large Polystyrene Beads	106 - 600µm
Polybead® Microspheres	0.05 - 90µm	Polyballs	1,587.5 - 9,525µm
Fluoresbrite® Microspheres	0.05 - 90µm	Inorganic Ions	0.0006µm
Protein Conjugated Microspheres	1 - 6µm	Monomers	0.0045µm
Flow Check™ Microspheres	0.5 - 6.0µm	HIV virus	0.12µm
Magnetic Particles	0.2 - 10µm	<i>E. coli</i>	1 - 2µm
BioMag® Particles	1.0 - 10µm	Red Blood Cells	6 - 8µm
Colloidal Gold	0.005 - 0.06µm	White Blood Cells	7 - 25µm
Glass Beads	3 - 850µm	Human Hair	80µm
Silica Microspheres	0.1 - 5.0µm	Beach Sand	650µm
Pollens	12 - 90µm		

### How Polysciences' Microspheres and Other Particles Measure Up

1 Micron (µm) = 1,000 Nanometers = 10,000 Angstroms



## MICROSPHERES & PARTICLES / TECHNICAL INFORMATION

### MICROSPHERE SELECTION

Microspheres offer a highly convenient and flexible system for developing reagents for assays and bioseparations and for use as instrument standards. As there are many varieties of microspheres available, it is important to think about the demands of the application when selecting a microsphere. Physical and optical properties should be considered in the context of handling and detection, and thought should also be given to requirements for diameter and size distribution, composition, surface chemistry and any other needed properties.

PROPERTY	CONSIDERATIONS
Size	Diameter, Uniformity / distribution
Composition	Density, Refractive index, Hydrophobicity / -philicity, Nonspecific binding, Autofluorescence
Surface chemistry	Reactive groups, Level of functionalization, Charge
Special properties	Visible dye / fluorophore, Superparamagnetic

### Particle Size

Microsphere size may be critical to the proper function of an assay, or it may be secondary to other characteristics. Considering traditional diagnostic methods, the test or assay format commonly dictates particle size, such as the use of very small spheres (~0.1 - 0.4 $\mu$ m) to ensure satisfactory wicking in lateral flow tests, or the use of larger, cell-sized spheres (~4 - 10 $\mu$ m) for bead-based flow cytometric assays.

In magnetic separations, particularly those involving capture and elution of target, the exact size of the magnetic particle may be unimportant provided that the particles are in some general size range and offer desired separation characteristics.

Diameter also determines surface area. Small-diameter spheres present more surface area per unit mass, while larger spheres present more surface area per bead. Size also affects ease of handling, process considerations (such as the method used for separations [centrifugation, dialysis, filtration]) and the amount of reagent needed for coating.

All sizes listed in this catalog are nominal. For most products, the mean diameter of your particles will be printed on the label with the standard deviation.

### Particle Composition

Common microsphere compositions include polystyrene (PS) and silica. These materials possess different physical and optical properties, which may present advantages or limitations for different applications.

Polymer beads are generally hydrophobic, and as such, have high protein binding abilities. However, they often require the use of some surfactant (e.g. 0.01 - 0.1% Tween® 20 or SDS) in the storage buffer to ensure ease of handling. During synthesis, functional monomers may be co-polymerized with styrene to develop beads with reactive surface groups. Functional groups may be used in covalent binding reactions and also aid in stabilizing the suspension.

Silica microspheres are inherently hydrophilic and negatively-charged. Consequently, aqueous silica suspensions rarely require the use of surfactants or other colloidal stabilizers. Carboxyl- and amine-functionalized silica spheres are available for use in common covalent coating protocols, and plain silica microspheres may be modified using a variety of silanes to generate functional groups or alter surface properties.

COMPOSITION	REFRACTIVE INDEX (589nm)	DENSITY (g/cm <sup>3</sup> )	GLASS TRANSITION TEMPERATURE (°C)
PS	1.59	1.05	95
Silica	1.43 - 1.46*	2.0*	>>1000

\*Determined using representative samples. Other values are as reported in the literature for bulk polymer or silica.

**Common Test and Assay Formats**

TEST / ASSAY FORMAT	BEAD SIZE	BEAD TYPE	COATING STRATEGY	DETECTION STRATEGY
Turbidimetric	50nm – 500nm	Undyed	Covalent	Turbidimetry
Magnetic Chemiluminescence	1 - 5 µm	ProMag® HP	Covalent	Luminescence
Flow cytometric (suspension array)	2µm – 15µm	QuantumPlex™ QuantumPlex™ (encoded populations for multiplexing) or Non-fluorescent (simplex or multiplex with different bead sizes)	Covalent or streptavidin / biotin	Flow cytometer
Bead “ELISA”	1- 3µm	ProMag®, ProMag® HP	Covalent	Spectrophotometer
Lateral Flow	0.1µm – 0.4µm	Dyed Europium Chelate	Covalent or adsorption	Visual or Automated Reader (absorbance, fluorescence)
Dipstick	0.1µm – 0.4µm	Dyed (visible)	Covalent or adsorption	Visual
Latex Agglutination Test (LAT)	0.2µm – 1.0µm	Undyed or visibly dyed	Covalent or adsorption	Visual (may be microscope-assisted)

**Magnetic Assays**

ASSAY	
Chemiluminescence	ProMag® HP
Immuno	ProMag®, ProMag®HP, COMPEL™ or BioMag®
Molecular	Magnefy™, ProMag® or ProMag® HP
Flow cytometric	QuantumPlex™

**Magnetic Separations**

SEPARATION	
Antibodies	BioMag® Protein A or Protein G and ProMag® Protein G
Proteins	BioMag®, ProMag®, ProMag® HP or COMPEL
Glycans, glycoproteins	BioMag® WGA or Con A
Cells	BioMag® anti-CD marker or secondary antibody
Subcellular organelles	BioMag® (antibody-coated)
Immunoprecipitates	BioMag® secondary antibody
mRNA	BioMag® Oligo dT(20) or mRNA Purification System
DNA (total-SPRI)	Magnefy™ or BioMag® COOH
DNA (specific sequence)	ProMag® ProMag® HP, Magnefy™, COMPEL™ or BioMag® Streptavidin or COOH (oligo attachment)
Biopanning	ProMag®, COMPEL™ or BioMag®

## MICROSPHERES & PARTICLES / TECHNICAL INFORMATION

### Special Properties

Many applications in the life sciences demand added properties such as fluorescence or a visible color, or iron oxide inclusions for magnetic separations. Polymer spheres (and some polymer-based magnetic spheres) are often internally dyed via organic solvent swelling and many standard products are available. Dye concentrations can be adjusted to produce beads with different intensities to meet special needs, such as QuantumPlex™ for multiplexed flow cytometric assays or our Dragon Green or Flash Red Intensity Standards, which support imaging applications and associated instrument QC. Many surface- or internally-labeled fluorescent beads are also available as specialized flow cytometry standards.

Various types of superparamagnetic microparticles are available, with different matrices, magnetite content, surface groups, etc. For new assays or applications, magnetic beads should be evaluated with application demands in mind.

### GENERAL HANDLING

#### Particle Suspension

The number of particles per ml will vary with the specified weight to volume (w / v) concentration, diameter of the particle and density of particle composition. The number of particles per milliliter can be calculated using the following equation:

$$\frac{6x 10^{12} \rho_L}{\rho_s p z^3}$$

$x$  = solids content (g/ml)  
 $\rho_s$  = density of solid sphere (g/cm<sup>3</sup>)  
 $z$  = diameter (μm)  
 $\rho_L$  = density of bead suspension (g/ml)  
 $\rho_L = 100 \rho_s / [100 \times (1 - \rho_s) + (100 \rho_s)]$

The following grid gives the estimated particles per milliliter for common diameters of polystyrene beads ( $\rho = 1.05$  g/ml) suspended at 2.5% solids (w / v), 25mg/mL, and silica beads ( $\rho = 2.0$  g/ml) suspended at 10% solids (w/v, 100mg/mL), at common diameters:

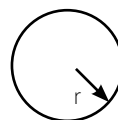
DIAMETER (μm)	POLYSTYRENE 2.5% SOLIDS (PARTICLES/ML)	SILICA 10% SOLIDS (PARTICLES/ML)
0.05	$3.64 \times 10^{14}$	N/A
0.10	$4.55 \times 10^{13}$	$1.00 \times 10^{13}$
0.20	$5.68 \times 10^{13}$	$1.26 \times 10^{13}$
0.35	$1.06 \times 10^{12}$	$2.34 \times 10^{12}$
0.50	$3.64 \times 10^{11}$	$8.04 \times 10^{11}$
0.75	$1.08 \times 10^{11}$	$2.38 \times 10^{11}$
1.00	$4.55 \times 10^{10}$	$1.00 \times 10^{10}$
1.50	$1.35 \times 10^{10}$	$2.98 \times 10^{10}$
2.00	$5.68 \times 10^9$	$1.26 \times 10^{10}$
3.00	$1.68 \times 10^9$	$3.72 \times 10^9$

DIAMETER (μm)	POLYSTYRENE 2.5% SOLIDS (PARTICLES/ML)	SILICA 10% SOLIDS (PARTICLES/ML)
4.50	$4.99 \times 10^8$	$1.10 \times 10^9$
6.00	$2.10 \times 10^8$	$4.65 \times 10^8$
10.0	$4.55 \times 10^7$	N/A
15.0	$1.35 \times 10^7$	N/A
20.0	$5.68 \times 10^6$	N/A
25.0	$2.91 \times 10^6$	N/A
45.0	$4.99 \times 10^5$	N/A
75.0	$1.08 \times 10^5$	N/A
90.0	$6.24 \times 10^4$	N/A



**Surface to Volume Ratios**

Use these formulas as a rough guide to estimate the surface area or the volume of a sphere for protein binding applications and charge calculations.



Surface Area =  $4 \pi r^2$

Volume =  $4 / 3 \pi r^3$

**Handling and Storage**

Our microspheres are synthesized in water and should be stored in aqueous environments. Deionized water is the best suspending medium for uncoated spheres as high concentrations of ions may result in aggregation. Coated microspheres should be stored in buffers that are appropriate for the ligand that is bound to the surface. Storage of particles over long periods of time should be at 4°C to deter the growth of microbes, and the particle suspensions must not be allowed to freeze. Dyed and fluorescent particles should be protected from light. Biocides may be added for extended storage.

**Washing**

Microspheres sold as instrument standards can often be used as-is, or simply diluted in an appropriate buffer or aqueous solution. Conversely, microspheres that will be coated or otherwise modified should be washed to remove additives and residuals that could interfere with the binding reactions or downstream processes.

Common washing and separation methods for non-magnetic beads include centrifugation, filtration and dialysis. Selection of the “best” method will depend on processing volume/scale, required throughput and microsphere characteristics. Centrifugation is often used for small-scale separations of  $\geq 0.5\mu\text{m}$ , dialysis filtration for small spheres  $< 0.5\mu\text{m}$ , or to achieve higher throughput. Superparamagnetic microparticles are separated using rare earth or electro-magnets.

**Centrifugation**

Particle washing may be conducted via centrifugation. This procedure must be performed carefully as excessive centrifugation may result in resuspension difficulties. Though centrifugation of BioMag® magnetic particles is not recommended, ProMag® may be processed in this way. For the purposes of pelleting, it is important to understand the settling velocities of particles. For spherical particles, settling velocity can be calculated using Stokes’ Law:

$$V = \frac{2Ga^2(r_1 - r_2)}{9\eta}$$

$V$  = Velocity (cm/sec)  
 $G$  = G force ( $1G = 980.7 \text{ cm/sec}^2$ )  
 $r_1$  = density of particle ( $\text{g/cm}^3$ )  
 $r_2$  = density of suspending media ( $\text{g/cm}^3$ )  
 $\eta$  = coefficient of viscosity  
 $a$  = radius of spherical particle in cm

For calculating the settling velocity of polystyrene spheres at 1 G in 20°C water, Stokes’ Law can be expressed in the following formula where  $d$  = diameter ( $\mu\text{m}$ ) ( $r_1 = 1.05 \text{ g/cm}^3$ ,  $r_2 = 1.00 \text{ g/cm}^3$  and water = 1.002 cp);  $V = 2.77 \times 10^{-6} d^2$ . To estimate appropriate times for centrifugation, settling velocity is multiplied by the G forces generated by the centrifuge. The resultant velocity is then compared to the height of the centrifuge tube.

For example: A 1.0 $\mu\text{m}$  polystyrene particle placed in a microcentrifuge generating 10,000 G will settle at a velocity of  $2.72 \times 10^{-2} \text{ cm/sec}$ .

BEAD TYPE	DIAMETER RANGE	RELATIVE CENTRIFUGAL FORCE (xG)	SPEED (RPM)
Polymer	> 0.5 $\mu\text{m}$	6500 - 14000	8925 - 13100
	> 1.0 $\mu\text{m}$	3000 - 5500	6060 - 8210
	> 5 $\mu\text{m}$	1300 - 3000	3990 - 6060

### Centrifugation *continued*

BEAD TYPE	DIAMETER RANGE	RELATIVE CENTRIFUGAL FORCE (×G)	SPEED (RPM)
Silica	> 0.5µm	3000 - 5500	6060 - 8210
	> 1.0µm	1300 - 3000	3990 - 6060
	> 5.0µm	750 - 1300	3030 - 3990
Protein/Ab-coated	> 0.5µm	8000 - 11000	9900 - 11610
	> 1.0µm	5500 - 8000	8210 - 9900
	> 5.0µm	2000 - 5500	4950 - 8210

Pelleting the particle in a 4cm high tube would require a 144-second (minimum) centrifuge run. The actual time required to form an acceptable pellet could possibly be 50% longer. These calculations are intended to be used as guidelines to assist in determining centrifugation time. Different size particles yield dramatically different settling velocities. A 10.0µm particle could settle in 2 seconds under the aforementioned conditions, whereas a 0.01µm particle could take at least 4 hours to settle. Brownian motion and particle concentration also affect the settling rate.

### Aggregation

Our microspheres are available in a variety of compositions, including polystyrene, poly(methyl methacrylate) and silica. Though polymer microspheres are more susceptible to hydrophobic-mediated aggregation, there are several factors that may influence the dispersity of the suspension. For example, low surface charge, small diameter (high surface area:volume ratio), high microsphere concentration and suboptimal buffer composition or pH may promote aggregation. Strategies that are effective in addressing aggregation thus counter these conditions, i.e. use of surfactant to reduce hydrophobicity (e.g. 0.01 - 0.1% Tween® 20 or SDS), sonication to disrupt aggregates and adjusting microsphere concentration or buffer pH to deter contact between individual spheres.

### COATING MICROSPHERES

Microspheres may be coated with capture molecules such as antibodies, oligonucleotides, peptides, etc. for use in diagnostic or bioseparation applications. Microsphere coatings are typically optimized to achieve desired specific activity, while minimizing nonspecific interactions. Consideration should also be given to the required stability, development time frame and budget and the specific biomolecule to be coated. These factors will aid in determining the most fitting coating strategy for both short- and long-term objectives.

Standard microsphere products support three basic coating strategies: passive adsorption, covalent coupling and affinity binding. It is important to note that each binding strategy has benefits and limitations, which should be weighed in the context of study objectives and the demands that will be placed upon the finished reagent.

#### Passive Adsorption

Passive adsorption relies primarily on hydrophobic interactions between the biomolecule and the polymer particle. Such coatings are fairly simple to conduct, involving incubation of the microspheres with the purified ligand. They typically require little optimization and reagents may be developed relatively quickly. However, as adsorption relies on the formation of multiple attachment points between the molecule and the particle, this strategy is typically reserved for use with proteins and non-functionalized polymer spheres. Adsorption is generally not suitable for hormones, peptides or nucleic acids in hybridization-based applications, and protein adsorption to silica is expected to be less efficient than to polymer. Most techniques using passive adsorption technology report four to six months of bead stability. The reagent may be lyophilized for extended stability.

## Covalent Coupling

Covalent coupling results in the permanent attachment of the molecule to the functionalized (e.g. carboxyl or amine) microsphere. It can provide needed stability when developing a commercial reagent, and for multiplexed assays, where analyte-specific bead populations are mixed. Additionally, specialized chemical linkers may be employed to address steric effects or to optimally orient the molecule. If surfactant is required as an additive in the assay, covalent coupling procedures are recommended as surfactants can displace adsorbed proteins from the surface. Covalent binding is also important for the immobilization of oligonucleotides or peptides, where end-point attachment is required. Although covalent binding protocols often involve a higher level of optimization than other approaches, coupling kits are available to simplify the process.

### When Coupling to Particles Less Than 0.5µm

The chemical aspects of the protocols are universally applied, but the mechanical separations of these particles must be adapted for specific sizes. Most protocols suggest centrifugation to separate the particles from the reagents. This is not practical for particle sizes less than 0.5µm, as most microcentrifuges cannot spin these particles down within 30 minutes. Even extremely high G forces are not recommended, as resuspension becomes arduous. Other separation techniques may be utilized, such as dialysis, forced membrane filtration or centrifugal filter devices. Polysciences also offers Vivaspin® Ultrafiltration devices to effect separation of 0.02-0.5µm particles.

## Affinity Binding

Affinity binding is a straightforward method for immobilizing primary antibodies or tagged molecules. Proteins A and G and Fc-specific antibody coatings permit the directed immobilization of primary antibodies, and streptavidin (SA) is used extensively for the binding of biotinylated molecules, such as antibodies, peptides and oligonucleotides.

BIOMOLECULE	COATING STRATEGY	NOTES
Peptides	Covalent Streptavidin / biotin	End-point attachment to preserve the activity of the peptides.
Nucleic acids	Covalent Streptavidin / biotin	End-point attachment to permit hybridization of probe sequence with target sequence.
Proteins (e.g. antibodies)	Covalent Adsorption Streptavidin / biotin Proteins A / G	Common proteins are generally large enough that multi-point attachment and nonspecific orientation do not compromise their activity. However, linkers, spacers (covalent or SA / B) or affinity ligands may be employed to address steric effects or sub-optimal orientation.

### Alternative for BSA as a Blocking Agent

Any innocuous protein may be used to block the effects of non-specific adsorption. In selecting an alternative to BSA, it is suggested that the size of the active protein and the size of the blocking protein be compared. BSA is highly recommended for IgG coupling. However, the large size of BSA could obscure the activity of smaller active proteins. Glycine or small polypeptides may be used as alternatives.

### Protein Coupling Efficiency Determination

Coupling efficiency can be determined by measuring the change in absorbance of the supernatant before and after coupling.

1. Set spectrophotometer wavelength to 280nm. Blank with the Coupling Buffer.
2. Measure the absorbance of the Pre-Coupling Solution. A further dilution may be necessary to read an absorbance depending upon the amount of protein added (D = dilution factor).
3. Measure the absorbance of the Post-Coupling Solution. A dilution may be necessary to read the absorbance (D = dilution factor). Calculate the coupling efficiency, expressed as the % Protein Uptake, as follows. Typical values of Protein Uptake are >60%.

$$\left[ \frac{(A_{280} \text{ Pre-Coupling Solution} \times D_1) - (A_{280} \text{ Post-Coupling Solution} \times D_2)}{(A_{280} \text{ Pre-Coupling Solution} \times D_1)} \times 100 \right]$$

### Protein Binding Protocols

The following sequences serve as guidelines for protein binding. Technical Data Sheets (TDS) with detailed step-by-step protocols can be downloaded from our website, and ligand-specific immobilization protocols may be found in the literature.

ADSORBING PROTEIN ON PARTICLES - TDS 238E	COUPLING BY CARBODIIMIDE - TDS 238C & 644	COUPLING BY GLUTARALDEHYDE - TDS 238D & 238G
Plain Polystyrene	Carboxylate Functional Particles	Amino or Blue Dyed Particles
<ul style="list-style-type: none"> <li>Initial Buffer: 0.1M Borate Buffer, pH 8.5</li> <li>Suspend in buffer, spin down and resuspend 2 or 3 times.</li> <li>Suspend in borate buffer.</li> <li>Add protein and mix end-to-end overnight.</li> <li>Spin and save supernatant for protein determination.</li> <li>Re-suspend in BSA in appropriate buffer and spin down twice.</li> <li>Re-suspend in PBS, pH 7.4, containing BSA (storage buffer).</li> <li>Protein bound directly on surface.</li> </ul>	<ul style="list-style-type: none"> <li>Initial Buffer: 0.1M Carbonate Buffer</li> <li>Suspend in buffer, spin down and resuspend 2 or 3 times.</li> <li>Suspend in MES buffer.</li> <li>Add fresh carbodiimide solution dropwise and incubate for 15 - 30 minutes.</li> <li>Wash to remove excess carbodiimide, then resuspend in borate buffer.</li> <li>Add protein and mix end-to-end for 2 - 4 hours.</li> <li>Add ethanolamine, mix for 30 minutes.</li> <li>Spin and save supernatant for protein determination.</li> <li>Re-suspend in BSA-containing buffer and spin down twice.</li> <li>Re-suspend in PBS, pH 7.4, containing BSA (storage buffer).</li> <li>Protein bound 2 - 3 carbon atoms from surface.</li> </ul>	<ul style="list-style-type: none"> <li>Initial Buffer: 0.02M PBS, pH 7.4</li> <li>Suspend in buffer, spin down and resuspend 2 or 3 times.</li> <li>Suspend in PBS.</li> <li>Suspend in 8% glutaraldehyde in PBS, pH 7.4 and mix end-to-end for 4 - 6 hours.</li> <li>Wash to remove excess glutaraldehyde and resuspend in PBS buffer.</li> <li>Add protein and mix end-to-end overnight.</li> <li>Add ethanolamine, mix for 30 minutes.</li> <li>Spin and save supernatant for protein determination.</li> <li>Re-suspend in BSA-containing buffer and spin down twice</li> <li>Re-suspend in PBS, pH 7.4, containing BSA (storage buffer).</li> <li>Protein bound 5 carbon atoms from surface of blue dyed beads and 11-12 carbon atoms from surface of amino beads.</li> </ul>

### Protein Coupling Troubleshooting

Below are some solutions for protein coupling troubleshooting. If you do not see a solution to the problem you have encountered, please email us at: [info@polysciences.com](mailto:info@polysciences.com).

PROBLEM	SOLUTION
Clumping prior to use	Careful sonication
<ul style="list-style-type: none"> <li>Clumping after procedure</li> <li>Carbodiimide addition causes clumping</li> <li>Glutaraldehyde addition causes clumping</li> <li>Protein addition causes clumping</li> <li>Washing causes clumping</li> </ul>	<ul style="list-style-type: none"> <li>Isolate the step that causes clumping</li> <li>Add slowly, agitate beads, decrease bead concentration</li> <li>Add slowly, agitate beads, decrease bead concentration; add an excess of glutaraldehyde to avoid chemical crosslinking of particles; clumping will typically resolve by the conclusion of protein coupling</li> <li>Increase protein concentration</li> <li>Add surfactant or reduce number of washing steps</li> </ul>
Low binding	Move pH closer to protein isoelectric point
Variable coating	Use pure water – no contaminants; use fresh reagents
Coating, but no reaction	Optimize pH away from isoelectric point
Centrifuge not practical	Use membrane filtration, dialysis or spin filters for small particles
Nonspecific adsorption	Use an alternative for BSA (glycine, casein)
Small proteins bound, but not reactive	Use a crosslinking reagent to extend coupling away from the surface of the bead
Long-term storage leaches protein	Try covalent attachment or lyophilize final product

### POLYSTYRENE MICROSPHERES

#### Polystyrene Microsphere General Characteristics

PARAMETER	DESCRIPTION
Size	0.05 - 150µm for a wide range of applications
Monodispersity	Coefficient of variance ≤15% for most size ranges, 0.05 - 90µm
Concentration	2.5%
Suspending medium	DI water with residual surfactant to ensure stable dispersions
Color	Undyed, red, yellow, black, blue, violet, orange, green and several fluorescent colors
Functionality	Plain, COOH, -NH <sub>2</sub> and -OH.
Stability	Inert, safe for handling and ideal for biological studies
Protein Affinity	Covalent coupling for functionalized spheres or passive adsorption possible
Glass Transition	~94°C, stable to moderate heating temperature; some diameters feature a low level of DVB crosslinking
Bead Density	~1.05 g/cm <sup>3</sup> , similar to cell densities
Refractive Index (589nm)	~1.59 - 1.60, ideally suited for applications
Biocides	None (except where noted); particles are compatible with sodium azide, ProClin® and other treatments.

## MICROSPHERES & PARTICLES / TECHNICAL INFORMATION

### Polystyrene Microsphere Stability

Polysciences offers a one year shelf life for most products. Unless noted, biocides are not added and the particles are shipped in DI water with residual surfactant. All suspended polystyrene products should be stored at 4°C to prevent microbial growth. Microsphere suspensions must be protected from freezing to safeguard against irreversible aggregation. If long-term storage is required, the addition of biocide is recommended.

### Polystyrene Microsphere Monodispersity

The following chart lists our specifications for the uniformity of our particles, expressed as the coefficient of variance (CV). The actual diameter (D) and the standard deviation (SD) for each lot is printed on the label. The % CV is expressed as the SD/D x 100.

DIAMETER (µm)	CV MAXIMUM (%)
0.05	≤15
0.10	≤15
0.20	≤8
0.35	≤5
0.50	≤3

DIAMETER (µm)	CV (%)
0.75	≤3
1.00	≤3
1.5	≤5
2.00	≤5
3.00	≤5

DIAMETER (µm)	CV MAXIMUM (%)
4.50	≤7
6.00	≤10
10.00	≤10
15.00 - 90.00	≤15

### Microsphere Sterility and Shelf Life

Most of our polystyrene microspheres are packaged as non-sterile suspensions. We have made the decision to give the customer the option of adding biocides or preservatives into the product upon receipt. The particles will be stable for up to one year after the date of sale. Degradation of the particles, their functional groups or the incorporated dyes is not expected under normal conditions and our primary concern is the quality of the DI water. We make every effort to ensure that our water source and packaging procedures will allow us to meet our one year shelf life. If a sterile product is necessary, then the particles may be gamma irradiated. Additions of biocides, such as thimerosal or sodium azide, are common. For research applications involving in vivo studies or live cells, the particles can be suspended in alcohols prior to use. See *Technical Data Sheet 670, Decontaminating Microspheres, for more information.*

### Embedding Tissues Containing Polystyrene Microspheres

Polystyrene microspheres have been visualized by light microscopy in unembedded coverslip monolayers, in fixed or unfixed frozen sections, in paraffin sections and in glycol methacrylate kits. For paraffin sections, n-butyl alcohol must be used for clearing and deparaffination since typical organic solvents (e.g. toluene, THF or ethyl acetate) will destroy the beads. The beads cannot be embedded in methyl or butyl methacrylate media. TEM embedments in Epon and Spurr's have been successful.

POLYBEAD® AND FLUORESBRITE® DYED PARTICLES

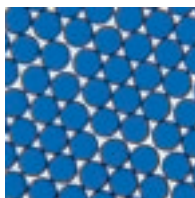
**Types of Dyes Used**

Most of our visibly dyed and fluorescent (i.e. internally dyed) products feature water insoluble dyes\*. This minimizes the incidence of dye leaching from the particles into aqueous buffers. Our visibly dyed microspheres are available as black, blue, red, violet, orange, green and yellow. Polysciences' most popular fluorescent dyes match the following filter settings:

FLUORESCENT PARTICLES	FILTER SETTING	DYED PARTICLE	EXCITATION MAX. (NM)	EMISSION MAX. (NM)
BB (Bright Blue)	Coumarin	BB	360	407
YG (Yellow Green)	Fluorescein	YG	441	486
YO (Yellow Orange)*	Rhodamine	YO	529	546
PC (Polychromatic Red)	Phycocerythrin	Red	491; 512	554
		Ruby Red	475; 590	663

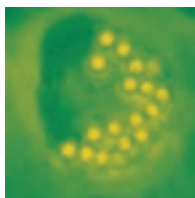
\* YO has limited water solubility; some leaching may occur with rigorous washing.

**Dyed Microspheres and Microscopy**



A 6µm visibly dyed (non-fluorescent) particle is the smallest particle whose color can reasonably be observed under light microscopy conditions (400x). Infinite magnification of a dyed particle will result in an undyed appearance. Fluorescently-labeled Fluoresbrite® microspheres are recommended for microscopic viewing of particles smaller than 6µm. Fluoresbrite® 0.05µm particles have been identified using a fluorescent microscope set at 100x objective and 10x ocular magnification.

**Fluoresbrite® for Phagocytosis or Retrograde Transport**

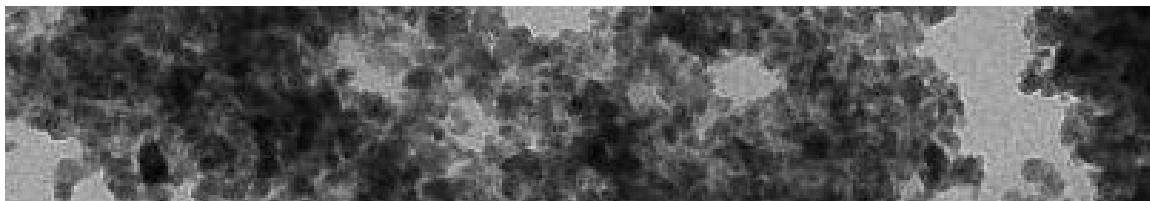


Uniform polystyrene particles are ideal for cellular studies. Microspheres are easily identified by their intense fluorescence, and polystyrene has long been recognized as a biologically active surface for cell attachment. See *Technical Data Sheet 430 for more information on phagocytosis studies.*

**Fluoresbrite® to Calibrate Flow Cytometers**

Our Fluoresbrite® Calibration Grade particles have had a long history of use as flow cytometry standards. We also carry the extensive line of Bangs Flow Cytometry Standards. See Polysciences Flow Cytometry Technical Guide or *Technical Data Sheet 431 for more information.*

BIOMAG®, BIOMAG® PLUS AND BIOMAG® MAXI



### BioMag® Physical Characteristics

Our conventional BioMag are irregularly-shaped iron oxide particles that are approximately 1-2µm in size. BioMag Plus are similar, but have undergone additional processing for the reduction of outliers. BioMag Maxi are ~6µm. Functionalized versions are covered with a silane coating that provides functional groups for the attachment of ligand. The irregular shape of the BioMag, BioMag Plus and BioMag Maxi particles provide increased surface area and therefore increased binding capacity per unit mass.

BioMag particle surface area:	>100 m <sup>2</sup> /g
BioMag particle density:	>>2.5 g/cc
BioMag settling rate:	4% in 30 minutes

### BioMag® Stability

As the BioMag base particle is composed of coated iron oxide, the particle itself is very stable. However, any biologic ligands attached to BioMag particles are susceptible to degradation over time. BioMag® should not be frozen or exposed to elevated temperatures.

### BioMag® Stability in Solvents

BioMag particles have been used in various coupling buffers at pH ranging from 5.5 to 8.0. Apart from use in brief elution steps, low pH buffers can be problematic for BioMag. It is best to test BioMag in advance of exposure to organic solvents, extreme pH, or elevated temperature.

### BioMag® Magnetic Responsiveness

BioMag particles are superparamagnetic. In other words, they have no magnetic memory and will readily re-suspend if the magnetic force is removed. The particles are greater than 90% magnetite in composition and have a magnetization of 25 - 35 emu/g (Electromagnetic Units).

### Positive and Negative Selection with BioMag®

BioMag particles can be used for both positive and negative selections. In negative selection, the unwanted components are bound and pulled out of solution by the BioMag particles. After magnetic separation, the resulting supernatant is enriched for the target cells or molecules. In positive selection schemes, the BioMag particles are used to pull out of solution only the target cells or molecules of interest. Unwanted cell populations and other sample constituents will be discarded with the supernatant, resulting in a purified suspension of the target components.

### Magnetic Separator for BioMag®

Small superparamagnetic particles such as BioMag require a strong magnetic field for efficient separation. Polysciences' magnets offer optimal performance, featuring rare earth (Neodymium-Iron-Boron) magnets embedded in plastic housings, with magnetic strengths ranging from 27 - 35 megagauss Oersted. See *Technical Data Sheet 796* for additional information on the magnetic separators offered.

*For complete technical information for each BioMag® product, refer to the appropriate Technical Data Sheet.*



FLOW CYTOMETRY QUALITY CONTROL

**Validation / Quality Control**

An instrument validation / Quality Control (QC) program will depend on the type and complexity of the work being performed on the instrument. Multi-fluorescent beads such as Full Spectrum™ or Quantum™ QC allow operators to run a single product to check basic function and track general stability of all of the lasers / detectors. It will also be important to understand the sensitivity, resolution and linearity of different detectors. Linearity determinations are particularly important for quantitative fluorescence analyses.

**Instrument Set-Up**

Flow cytometers are highly configurable, and results can vary dramatically with different instrument settings. Establishing a common “Window of Analysis” for each detector, with upper and lower fluorescence limits defined, allows reference populations to be positioned in approximately the same place on the same scale. This may be accomplished with the aid of Quantum™ QC or Full Spectrum™. If multi-color analyses are being performed, compensation standards will likely be required to tailor settings.

**Applications**

There are many different types of studies that can be conducted on a flow cytometer. This might include quantitative surface marker expression analysis (Quantum™ MESF, Quantum™ Simply Cellular®), absolute counting (Flow Cytometry Absolute Count Standard™), size estimation (Small Bead Calibration Kits, Size Calibration Standard Kits), or various fluorescence analysis (Fluorescence Reference Standards).

The chart that follows provides additional product recommendations for specific tasks / objectives, and we additionally invite you to contact us to discuss the specific requirements of your program.

CATEGORY	PURPOSE	FREQUENCY	PRODUCTS
Daily QC	General check of instrument stability / status	Daily	Full Spectrum™ (multi) Ultra Rainbow Fluorescent Particles (multi) Fluorescence Reference Standards (single) Flow Check™ Ruby Red Fluorescent Microspheres (single) Quantum™ QC (multi)
Daily QC	General check of instrument optical system	Daily	Full Spectrum™ (multi) Ultra Rainbow Fluorescent Particles (multi) Fluorescence Reference Standards (single) Flow Check™ Ruby Red Fluorescent Microspheres (single) Quantum™ QC (multi)
Daily QC	Optical alignment	Daily	Right Reference Standard™ Flow Check™ Alignment and Compensation Particle Sets
Daily QC	Fluidics check	Daily	Surface-labeled fluorescent microspheres, e.g. Fluorescence Reference Standards, Quantum™ MESF
Weekly QC	Optical system sensitivity, resolution for linearity (for specific lasers / PMTs)	Weekly	Quantum™ QC (multi)
Daily Set-Up	Standardized instrument set-up (PMTs)	Daily or between runs if settings are changed	Quantum™ QC (multi)
Daily Set-Up	Standardized compensation settings for multi-color analyses	Daily or between runs if settings are changed	FITC/PE Compensation Standard Simply Cellular® Compensation Standard, Quantum™ Simply Cellular® Viability Dye Compensation Standard Simply Cellular for Violet Laser

Table continued on next page

## MICROSPHERES & PARTICLES / TECHNICAL INFORMATION

CATEGORY	PURPOSE	FREQUENCY	PRODUCTS
Application	Fluorescence quantitation in cellular expression studies or bead-based assays	Daily when quantitative analyses are performed or between different applications, if fluorescence PMT settings are changed	Quantum™ MESF Quantum™ Simply Cellular®
Application	F : P ratio determination for quantitative fluorescence analyses	As needed, i.e. with each new lot of fluorochrome-conjugated antibody	Simply Cellular® (used in conjunction with Quantum™ MESF)
Application	Compensation for multi-color flow cytometry	Daily or between different applications if fluorescence PMT settings are changed	FITC / PE Compensation Standard Simply Cellular® Compensation Standard Quantum™ Simply Cellular® Viability Dye Compensation Standard Simply Cellular® for Violet Laser, Fluorescence Reference Standards (single) Flow Cytometry Antibody Binding Beads (Protein A and G)
Application	Cell counting	As needed	Flow Cytometry Absolute Count Standard™
Application	Cell size estimation	As needed	Size Calibration Standards Kit Submicron Bead Calibration Kit Micron Bead Calibration Kit
Application	Suspension array	Platform for development of bead-based flow cytometric assays	QuantumPlex™ QuantumPlex™M

**Accessory Reagents**

TDS 793	Polysciences Bead Solution
TDS 794	Polysciences Bead Coupling and Storage Buffers
TDS 911	Accessory Reagents
TDS 912	Surfactants

**Pollens**

TDS 281	Sporopollenin Microparticles
TDS 919	Pollens
TDS 604	Iron Powder
TDS 605	Black Iron Oxide Particles
TDS 607	Red Iron Oxide Particles
TDS 744	Hollow Glass Beads
TDS 758	Glass Beads
TDS 783	Phenolic Beads, Hollow
TDS 784	Polybead® Hollow Microspheres

**Dyed Microspheres**

TDS 808	Polybead® Dyed Microspheres
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**Flow Cytometry Products**

TDS 508	FlowCheck™ Microspheres
TDS 613	FlowCheck™: Flow Cytometry Particles and Sets
TDS 624	FlowCheck™ Ruby Red Fluorescent Microspheres
TDS 914	Flow Cytometry Instrument Quality Assurance / Quality Control Program
TDS 916	Small Bead Calibration Kits
TDS 1006	Nanobead Calibration Kit
PDS 214	QuantumPlex™ SP Streptavidin
PDS 215	QuantumPlex™ Streptavidin
PDS 234	QuantumPlex™ SP Carboxyl
PDS 235	QuantumPlex™ Carboxyl
PDS 250	QuantumPlex™M Carboxyl
PDS 251	QuantumPlex™M SP Carboxyl
PDS 252	QuantumPlex™M Streptavidin
PDS 253	QuantumPlex™M SP Streptavidin
PDS 510	Right Reference Standard™
PDS 612	Ultra Rainbow Fluorescent Particles
PDS 704	Fluorescence Intensity Standards
PDS 725	Quantum™ QC
PDS 810	Simply Cellular® anti-Mouse IgG
PDS 814	Quantum™ Simply Cellular®
PDS 820	FITC / PE Compensation Standard
PDS 821	Quantum™ MESF Kits
PDS 829	Size Calibration Standards Kit
PDS 831	Time Delay Calibration Standard
PDS 835	Simply Cellular® anti-Mouse for Violet Laser
PDS 850	Simply Cellular® anti-Mouse Compensation Standard
PDS 851	Simply Cellular® anti-Rat Compensation Standard
PDS 852	Simply Cellular® anti-Human Compensation Standard
PDS 853	Viability Dye Compensation Standard
PDS 854	Flow Cytometry Protein A and Protein G Antibody Binding Beads
PDS 880	Flow Cytometry Absolute Count Standard™
PDS 885	Full Spectrum™
PDS 890	Fluorescence Reference Standards
TDS 917	Quantitative Cytometry

PDS 818	Quantum™ Simply Cellular® and Quantum™ MESF Tips and Techniques
PDS 819	QuickCal®, v 2.3 Data Analysis Program

**Fluorescent Microspheres**

TDS 431	Fluoresbrite® Microparticles – Frequently Asked Questions
TDS PDS741	Europium Chelate Sampler Packs
TDS 745	Microsphere Excitation and Emission Spectra
TDS 913	StarLight™ Calibration Slides
TDS 915	Fluoresbrite® Europium Chelate Microspheres

**Informational Data Sheets**

TDS 410	Microsphere Coating Reagents
TDS 430	Phagocytosis and Microparticles
TDS 670	Decontaminating Microspheres
TDS 753	Streptavidin-Coated Microspheres Binding Biotinylated DNA
TDS 788	Microsphere Selection

**Magnetic Microparticles**

TDS 438	Magnetic Microparticles
TDS 528	BioMag® and Cell Sorting
TDS 528A	BioMag® and Cell Sorting References
TDS 529	BioMag® Oligo (dT) 20
TDS 530	BioMag® Nuclease-free Streptavidin
TDS 531	BioMag® Coupling Procedures for Attaching Oligonucleotides
TDS 546	BioMag® Magnetic Immobilization Kit & BioMag® Amine
TDS 547	BioMag® Superparamagnetic Iron Oxide
TDS 548	BioMag® Goat anti-Rat IgG (Fc Specific)
TDS 549	BioMag® Goat anti-Mouse IgG
TDS 550	BioMag® Goat anti-Mouse IgG (Fc Specific)
TDS 551	BioMag® Streptavidin
TDS 553	BioMag® Protein G
TDS 554	BioMag® Protein A
TDS 555	BioMag® Dextran-coated Charcoal
TDS 557	BioMag® Goat anti-Rat IgM
TDS 558	BioMag® Goat anti-Mouse IgM
TDS 559	BioMag® Goat anti-Rabbit IgG
TDS 560	BioMag® Goat anti-Rat IgG
TDS 561	BioMag® Goat anti-Human IgM
TDS 562	BioMag® Goat anti-Human IgG (Fc Specific)
TDS 563	BioMag® Goat anti-Human IgG
TDS 570	BioMag® Carboxyl
TDS 583	BioMag® SelectaPure anti-Human CD8
TDS 584	BioMag® SelectaPure anti-Human CD14
TDS 585	BioMag® SelectaPure anti-Human CD16
TDS 586	BioMag® SelectaPure anti-Human CD19
TDS 587	BioMag® SelectaPure anti-Human CD34
TDS 588	BioMag® SelectaPure anti-Human CD45
TDS 589	BioMag® SelectaPure anti-Human CD56
TDS 590	BioMag® SelectaPure anti-Human CD71
TDS 591	Cell Sorting Using BioMag® SelectaPure anti-Human Leukocyte Particles
TDS 592	BioMag® SelectaPure anti-Mouse CD4
TDS 593	BioMag® SelectaPure anti-Mouse CD8a
TDS 594	BioMag® SelectaPure anti-Mouse CD45R
TDS 595	BioMag® SelectaPure anti-Human CD2
TDS 596	BioMag® SelectaPure anti-Human CD11b

## MICROSPHERES & PARTICLES / TECHNICAL INFORMATION

### Technical Data Sheets

#### Magnetic Microparticles *continued*

TDS 617	BioMag® Plus Amine & BioMag® Plus Amine Protein Coupling Kit
TDS 618	BioMag® Plus Carboxyl & BioMag® Plus Carboxyl Protein Coupling Kit
TDS 619	BioMag® Plus Goat anti-Mouse IgG Particle Antibody Coupling Starter Kit
TDS 620	BioMag® Plus Protein A and G Particle Antibody Isolation Starter Kit
TDS 621	BioMag® Plus Streptavidin & BioMag® Plus Streptavidin / Biotin Binding Starter Kit
TDS 658	ProMax Albumin Removal Kit
TDS 659	ProMax Serum IgG Removal Kit
TDS 692	BioMag® Plus Mouse anti-Fluorescein IgG
TDS 721	BioMag® Maxi Carboxyl
TDS 722	BioMag® Maxi Amine
TDS 749	Magnetic Sampler Packs
TDS 755	ProMag® Magnetic Microspheres
TDS 759	BioMag® Plus Wheat Germ Agglutinin
TDS 766	BioMag® Plus Concanavalin A
TDS 855	Magnetic Particles – ProMag® and BioMag®
TDS 1003	ProMag® High Performance Magnetic Microspheres
TDS 1007	Magnefy™ Magnetic Microspheres

#### Magnetic Separators & Equipment

TDS 571	BioMag® Flask Separator
TDS 572	BioMag® 15ml / 50ml Tube Separator
TDS 573	BioMag® 12mm x 75mm Test Tube Separator
TDS 574	BioMag® Multi-32 Microcentrifuge Tube Separator
TDS 575	BioMag® 96-Well Plate Separator
TDS 575A	BioMag® 96-Well Plate Side Pull Magnetic Separator
TDS 576	BioMag® Multi-6 Microcentrifuge Tube Separator
TDS 577	BioMag® Solo-Sep Microcentrifuge Tube Separator
TDS 791	BioMag® MultiSep Magnetic Separator
TDS 796	Biomagnetic Separators
TDS AA022	Vivaspin® Ultrafiltration Device

#### NIST Traceable Particle Size Standards

TDS 623	Precision Particles: NIST Traceable Size Standards
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#### Polymer Microspheres

TDS 238	Polybead® Polystyrene Microspheres: FAQ
TDS 238C	Covalent Coupling of Proteins to Carboxylated Polystyrene Microparticles by the "Carbodiimide" Method
TDS 238D	Covalent Coupling of Proteins to Amino & Blue Dyed Microspheres
TDS 238E	Protocol for Adsorbing Proteins on Polystyrene Microspheres
TDS 404	Polyballs
TDS 644	PolyLink Protein Coupling Kit for COOH Microparticles
TDS 788	Polybead® Microspheres
TDS 856	Polystyrene Beads, Large

#### Protein Coated Microspheres

TDS 615	Protein Conjugated Microspheres
TDS 616	Streptavidin & Biotin Conjugated Microspheres

#### SureCount™ Particle Count Standards

TDS 852	SureCount™ Particle Count Standards
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#### Uniform Silica Microspheres

TDS 635	Uniform Silica Microspheres
TDS 792	Silica Microspheres, Colloidal

#### ViaCheck™ Viability Instrument Standards

TDS 706	ViaCheck™ Viability Control SingleShots™
TDS 711	ViaCheck™ Concentration Control





## MONOMERS

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Polysciences stocks a broad portfolio of monomers. Such variety offers you the tools to make a rich array of polymer compositions. Our Monomers Quick Reference Product Guide organizes this set of reactive monomers into various groupings. With these organized sets of data you will be able to readily compare and contrast monomer alternatives, enabling you to determine which monomers meet your needs. More detailed information and chemical structures are included in the alphabetical listing that follows.

Quick Reference Guide .....	272
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## MONOMERS / QUICK REFERENCE PRODUCT GUIDE

### ACID CONTAINING MONOMERS

Acidic groups are often used to convey solubility to polymers in aqueous media. These moieties can be converted to a wide range of alternative functional groups. Acid groups can be utilized as catalysts for chemical reactions. Additionally, they are employed in polymers as a functional group that enables improved adhesion to a variety of substrates through hydrogen bonding or metal chelation.

PRODUCT NAME	CATALOG #
$\beta$ -Carboxyethyl acrylate, >98% Active	24891
4-Methacryloxyethyl trimellitic anhydride	17285
Methacryloyl-L-Lysine	24315
o-Nitrobenzyl methacrylate, min. 95%	24360
2-Sulfoethyl methacrylate, >90%	02597
3-Sulfopropyl acrylate, potassium salt	17209
3-Sulfopropyl methacrylate, potassium salt, 98%	17210

### ACRYLIC MONOMERS (NEUTRAL, MONOFUNCTIONAL)

Monofunctional acrylics shape the type and nature of the main polymer chain backbone. Monomers are chosen to obtain the desired glass transition temperature, flexibility, mechanical strength, polarity and hydrophilic/hydrophobic character of the resulting polymer. Generally, acrylamides exhibit improved resistance to hydrolysis compared to acrylic/methacrylic esters.

PRODUCT NAME	CATALOG #
Benzyl acrylate, $\geq$ 99%	26296
Benzyl methacrylate, min. 95%	02000
N-Benzylmethacrylamide	17969
2-n-Butoxyethyl methacrylate, ~99%	02034
n-Butyl acrylate, min. 99%	02037
iso-Butyl methacrylate	02056
n-Butyl methacrylate	02059
sec-Butyl acrylate	02038
sec-Butyl methacrylate	02057
iso-Decyl acrylate	03008
n-Decyl methacrylate, 99%	23344
N,N-Diethylacrylamide, min. 95%	00871
N-Dodecylacrylamide	25723
N-Dodecylmethacrylamide	04135
n-Dodecyl methacrylate	02461
N-Ethylmethacrylamide	02322
n-Hexyl acrylate, min. 98%	02411
2-Methoxyethyl acrylate	02487
Methyl methacrylate, min. 99.5%	00834



Acrylic Monomers (Neutral, Monofunctional) *continued*

PRODUCT NAME	CATALOG #
2-Naphthyl acrylate	06024
N-(n-Octadecyl)acrylamide	04673
n-Octyl methacrylate, 99+%	23355
N-tert-Octylacrylamide	03141
Pentafluorophenyl acrylate	06349
2-Phenoxyethyl methacrylate	02640
Phenyl acrylate, min. 95%	02642
Phenyl methacrylate, >95%	02644
2-Phenylethyl acrylate, min. 92%	02834
2-Phenylethyl methacrylate, min. 99%	02911
n-Propyl acrylate	03132
n-Propyl methacrylate	03174
N-iso-Propylacrylamide	02455
2,4,6-Tribromophenyl acrylate	03330
3,3,5-Trimethylcyclohexyl methacrylate	02660

ADHESION PROMOTING MONOMERS

Functional groups known to increase adhesion of polymers to surfaces include phosphate and carboxylic acids (metal adhesion) and silyl ethers (glass/siliceous adhesion) which hydrolyze to give reactive Si-OH bonds. While these monomers are well-studied examples, many monomers possessing functional groups such as acids, amines and hydroxyls can also impart polymer adhesion to various substrates. Please refer to other tables for a more expansive listing of these monomers. Also see Amine Monomer section.

PRODUCT NAME	CATALOG #
Bis(2-methacryloxyethyl) phosphate	16041
2-(Methacryloxy)ethyl phosphate	25422
4-Methacryloxyethyl trimellitic anhydride	17285
Monoacryloxyethyl phosphate	22468

## MONOMERS / QUICK REFERENCE PRODUCT GUIDE

### AMINE CONTAINING MONOMERS

Amines are among the most widely versatile functional groups. In biopolymers, amines are the key synthetic handle to build structure and architecture to a polymer. Amine groups can act as base catalysts, can be quaternized to yield aqueous soluble polymers and can function as ligands to a variety of metals. Amines are good nucleophiles and can be converted to a wide set of functional groups. Amines can form salts with carboxylic and phosphoric acids to form biologically interesting complexes and structures.

PRODUCT NAME	CATALOG #
2-Acryloxyethyltrimethylammonium chloride	17981
2-Aminoethyl methacrylate hydrochloride, min. 95%	21002
N-(2-aminoethyl) methacrylamide hydrochloride	24833
N-(t-BOC-aminopropyl)methacrylamide	24318
N-(3-Aminopropyl)methacrylamide hydrochloride, >98%	21200
2-(tert-Butylamino)ethyl methacrylate, min. 90%	01797
2-(N,N-Diethylamino)ethyl methacrylate	01872
2-Diisopropylaminoethyl methacrylate	24263
2-(N,N-Dimethylamino)ethyl acrylate	02257
2-(N,N-Dimethylamino)ethyl methacrylate, min. 99%	00213
N-[2-(N,N-Dimethylamino)ethyl]methacrylamide	06172
N-[3-(N,N-Dimethylamino)propyl]acrylamide, min. 95%	22018
N-[3-(N,N-Dimethylamino)propyl]methacrylamide	09656
N-Dodecylacrylamide	25723
N-Dodecylmethacrylamide	04135
Methacryloyl-L-Lysine	24315
2-N-Morpholinoethyl acrylate, 95%	17977
2-N-Morpholinoethyl methacrylate, 95%	17978

### CROSSLINKING ACRYLIC MONOMERS – DIFUNCTIONAL

Difunctional monomers are useful for imparting crosslinking or branching sites to polymer architectures. The “spacer” group between the acrylic end groups often helps determine the physical and mechanical attributes of the resulting crosslinked polymer structure. Acrylic moieties are generally more reactive than methacrylic moieties and are thus used when faster reaction kinetics are desired (e.g. UV curable systems).

PRODUCT NAME	CATALOG #
Bis(2-methacryloxyethyl) N,N'-1,9-nonylene bis carbamate	21619
Bis(2-methacryloxyethyl) phosphate	16041
1,4-Butanediol diacrylate, min. 85%	02049
1,3-Butanediol dimethacrylate, 98%	02047
1,4-Butanediol dimethacrylate, min. 90%	05973
Copper(II) methacrylate	21222
N,N'-Cystaminebisacrylamide, Electro Pure™	09809
1,10-Decanediol dimethacrylate	02140

Crosslinking Acrylic Monomers – Difunctional *continued*

PRODUCT NAME	CATALOG #
N,N-Diallylacrylamide	01848
Diethylene glycol diacrylate	02215
Diethylene glycol dimethacrylate	02214
Ethylene glycol diacrylate	02302
Ethylene glycol dimethacrylate, 99.7% (EGDMA)	24896
Fluorescein dimethacrylate	23589
1,3-Glycerol dimethacrylate	25420
1,6-Hexanediol diacrylate	23671
1,6-Hexanediol dimethacrylate, min 98%	23672
2,2-Bis[4-(2-hydroxy-3-methacryloxypropoxy)phenyl]propane	03344
1,9-Nonanediol dimethacrylate	00801
1,5-Pentanediol dimethacrylate	04260
1,4-Phenylene diacrylate	06389
Tetraethylene glycol dimethacrylate	02654
Tricyclodecane dimethanol diacrylate	25110
Triethylene glycol diacrylate	02655
Triethylene glycol dimethacrylate	01319
Triethylene glycol dimethacrylate	24034

CROSSLINKING ACRYLIC MONOMERS – MULTIFUNCTIONAL

Typically used for generating highly-crosslinked polymer structures, these monomers increase polymer toughness, modulus and solvent resistance. For UV-curable formulations, multifunctional acrylates are typically faster-reacting than their methacrylate analogs.

PRODUCT NAME	CATALOG #
Dipentaerythritol pentaacrylate (mixture of tetra-, penta-, hexaacrylate)	16311
Pentaerythritol tetraacrylate	01547
Pentaerythritol triacrylate	04259
PEO(5800)-b-PPO(3000)-b-PEO(5800) dimethacrylate	25430
1,1,1-Trimethylolpropane triacrylate	02658
1,1,1-Trimethylolpropane trimethacrylate	02659

## MONOMERS / QUICK REFERENCE PRODUCT GUIDE

### DUAL REACTIVE ACRYLIC MONOMERS

It is often desirable to synthesize polymer architectures that are capable of further reaction to incorporate new functionality, graft new polymer chains, attach drugs or biomolecules, or make the polymer respond intelligently to changes in its environment. This diverse set of monomers have easily polymerizable carbon-carbon double bonds yet contain a secondary reactive group that can be elaborated in a multitude of ways. Some reactive groups e.g., carboxylic acid in o-nitrobenzyl methacrylate (Cat. #24360) are masked and are revealed by simple deprotection schemes.

PRODUCT NAME	CATALOG #
Acrylic anhydride min. 90%	00488
N-Acryloxysuccinimide	19930
Allyl methacrylate	01643
2-Aminoethyl methacrylate hydrochloride, min. 95%	21002
N-(t-BOC-aminopropyl)methacrylamide	24318
N-(3-Aminopropyl)methacrylamide hydrochloride, >98%	21200
2-(tert-Butylamino)ethyl methacrylate, min. 90%	01797
Cinnamyl methacrylate	02092
2-Cyanoethyl acrylate	01829
N,N-Diallylacrylamide	01848
Dicyclopentenylxyethyl acrylate	15797
Glycerol monomethacrylate, mixture of isomers	04180
2-Hydroxyethyl acrylate	01902
Hydroxypropyl methacrylate, mixture of isomers	00730
N-(2-Hydroxypropyl)methacrylamide	08242
Monoacryloxyethyl phosphate	22468
o-Nitrobenzyl methacrylate, min. 95%	24360
Tricyclodecane dimethanol diacrylate	25110

### EPOXIDES / ANHYDRIDES / IMIDES

Unlike ethylenic monomers that polymerize through free radical processes, epoxide resins react with amines, carboxylic acids, anhydrides, etc. to form polymers displaying a range of characteristics from tough and durable to soft and adhesive.

PRODUCT NAME	CATALOG #
1,4-Butanediol diglycidyl ether	01795
Ethylene glycol diglycidyl ether (Quetol 651)	01479
Glycidyl Glycerol-Ether, Polyfunctional	09221
Methacrylic anhydride	01517
Propylene Oxide, EM Grade	00236

FLUORESCENT ACRYLIC MONOMERS

Monomers with fluorescent tags are often used to build polymers that can be detected at very low concentrations using fluorescence spectroscopy. Polymer migration and diffusion has been studied using fluorescent tags. Polymer microspheres containing fluorescent groups are used routinely for flow cytometry and medical diagnostic assays.

PRODUCT NAME	CATALOG #
Acryloxyethyl thiocarbonyl Rhodamine B	25404
9-Anthracenylmethyl methacrylate, ≥98.5%	23587
Fluorescein dimethacrylate	23589
Methacryloxyethyl thiocarbonyl rhodamine B	23591
2-Naphthyl acrylate	06024
2-Naphthyl methacrylate	23602
Nile Blue Acrylamide	25395

FLUORINATED ACRYLIC MONOMERS

Monomers containing fluorine provide polymers with unique low energy surfaces. Materials made from these monomers are typically chemical resistant and very hydrophobic.

PRODUCT NAME	CATALOG #
1H,1H,2H,2H-Heptadecafluorodecyl methacrylate	19226
Hexafluoro-iso-propyl methacrylate	02401
1H,1H,5H-Octafluoropentyl methacrylate, min. 98%	21045
Pentafluorophenyl acrylate	06349
2,2,2-Trifluoroethyl acrylate	01718
2,2,2-Trifluoroethyl methacrylate	02622

HIGH / LOW REFRACTIVE INDEX MONOMERS

Polymers that interact with light can be modified by optimizing their refractive index properties. These materials are useful in many types of optical applications: lenses, optical switches, optical fiber coatings, etc. Low RI monomers are typically highly fluorinated. Polymers using perfluorinated monomers are often hydrophobic and exhibit very low surface energies.

PRODUCT NAME	CATALOG #
Benzyl acrylate, ~99%	26296
Benzyl methacrylate, min. 95%	02000
N-Benzylmethacrylamide	17969
1H,1H,2H,2H-Heptadecafluorodecyl methacrylate	19226
Hexafluoro-iso-propyl methacrylate	02401
1H,1H,5H-Octafluoropentyl methacrylate, min. 98%	21045
2,2,2-Trifluoroethyl acrylate	01718
2,2,2-Trifluoroethyl methacrylate	02622

## MONOMERS / QUICK REFERENCE PRODUCT GUIDE

### HYDROXY CONTAINING MONOMERS

Hydroxyl groups have utility as hydrogen bonding sites and can provide polymers with compatibility for water or polar solvents. These versatile functional groups can be derivatized broadly. Polymers containing free-OH groups can be post reacted with acids, epoxies, isocyanates, etc. to create novel polymer properties and architectures.

PRODUCT NAME	CATALOG #
Glycerol monomethacrylate, mixture of isomers	04180
Polyethylene glycol monomethacrylate (PEGMA 440)	24890
2-Hydroxyethyl acrylate	01902
Hydroxypolyethoxy (10) Allyl Ether, 98%	24899
Hydroxypropyl methacrylate, mixture of isomers	00730
N-(2-Hydroxypropyl)methacrylamide	08242
3-Phenoxy 2 hydroxy propyl methacrylate (PHPM)	25506

### STYRENIC MONOMERS

Popular alternatives to acrylic and related monomers, styrenic monomers generally provide polymers of higher glass transition temperature, higher modulus, increased hydrophobic character and nominal UV absorbance. As such, coatings made with high concentrations of styrenic monomers can yellow with time if exposed to UV light. Crosslinked styrene resins (especially in microsphere form) are tough and chemically resistant. These form the basis for ion exchange resins and microbeads used as supports for biochemical reactions.

PRODUCT NAME	CATALOG #
Chloromethylstyrene, mixture of isomers, ≥97%	02718
Divinylbenzene	22478

### SULFONATE CONTAINING MONOMERS

PRODUCT NAME	CATALOG #
2-Sulfoethyl methacrylate, >90%	02597
3-Sulfopropyl methacrylate, potassium salt, 98%	17210
3-Sulfopropyldimethyl-3-methacrylamidopropylammonium, inner salt	16570

**UV (LIGHT) ACTIVE MONOMERS**

Polymers with aliphatic backbones often show little absorbance of light and usually do not absorb in the near and mid UV spectral range. UV absorbing monomers improve the capture of light at these wavelengths. These absorbers can be used to shield the polymer system or an underlying substrate from degradation by UV light, e.g. phenethyl methacrylate containing polymers for optical lenses. Additionally, some UV absorbing materials can act as sensitizers to promote photochemical reactions.

PRODUCT NAME	CATALOG #
Cinnamyl methacrylate	02092
2-(2'-Methacryloxy-5'-methylphenyl)benzotriazole	21871
Phenyl acrylate, min. 95%	02642
Phenyl methacrylate, >95%	02644
2-Phenylethyl acrylate, min. 92%	02834
2-Phenylethyl methacrylate, min. 99%	02911

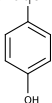
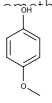
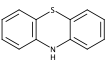
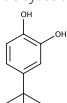
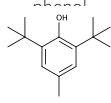
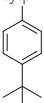
**VINYL AND ETHENYL MONOMERS**

An alternative choice to styrenics and acrylics, these monomers are often used to create polymers with inert main chain features. Many of these monomers can be polymerized via metallocene or other metal mediated polymerization processes.

PRODUCT NAME	CATALOG #
Diallyl Maleate	02156
N-methyl N-vinyl acetamide	22065
N-vinyl acetamide (NVA)	24806
Vinyl azlactone	21329
Vinylferrocene	04503
4-Vinylpyridine	02668

**POLYMERIZATION INHIBITORS FOR MONOMERS**

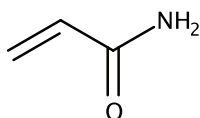
Throughout the Monomer section, we list monomers that are inhibited with a variety of polymerization inhibitors. These inhibitors are chosen for effectiveness, and minimum color formation on storage. Below is a table identifying the inhibitors used and their structures.

INHIBITOR	HQ	MEHQ	PTZ	T-BUTYLCATECHOL	BHT(BUTYLATED HYDROXY-TOLUENE)	P-T-BUTYLPHENOL
CHEMICAL NAME	Hydroquinone	Hydroquinone monomethyl ether	Phenothiazine	4-t-butylcatechol	2,6-di-t-Butyl-4-methylphenol	4-t-Butylphenol
STRUCTURE						

## MONOMERS / ALPHABETICAL LISTING

### A

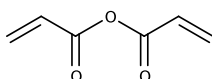
#### Acrylamide, Chemzymes Ultra Pure® CAS#: 79-06-1 | HAZARD CODE: HMO6d

**00019**


Specific conductance of 35% (w/v) solution 2 μmho/cm. Used in electrophoresis for separation of nucleic acid fragments and proteins. For introduction of hydrophilic sites, preparation of water-soluble polymers and in electrophoresis. *Technical Data Sheet #155*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 71.08, mp 84-85°C, uninhibited 165°C	100 g	00019-100
	500 g	00019-500

#### Acrylic anhydride min. 90% CAS#: 2051-76-5 | HAZARD CODE: BH7d

**00488**


Used to prepare specialty acrylate, acrylamide monomers. Forms cyclic anhydrides on polymerization and does not produce crosslinks in polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 126.1, bp 97°C/35mm, n20/D, 1.444 500ppm MEHQ	50 g	00488-50

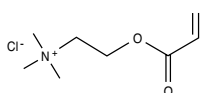
#### Acryloxyethyl thiocarbamoyl Rhodamine B CAS#: 1821380-54-4 | HAZARD CODE: U5cd

**25404**

Fluorescent monomer useful for labeling polymers. Ex. max: 548nm. Em. max: 570nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Purple solid, MW 668.24	10 g	25404-10

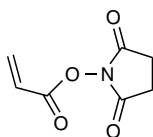
#### 2-Acryloxyethyltrimethylammonium chloride CAS#: 44992-01-0 | HAZARD CODE: H5d

**17981**


For preparation of water-soluble cationic polymers, introduction of cationic sites. 80% solution in water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 193.6, 550 ppm MEHQ	250 g	17981-250

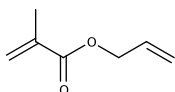
#### N-Acryloxysuccinimide CAS#: 38862-24-7 | HAZARD CODE: U4d

**19930**


For preparation of acrylic derivatives, e.g. of biologically active compounds or dyes either in monomer or polymer form, under mild conditions.

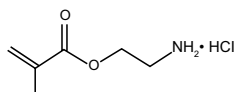
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 193.6, mp 69°C	1 g	19930-1
	5 g	19930-5



**Allyl methacrylate** CAS#: 96-05-9 | HAZARD CODE: CH5g**01643**

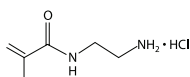
Contains polymerizable units of differing reactivity, methacrylate moiety being more reactive than allyl. *Requires poison pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 126.2, bp 55°C/30mm, n <sub>20</sub> /D 1.436, 100ppm MEHQ	500 g	01643-500

**2-Aminoethyl methacrylate hydrochloride, min. 95%** CAS#: 2420-94-2 | HAZARD CODE: H6d**21002**

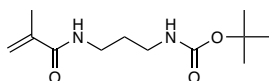
For preparation of polymers containing primary amine groups and preparation of specialty methacrylate monomers. *Technical Data Sheet #522*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 166.6, mp 121 – 124°C uninhibited	10 g	21002-10

**N-(2-aminoethyl) methacrylamide hydrochloride** CAS#: 76259-32-0 | HAZARD CODE: U2bd**24833**

Monomer building block for polymerization reactions that may yield a primary amine functional polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
White to off-white free-flowing powder, mp 121 – 123°C (polymerization is initiated around 122°C)	5 g	24833-5

**N-(t-BOC-aminopropyl)methacrylamide** CAS#: 2197-397-94 | HAZARD CODE: U2bd**24318**

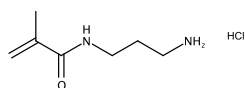
A solvent-soluble, blocked primary amine monomer, it is soluble in a range of organic solvents and it polymerizes readily with other vinylic monomers. The t-BOC group is widely known to those in the peptide field and is easily deprotected to the free amine with a variety of reagents including HCl/MeOH, Me<sub>3</sub>SiI, or heat (185°C). Copolymers containing N-(N-(t-BOC-aminopropyl)methacrylamide can be readily converted to primary amino copolymers, which can be further modified by coupling to peptides, dyes, etc.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Solid white powder, MW 242, mp 81-83°C uninhibited	1 g	24318-1
	5 g	24318-5
	10 g	24318-10

## MONOMERS / ALPHABETICAL LISTING

### A

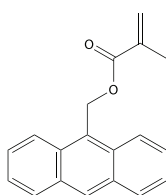
#### **N-(3-Aminopropyl)methacrylamide hydrochloride, >98%** CAS#: 72607-53-5 | HAZARD CODE: U2bd **21200**



Primary amine monomer. Hydrolytically stable for preparation of polymers containing primary amine functionality. *Technical Data Sheet #522*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 178.7, mp 122-124°C uninhibited	1 g	21200-1
	5 g	21200-5

#### **9-Anthracenylmethyl methacrylate, ≥98.5%** CAS#: 31645-35-9 | HAZARD CODE: U3ag **23587**

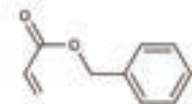


Fluorescent monomer. Ex. max = 362 nm, Em. max = 407 nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
PolyFluor® 407, Yellow crystals, MW 276.2, mp 82-84°C	100 mg	23587-100
	1 g	23587-1

### B

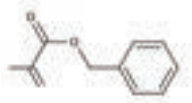
#### **Benzyl acrylate, ≥99%** CAS#: 2495-35-4 | HAZARD CODE: H4g **26296**



Used to make polymers of high (~1.55) refractive index.

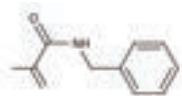
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 162.2, bp 100°C/118mm, Tg 6°C, n20/D, 1.514, 150ppm MEHQ	10 g	26296-10
	100 g	26296-100

#### **Benzyl methacrylate, min. 95%** CAS#: 2495-376 | HAZARD CODE: H2d **02000**



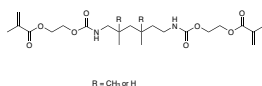
Used to make polymers of high (1.5680) refractive index.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 176.2, bp 231–233°C, Tg 54°C, n20/D 1.512, 50ppm MEHQ	100 g	02000-100

**N-Benzylmethacrylamide** CAS#: 3219-55-4 | HAZARD CODE: U2g**17969**

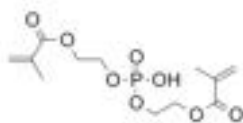
Used to make polymers of high (1.5965) refractive index.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 175.2, mp 82°C	25 g	17969-25

**Bis(2-methacryloxyethyl) N,N'-1,9-nonylene-biscarbamate** CAS#: 72869-86-4 | HAZARD CODE: U5d**21619**

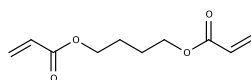
(Diurethane dimethacrylate) Long chain-length, flexible, hydrophobic crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 470.6, bp 200°C, n <sub>20</sub> /D 1.485	50 g	21619-50

**Bis(2-methacryloxyethyl) phosphate** CAS#: 32435-46-4 | HAZARD CODE: U4d**16041**

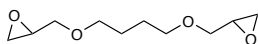
Crosslinking monomer. Adhesion promoter through free phosphoric acid group, good for metals.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 322.2, n <sub>20</sub> /D 1.469	10 g	16041-10
	100 g	16041-100

**1,4-Butanediol diacrylate, min. 85%** CAS#: 1070-70-8 | HAZARD CODE: BH5d**02049**

Crosslinking aliphatic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 198.2, bp 83°C/0.3mm, T <sub>g</sub> 45°, n <sub>20</sub> D 1.456, 75ppm MEHQ	100 g	02049-100

**1,4-Butanediol diglycidyl ether** CAS#: 2425-79-8 | HAZARD CODE: B06g**01795**

For post-crosslinking reactions, preparation of aliphatic epoxy resins. WPE ~130 (83°C/0.3mm).

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 203.3, bp 260-266°C, n <sub>20</sub> /D 1.453	50 g	07195-50

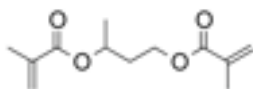
## MONOMERS / ALPHABETICAL LISTING

### B

**1,3-Butanediol dimethacrylate, 98%** CAS#: 1189-08-8 | HAZARD CODE: HO2d

**02047**

Crosslinking aliphatic monomer.



CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 226.3, bp 73°C/0.1mm, n20D 1.452, 200ppm MEHQ	500 g	02047-500

**1,4-Butanediol dimethacrylate, min. 90%** CAS#: 2082-81-7 | HAZARD CODE: HO2d

**05973**

Crosslinking aliphatic monomer.

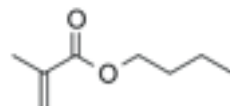


CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 226.3, bp 132°C/4mm, n20D 1.456, 200ppm MEHQ	250 g	05973-250

**2-n-Butoxyethyl methacrylate, ~97%** CAS#: 13532-94-0 | HAZARD CODE: H6d

**02034**

For low Tg polymers having higher polarity than alkyl methacrylate polymers.

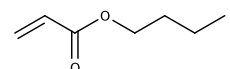


CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 186.2, bp 90-92°C/3mm, n20/D 1.434, 400-500ppm MEHQ	100 g	02034-100

**n-Butyl acrylate, min. 99%** CAS#: 141-32-2 | HAZARD CODE: BEHJO6d

**02037**

Forms hydrophobic, low Tg polymers soluble in hydrocarbons.



CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 128.2, bp 43-48°C/14mm, Tg -54°C, n20/D 1.418, 15-20 ppm MEHQ	3 g	02037-3
	500 g	02037-500

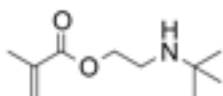
**n-Butyl methacrylate** CAS#: 97-88-1 | HAZARD CODE: CH07d

**02059**

Forms hydrophobic polymers soluble in hydrocarbons.

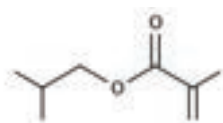


CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 142.2, bp 162°C, Tg 20°C, n20/D 1.4, 100 ppm MEHQ	250 g	02059-250
	500 g	02059-500

**2-(tert-Butylamino)ethyl methacrylate, min. 90%** CAS#: 3775-90-4 | HAZARD CODE: EH07d**01797**

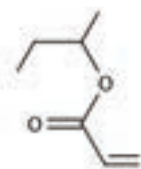
Secondary amine monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 185.3, bp 82°C/10mm, Tg 33°C, n20/D 1.442, 1100ppm MEHQ	100 g	01797-100

**iso-Butyl methacrylate** CAS#: 97-86-9 | HAZARD CODE: CH4d**02056**

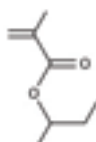
Forms hydrophobic polymers soluble in hydrocarbons.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 142.2, bp 154°C, Tg 53°C, n20/D 1.420, 10-20ppm MEHQ	500 g	02056-500

**sec-Butyl acrylate** CAS#: 2998-08-5 | HAZARD CODE: C3g**02038**

Hydrophobic acrylate ester having Tg similar to the less hydrophobic ethyl acrylate.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 128.2, bp 59–60°C/50mm, Tg 12°C, n20/D 1.414, 100ppm MEHQ	25 g	02038-25

**sec-Butyl methacrylate** CAS#: 2998-18-7 | HAZARD CODE: CU4d**02057**

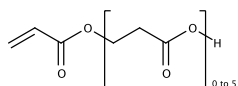
Forms hydrophobic polymers soluble in hydrocarbons.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 142.2, bp 146°C, Tg 60°C, 100ppm MEHQ	10 g	02057-10

## MONOMERS / ALPHABETICAL LISTING

### C

#### **β-Carboxyethyl Acrylate, Distribution** CAS#: 24615-84-7 | HAZARD CODE: BHM4d

**24891**


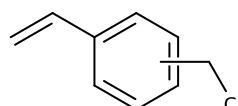
A high purity, hydrophilic material is in the class of carboxylic monomers of the acrylic or methacrylic acid type. A significant difference is the greater separation of the carboxylic acid functionality from the polymerizable vinyl functionality. Can be polymerized in solution or emulsion to produce acrylic, vinyl-acrylic or styrenic-acrylic polymers with improved adhesive properties.

Other key differences compared to conventional carboxylic acid functional materials are:

- Promotes flexibility in polymers owing to lower glass transition of its homopolymers (<30°C)
- Provides improved adhesion and stability in emulsion polymers due to its -COOH groups being more available than those in the conventional carboxylic acids
- Much more reactive in salt form than acrylic acid, allowing high levels of incorporation, over a wide pH range
- More compatible with other monomers, thus reducing aqueous phase polymerization and producing more uniform copolymers

CHARACTERISTICS	UNIT SIZE	CATALOG #
Slightly viscous liquid, MW 144, 1,000ppm MEHQ	100 g	24891-100

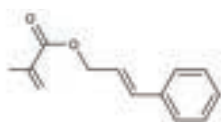
#### **3(4)-Chloromethylstyrene (VBC) ≥97%** CAS#: 30030-25-2 | HAZARD CODE: BH6d

**02718**


Reactive styrene monomer. Can be used to prepare Merrifield resins without using a chloromethylation step. (vinylbenzyl chloride)

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 152.6, bp 229°C, n <sub>20</sub> /D 1.570, 50 – 100ppm t-butylcatechol	100 g	02718-100
	500 g	02718-500

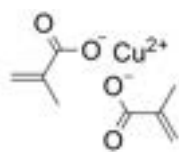
#### **Cinnamyl methacrylate** CAS#: 31736-34-2 | HAZARD CODE: U5d

**02092**


Photocrosslinking monomer.

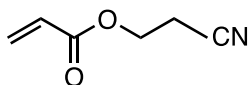
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 202.3, bp 141°C/3mm, n <sub>20</sub> /D 1.446, 100ppm MEHQ	5 g	02092-5

#### **Copper(II) methacrylate** CAS#: 53721-10-1 | HAZARD CODE: X7d

**21222**


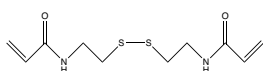
Metal salt of methacrylic acid.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 202.3	25 g	21222-25

**2-Cyanoethyl acrylate** CAS#: 106-71-8 | HAZARD CODE: BOVW6bd**01829**

Polar acrylate ester used in a wide range of applications including photocurable resists for liquid crystal devices, photocurable polymer insulators for multilayer circuitry, electroluminescent products, graft polymers for controlled diffusion, vulcanization of rubbers and as an adhesion promoter.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 125.1, bp 90°C/5mm, T <sub>g</sub> 4°C, n <sub>20</sub> /D 1.447, 400–800ppm MEHQ	100 g	01829-100

**N,N'-Cystaminebisacrylamide, Electro Pure™** CAS#: 60984-57-8 | HAZARD CODE: U6f**09809**

Reversible crosslinking monomer. Can be used to introduce mercaptan groups into polymers by reducing to mercaptan after polymerization. *Requires Dry Ice.*

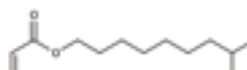
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 60.4, mp 120–125°C	5 g	09809-5

D

**1,10-Decanediol dimethacrylate** CAS#: 6701-13-9 | HAZARD CODE: EHOU6d**02140**

Hydrophobic, long-chain crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 310.4, bp 170°C/2mm, n <sub>20</sub> /D 1.458, 270ppm HQ	25 g	02140-25

**iso-Decyl acrylate** CAS#: 1330-61-6 | HAZARD CODE: H4d**03008**

Hydrophobic ester monomer. Forms hydrocarbon-soluble polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 212.3, bp 121°C/10mm, n <sub>20</sub> /D 1.440, 50ppm	100 g	03008-100

## MONOMERS / ALPHABETICAL LISTING

### D

**n-Decyl methacrylate, 99%** CAS#: 3179-47-3 | HAZARD CODE: U5d

**23344**

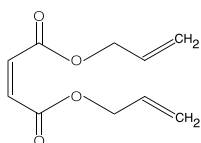


High-purity hydrophobic ester monomer, forms oil-soluble polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 226.4, bp 155-156°C/22mm, Tg -30°C, n <sub>20</sub> /D 1.443, 100ppm MEHQ	25 g	23344-25

**Diallyl Maleate** CAS#: 999-21-3 | HAZARD CODE: HV4d

**02156**

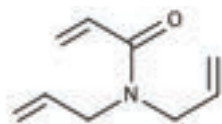


Reactive functional monomer. Polymers formed with the incorporation of Diallyl Maleate have pendant allyl groups. Applications for Diallyl Maleate include polyester resins, adhesives, and ion exchange resins. When used at low levels, Diallyl Maleate is an effective agent for the promotion of branching in emulsion polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 196.2, bp 116-160°C/4mm, Tg -30°C, Hg n <sub>20</sub> D 1.469, d 1.073g/ml 230°C	250 g	02156-250

**N,N-Diallylacrylamide** CAS#: 3085-68-5 | HAZARD CODE: U7d

**01848**



Crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 151.2, bp 108-110°C/3mm, n <sub>20</sub> .D 1.489, 100ppm HQ	10 g	01848-10

**Dibutyltin dilaurate** CAS#: 77-58-7 | HAZARD CODE: BH6g

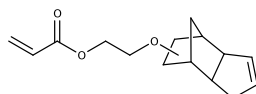
**01862**

Catalyst for polymerizing lactide and glycolide and isocyanate reactions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Yellowish liquid, MW 631.6, bp 205°C, n <sub>20</sub> /D 1.470, mp 24°, d 1.066	50 g	01862-50

**Dicyclopentenyl ethyl acrylate** CAS#: 65983-31-5 | HAZARD CODE: H4d

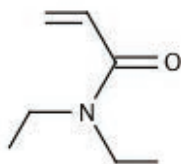
**15797**



Double bond in dicyclopentenyl does not participate in polymerization but can be post-reacted, e.g., by oxidative crosslinking.

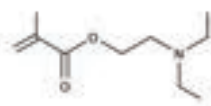
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 248.3, bp 113°C/1mm, n <sub>20</sub> D 1.501, Tg 11°C, 700ppm MEHQ	25 g	15797-25



**N,N-Diethylacrylamide, min. 95%** CAS#: 2675-94-7 | HAZARD CODE: U4d**00871**

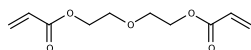
Substituted acrylamide monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 127.2, bp 93°C/19mm, n <sub>20</sub> /D 1.464, 100 MEHQ	25 g	00871-25

**2-(N,N-Diethylamino)ethyl methacrylate** CAS#: 105-16-8 | HAZARD CODE: EHO5g**01872**

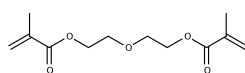
Preparation of cationic polymers, especially quaternary ammonium polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 185.3, bp 90-92°C/3mm, n <sub>20</sub> /D 1.444, T <sub>g</sub> 20°C, 100ppm PTZ	500 g	01872-500

**Diethylene glycol diacrylate (DEGDA)** CAS#: 4074-88-8 | HAZARD CODE: BOW6d**02215**

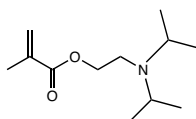
Hydrophilic crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 214.2, bp 200°C/760mm, n <sub>20</sub> /D 1.463, 120ppm MEHQ	100 g	02215-100
	1 kg	02215-1

**Diethylene glycol dimethacrylate** CAS#: 2358-84-1 | HAZARD CODE: H4g**02214**

Hydrophilic crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 242.3, bp 200°C/760mm, n <sub>20</sub> /D 1.458, 500ppm MEHQ	100 g	02214-100
	1 kg	02214-1

**2-Diisopropylaminoethyl methacrylate** CAS#: 16715-83-6 | HAZARD CODE: U5d**24263**

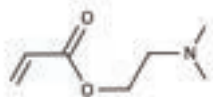
Amine-containing monomer. For preparation of polymers containing tertiary amine functionality.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 213.3, bp 70-75°C/1mm, n <sub>20</sub> /D 1.449	10 g	24263-10
	50 g	24263-50

## MONOMERS / ALPHABETICAL LISTING

### D

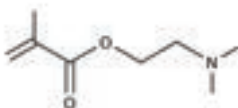
#### 2-(N,N-Dimethylamino)ethyl acrylate CAS#: 2439-35-2 | HAZARD CODE: BEOSVW6d 02257



For preparation of cationic polymers, especially quaternary ammonium polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 143.1, bp 53°C/3mm, n <sub>20</sub> /D, 1.438, 1000ppm MEHQ	500 g	02257-500

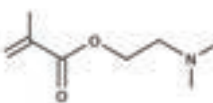
#### 2-(N,N-Dimethylamino)ethyl methacrylate, min. 99% CAS#: 2867-47-2 | HAZARD CODE: BEOS6abd 00213



For preparation of cationic polymers, especially quaternary ammonium polymers.  
*Requires poison pack. Technical Data Sheet #213*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 157.2, bp 75-77°C/13mm, n <sub>20</sub> D 1.440, 1000ppm MEHQ, d 0.933 g/mL at 25°C	500 g	00213-500

#### N-[2-(N,N-Dimethylamino)ethyl]methacrylamide CAS#: 13081-44-2 | HAZARD CODE: U6d 06172



Amine-functional methacrylamide derivative.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 156.3, bp 87°C/1.8mm, n <sub>20</sub> /D 1.474, 100ppm HQ	5 g	06172-5

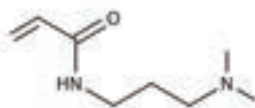
#### N-[3-(N,N-Dimethylamino)propyl]acrylamide, min. 95% CAS#: 3845-76-9 | HAZARD CODE: U6d 22018



For preparation of cationic polymers, especially quaternary ammonium polymers.

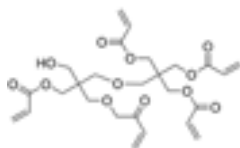
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 156.2, bp 85°C/0.01mm, n <sub>20</sub> /D 1.482, T <sub>g</sub> 19°C	10 g	22018-10

#### N-[3-(N,N-Dimethylamino)propyl]methacrylamide CAS#: 5205-93-6 | HAZARD CODE: BH4g 09656



For preparation of cationic polymers, especially quaternary ammonium polymers.  
Monomer is more hydrolytically stable than corresponding esters.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 170.3, bp 141°C/2mm, n <sub>20</sub> /D 1.479, 600-700ppm MEHQ	100 g	09656-100

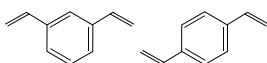
**Dipentaerythritol pentaacrylate****(mixture of tetra-, penta-, hexaacrylate)** CAS#: 60506-81-2 | HAZARD CODE: H05g**16311**

Highly efficient crosslinking monomer, used especially in UV curing coatings.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 524.5, Tg 90°C, n20/D 1.490, 270ppm MEHQ	500 g	16311-500

**Divinylbenzene**

CAS#: 1321-74-0 | HAZARD CODE: H05g

**22478**

Crosslinking monomer used primarily with styrene. 80% Active.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 130.2, bp 198°C, n20/D 1.574, ~1000ppm, t-butylcatechol inhibitor	100 g	22478-100

**N-Dodecylacrylamide**

CAS#: 1506-53-2 | HAZARD CODE: U2g

**25723**

Long-chain amide monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Solid. MW 239.4, bp 155°C, mp 58°C	5 g	25723-5
	25 g	25723-25

**N-Dodecylmethacrylamide**

CAS#: 1191-39-5 | HAZARD CODE: U5g

**04135**

Hydrophobic, long-chain alkyl-substituted amide monomer.



CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 253.4, Tg 15°C, bp 145°C/0.08mm, mp 41°C	10 g	04135-10

**n-Dodecyl methacrylate**

CAS#: 142-90-5 | HAZARD CODE: H2g

**02461**

Preparation of hydrophobic polymers.

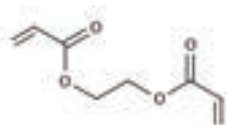


CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 254.4, bp 142-143°C/2mm, n20D 1.445, Tg -55°C, 400ppm MEHQ, 5 ppm HQ	250 g	02461-250

## MONOMERS / ALPHABETICAL LISTING

### E

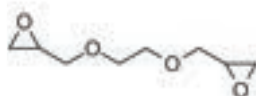
#### Ethylene glycol diacrylate (EGDA) CAS#: 2274-11-5 | HAZARD CODE: EH07d

**02302**


Crosslinking UV curable, acrylate, monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 170.2, bp 62°C/0.9mm, n20/D 1.453, 100ppm MEHQ	25 g	02302-25

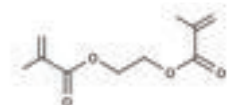
#### Ethylene glycol diglycidyl ether (EGDGE) CAS#: 2224-15-9 | HAZARD CODE: H5g

**01479**


Crosslinker for carboxyl-, amine- and hydroxyl- functional polymers. Material is ~100% active and contains higher molecular weight compounds having chloropropylene segments produced by reaction with more than one epichlorhydrin molecule per hydroxyl in synthesis.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 174.2, bp 112°C/4.5mm, n20/D 1.463	10 g	01479-10
	100 g	01479-100

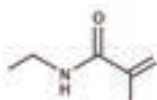
#### Ethylene glycol dimethacrylate, 99.7% (EGDMA) CAS#: 97-90-5 | HAZARD CODE: HO2d

**24896**


High purity, hydrophilic monomer for contact lens applications. Useful as a high purity crosslinker with bridging capability between polymer chains.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Clear liquid. MW 198, 50ppm MEHQ	25 g	24896-25
	250 g	24896-250

#### N-Ethylmethacrylamide CAS#: 7370-88-9 | HAZARD CODE: EIJ7d

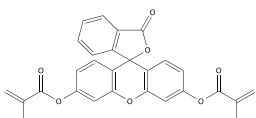
**02322**


Solvent-soluble, polymerizable amide. Hydrolytic stability, useful for hydrogels.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW113.2, bp 106°C/4mm	10 g	02322-10

### F

#### Fluorescein dimethacrylate CAS#: 206444-58-8 | HAZARD CODE: U5ad

**23589**


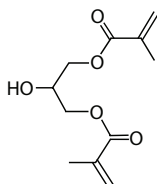
(3',6'-dimethacryloxyspirobenzo[c]-furan[1,9']xanthen-3-one; PolyFluor® 511)  
Fluorescent monomer. Ex. max = 470 nm, Em. = 511 nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Off-white crystals. MW 468.4, mp 154.5–156°C	100 mg	23589-100
	1 g	23589-1

**Glycerol monomethacrylate, mixture of isomers** CAS#: 5919-74-4 | HAZARD CODE: H05f**04180**

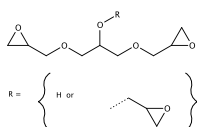
Hydrophilic monomer useful in hydrogel preparation.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 160.2, bp 140°C/0.6mm, n <sub>20</sub> /D 1.470, 4000ppm MEHQ	25 g	04180-25

**1,3-Glyceryl dimethacrylate** CAS#: 1830-78-0; 28497-59-8 | HAZARD CODE: H4adx**25420**

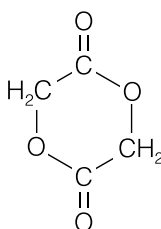
(Bis(methacryloxy)propanol) Hydrophilic.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Clear, colorless to light yellow liquid, MW 228.24, d 1.12 g/ml	50 ml	25420-50

**Glycidyl Glycerol-Ether, Polyfunctional** CAS#: 25038-04-4 | HAZARD CODE: H4g**09221**

Effective crosslinker for hydroxyl-, amine-, and carboxylic acid-functional polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
WPA 135 - 155	50 g	09221-50

**Glycolide, 99.9%** CAS#: 502-97-6 | HAZARD CODE: B6bf**17085**

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 116.1, mp 84°C	10 g	17085-10
	50 g	17085-50

## MONOMERS / ALPHABETICAL LISTING

### H

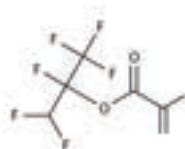
#### 1H,1H,2H,2H-Heptadecafluorodecyl methacrylate CAS#: 1996-88-9 | HAZARD CODE: BHO6d

**19226**


Low refractive index monomer. Polymer RI: ~1.35

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 532.2, bp 110°C/4mm, n <sub>20</sub> /D 1.343, T <sub>g</sub> 40°C, 100ppm MEHQ	25 g	19226-25

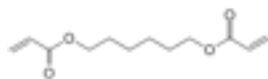
#### Hexafluoro-iso-propyl methacrylate CAS#: 3063-94-3 | HAZARD CODE: CH6d

**02401**


Low refractive index monomer. Polymer RI: ~1.38

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 236.1, bp 50°C/140mm, n <sub>20</sub> /D 1.331, 50ppm MEHQ	10 g	02401-10

#### 1,6-Hexanediol diacrylate CAS#: 13048-33-4 | HAZARD CODE: HO4g

**23671**


Crosslinking aliphatic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 226.3, bp 295°C, n <sub>20</sub> /D 1.456, T <sub>g</sub> 43°C, MEHQ 0–45ppm, HQ(HPLC) 75–125ppm	100 g	23671-100

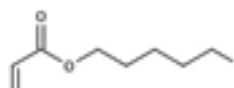
#### 1,6-Hexanediol dimethacrylate, min 98% CAS#: 6606-59-3 | HAZARD CODE: HO5g

**23672**


Crosslinking aliphatic monomer.

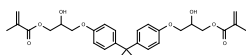
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 254.3, bp >315°C, n <sub>20</sub> /D 1.458, 100ppm HQ	100 g	23672-100

#### n-Hexyl acrylate, min. 98% CAS#: 2499-95-8 | HAZARD CODE: EHO4d

**02411**


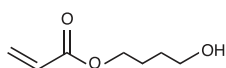
Hydrophobic, low T<sub>g</sub>, ester monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 156.2, bp 190°C, n <sub>20</sub> /D 1.428, T <sub>g</sub> -45°C, 85ppm HQ	100 g	02411-100

**2,2-Bis[4-(2-hydroxy-3-methacryloxypropoxy)-phenyl]propane** CAS#: 1565-94-2 | HAZARD CODE: A2d **03344**

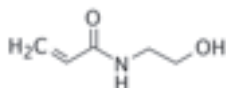
(Bis-GMA) Rigid, hydrophobic, crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 510.6, bp Gels before boiling, n <sub>20</sub> /D 1.550, 100ppm MEHQ	100 g	03344-100
	500 g	03344-500

**4-Hydroxybutyl acrylate** CAS#: 2478-10-6 | HAZARD CODE: H3ad **25352**

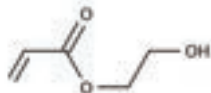
Increases the hydrophilic properties of polymers when copolymerized into a range of acrylate and methacrylate systems. This monomer has been used in polymers for contact lenses and other ophthalmic devices.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Colorless to brown liquid. MW 144.17, bp 95°C/0.1mm Hg, n <sub>20</sub> /D 1.452 d 1.041 g/mL at 25°C MEHQ	50 g	25352-50
	100 g	25352-100

**N-Hydroxyethyl acrylamide, 98%** CAS#: 7646-67-5 | HAZARD CODE: H3ad **25109**

Increases the hydrophilic properties of polymers when copolymerized into a range of acrylate and methacrylate systems. This monomer has been used in hydrogel systems for ocular delivery of ophthalmic drugs. The homopolymer has been used as a novel adsorbed coating for protein separation by capillary electrophoresis.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Colorless to pale yellow liquid. MW 115.13, bp 130°C/0.1mm Hg, n <sub>20</sub> /D 1.505, d 1.12 g/mL at 25°C 3,000ppm MEHQ	50 g	25109-50
	100 g	25109-100

**2-Hydroxyethyl acrylate** CAS#: 818-61-1 | HAZARD CODE: BHOR6g **01902**

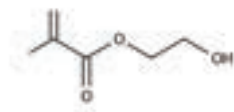
Hydrophilic monomer, reactive site for reactions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 116.1, bp 90°C/12mm, n <sub>20</sub> /D 1.450, 350–650ppm	250 g	01902-250
	1 kg	01902-1

## MONOMERS / ALPHABETICAL LISTING

### H

#### 2-Hydroxyethyl methacrylate CAS#: 868-77-9 | HAZARD CODE: HO2g

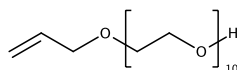


2-Hydroxyethyl methacrylate (HEMA) is perhaps the most widely studied and used neutral hydrophilic monomer. The monomer is soluble, its homopolymer is water-insoluble but plasticized and swollen in water. This monomer is the basis for many hydrogel products such as soft contact lenses, as well as polymer binders for controlled drug release, absorbants for body fluids and lubricious coatings. As a comonomer with other ester monomers, HEMA can be used to control hydrophobicity or introduce reactive sites. (glycol methacrylate)

CHARACTERISTICS	UNIT SIZE	CATALOG #
Ophthalmic Grade – Purity % = min. 99.50, Acid Content % = max 0.05, EGDMA content % = max 0.15, Color = 30, MW 130.1, n20/D 1.453, 7 - 13 ppm MEHQ	100 g	04675-100
	500 g	04675-500
Low Acid Grade – Purity % = min. 98, Acid Content % = max 0.10, EGDMA content % = max 0.2, Color = 30, MW 116.1, bp 90°/12mm, n20/D 1.453, 180 - 220 ppm MEHQ	100 g	03699-100
	500 g	03699-500
	1 kg	03699-1
Technical Grade – Purity % = min. 97, Acid Content % = max 1.5, EGDMA content % = max 0.2, Color = 50, MW 130.1, 180 - 220 ppm MEHQ	1 kg	00227-1

#### Hydroxypolyethoxy (10) Allyl Ether, 98% CAS#: 27274-31-3 | HAZARD CODE: H4d

24899

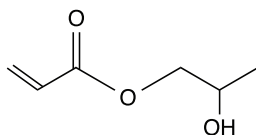


Difunctional molecule reactive in vinyl polymerization through its allylic group, to impart hydrophilic properties to aqueous solution or emulsion polymers. In particular, solution copolymers of Hydroxypolyethoxy (10) Allyl Ether with Acrylic acid have shown useful properties as dispersants and scale inhibitors in boiler water applications. Hydroxypolyethoxy (10) Allyl Ether is a high purity material, clear, slightly viscous liquid (5 cps at 20°C) which undergoes partial solidification below 10°C to form a viscous paste. Soluble in water as well as alcohols and aromatic solvents.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Low viscosity liquid. MW 498, Purity: 98%, Ethylene oxide, moles: 10, Active content (%): 99, Moisture content (%): 0.2, Hydroxyl number (mg KOH/mg): 115	100 g	24899-100

#### 2-hydroxypropyl acrylate CAS#: 999-61-1 | HAZARD CODE: BEOVWX3g

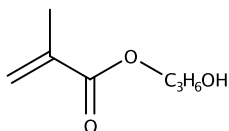
25353



Increases the hydrophilic properties of polymers when copolymerized into a range of acrylate and methacrylate systems. This monomer has been used in hydrogel polymers and in RAFT polymerizations.

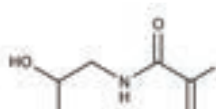
CHARACTERISTICS	UNIT SIZE	CATALOG #
Colorless to pale yellow liquid. MW 130.14, bp 210°C (1 atm), n20/D 1.4432, d 1.049 g/mL at 25°C, MEHQ inhibitor 350–650ppm	50 g	25353-50
	100 g	25353-100



**Hydroxypropyl methacrylate, mixture of isomers** CAS#: 27813-02-1 | HAZARD CODE: H4g**00730**

Hydrophilic aliphatic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 144.2, bp 93-95°C/9mm, n <sub>20</sub> /D 1.447, 200ppm MEHQ	500 g	00730-500
	1 kg	00730-1

**N-(2-Hydroxypropyl)methacrylamide** CAS#: 21442-01-3 | HAZARD CODE: U6d**08242**

Hydrolytically stable hydrophilic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 143.2, mp 67°C	1 g	08242-1
	5 g	08242-5
	10 g	08242-10

L

**L-(-)Lactide** CAS#: 4511-42-6 | HAZARD CODE: H3be**05749**

Synthesis of biodegradable homo- and copolymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 144.1, mp 95–97°C	10 g	05749-10
	100 g	05749-100
	500 g	05749-500

**dl-Lactide** CAS#: 95-96-5 | HAZARD CODE: H4be**16640**

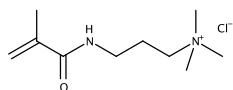
Synthesis of biodegradable homo- and copolymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 144.1, mp 124–126°C	10 g	16640-10
	100 g	16640-100
	500 g	16640-500

## MONOMERS / ALPHABETICAL LISTING

### M

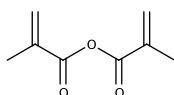
#### Methacrylamidopropyltrimethylammonium chloride CAS#: 51410-72-1 | HAZARD CODE: A4g 09657



Quaternary ammonium monomer. 50% soln. in water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 220.7, ~200ppm MEHQ	100 g	09657-100

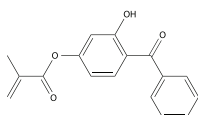
#### Methacrylic anhydride CAS#: 760-93-0 | HAZARD CODE: BEKX5g 01517



Reactive monomer used primarily in preparation of other monomers under mild reaction conditions. Homopolymers are linear and contain cyclic anhydride units, uncrosslinked.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 154.2, bp 80–85°C/8mm, n <sub>20</sub> /D 1.453 2000ppm BHT	100 ml	01517-100

#### 4-Methacryloxy-2-hydroxybenzophenone CAS#: 2035-72-5 | HAZARD CODE: U5d



UV absorbing monomer, especially for ophthalmic and optic applications.  
*Technical Data Sheet #514*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 282.3, mp 70–72°C λ max (MeOH) 205nm (ε = 3.03 x 10 <sup>4</sup> ) 275nm (ε = 1.18 x 10 <sup>4</sup> ) 325nm (ε = 7.23 x 10 <sup>3</sup> ) - min 99%	25 g	23350-25
MW 282.3, mp 70–72°C λ max (MeOH) 205nm (ε = 3.03 x 10 <sup>4</sup> ) 275nm (ε = 1.18 x 10 <sup>4</sup> ) 325nm (ε = 7.23 x 10 <sup>3</sup> ) - min 94%	25 g	16989-25

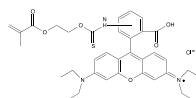
#### 2-(Methacryloxy)ethyl phosphate CAS#: 52628-03-2 | HAZARD CODE: BHJ4d 25422



Contains 700 – 1000ppm monomethyl ether hydroquinone and approximately 25% of diester. Used for introducing phosphorus into polymers, adhesion promoter.

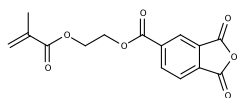
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 210.12, d 1.37 g/mL, Colorless, viscous liquid.	50 ml	25422-50

#### Methacryloxyethyl thiocarbamoyl rhodamine B CAS#: 669775-30-8 | HAZARD CODE: U5ad 23591



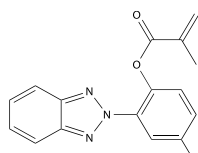
Fluorescent monomer. Purple crystals. Ex. max = 548 nm, Em. max = 570 nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(N-[9-(2-carboxy-x-methacryloxy-ethylthiocarbamoylphenyl)-6-diethylamino-3H-xanthen-3-ylidene]-N-ethyl-ethanaminium chloride; PolyFluor® 570) MW 683.24	100 mg	23591-100
	1 g	23591-1

**4-Methacryloxyethyl trimellitic anhydride** CAS#: 70293-55-9 | HAZARD CODE: U5bd**17285**

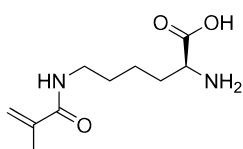
Reactive monomer, especially in dental applications. Used as adhesion promoter.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 304.2, mp 95°C	10 g	17285-10

**2-(2'-Methacryloxy-5'-methylphenyl)benzotriazole** CAS#: 188680-81-1 | HAZARD CODE: U7ad**21871**

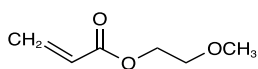
UV absorbing monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 293.3, mp 57–59°C	25 g	21871-25

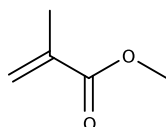
**Methacryloyl-L-Lysine** CAS#: 45158-94-9 | HAZARD CODE: U7g**24315**

Can be used as a building block for producing custom made polymers with pendant amine functionality.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 214	5 g	24315-5

**2-Methoxyethyl acrylate** CAS#: 3121-61-7 | HAZARD CODE: EHW5d**02487**Low Tg, more polar than butyl acrylate. *Requires poison pack.*

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 130.2, Tg -50°C, n20/D 1.427, 50ppm MEHQ inhibitor	100 g	02487-100

**Methyl methacrylate, min 99.5%** CAS#: 80-62-6 | HAZARD CODE: CH05g**00834**

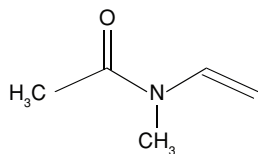
Widely used in preparation of stable, hard, polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 100.1, bp 99–100°C, n20/D 1.414, 25ppm HQ, Tg 105°C	1 liter	00834-1
	4 x 1 liters	00834-4
	5 gal	00834-5

## MONOMERS / ALPHABETICAL LISTING

### N

#### **N-methyl N-vinyl acetamide** CAS#: 3195-78-6 | HAZARD CODE: EH6d

**22065**


Specialty monomer with affinity for water and solvents. Water white liquid has both hydrophobic and hydrophilic character, and is known to undergo polymerization reactions in water or in hydrocarbon solvents with traditional free radical catalysts. Versatility to react with co-monomers such as acrylamide, vinyl acetate and methyl methacrylate allows a wide range of polymeric compositions to be made. Limited shelf life in water, decomposes rapidly under low pH conditions. Available in convenient protective foil packages for laboratory scale, and in bulk quantities for larger projects. Call for custom quotations.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 99.1, bp 70°C, 25 mm Hg, Colorless liquid.	25 g	22065-25

#### **2-N-Morpholinoethyl acrylate, 95%** CAS#: 19727-38-9 | HAZARD CODE: H04g

**17977**

Cationic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 185.2, bp 67°C/0.2mm, ~750ppm MEHQ	10 g	17977-10

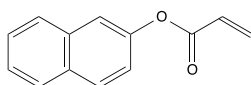
#### **2-N-Morpholinoethyl methacrylate, >95%** CAS#: 2997-88-8 | HAZARD CODE: EO7g

**17978**

Cationic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 199.2, bp 78°C/1.7mbar, 100ppm MEHQ	100 g	17978-100

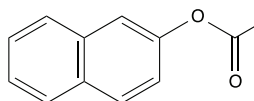
#### **2-Naphthyl acrylate** CAS#: 52684-34-1 | HAZARD CODE: U6d

**06024**


Fluorescent, hydrophobic, aromatic monomer.

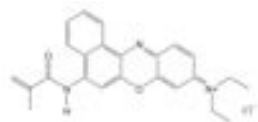
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 268.4, bp 138°C/0.4mm, Tg 24°C	100 mg	06024-100
	1 g	06024-1

#### **2-Naphthyl methacrylate** CAS#: 10475-46-4 | HAZARD CODE: U4d

**23602**


PolyFluor® 345. Fluorescent monomer. Ex. max = 285 nm, Em. min = 345 nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 212.2, mp 62–64°C, Colorless crystals.	100 mg	23602-100
	1 g	23602-1

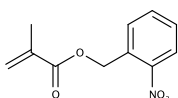
**Nile Blue Acrylamide** CAS#: 699018-10-5 | HAZARD CODE: H3ae**25395**

Nile Blue is a fluorescent dye that is used routinely in histology to impart a blue color to cell nuclei, where it highlights the distinction between neutral lipids (triglycerides, etc.), which are stained pink, and fatty acids, which are stained blue. Nile Blue Acrylamide has also been used to covalently link Nile Blue dye into the backbone of polymers for use in various sensor applications. Em. max = 674 nm.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 408, Appearance: Dark blue crystals.	100 mg	25395-100

**Nile Blue Methacrylamide** CAS#: 699018-10-5**25355**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Purity by HPLC $\geq$ 80.0%.	100 mg	25355-100

**o-Nitrobenzyl methacrylate, min. 95%** | HAZARD CODE: U7d**24360**

Blocked carboxylic acid monomer, acid formed by photolabile deprotection, used for catalysis, photoresists and latent reactive acid.

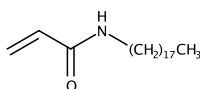
CHARACTERISTICS	UNIT SIZE	CATALOG #
100ppm HQ	10 g	24360-10

**1,9-Nonanediol dimethacrylate** CAS#: 65833-30-9 | HAZARD CODE: U7d**00801**

Long-chain crosslinking flexible, aliphatic, monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 296.4, 100ppm HQ	10 g	00801-10

O

**N-(n-Octadecyl)acrylamide** CAS#: 1506-54-3 | HAZARD CODE: U2d**04673**

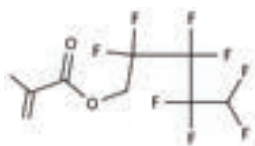
Hydrophobic acrylamide monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 323.6, mp 74.5–75.5°C	10 g	04673-10

## MONOMERS / ALPHABETICAL LISTING

### O

#### 1H,1H,5H-Octafluoropentyl methacrylate, min. 98% CAS#: 355-93-1 | HAZARD CODE: EH4g

**21045**


Low refractive index monomer. Polymer RI: ~1.39

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 300.2, bp 178–9°C, T <sub>g</sub> 36°C, n <sub>20</sub> /D 1.358, 100ppm MEHQ	25 g	21045-25

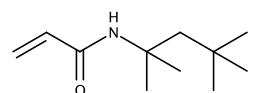
#### n-Octyl methacrylate, 99+% CAS#: 2157-01-9 | HAZARD CODE: EU6d



Hydrophobic methacrylate monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 198.3, bp 105°C/4mm, T <sub>g</sub> -20°C, 100ppm MEHQ - 99+%	25 g	23355-25
MW 198.3, bp 105°C/4mm, T <sub>g</sub> -20°C, 100ppm MEHQ - ~95%	25 g	02679-25

#### N-tert-Octylacrylamide CAS#: 4223-03-4 | H<sub>3</sub>C(CH<sub>2</sub>)<sub>4</sub>C(CH<sub>3</sub>)<sub>2</sub>NHCOCH=CH<sub>2</sub> | HAZARD CODE: H5d

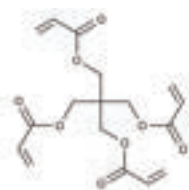
**03141**


Hydrophobic acrylamide derivative.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 183.3, mp 63.6°C	25 g	03141-255

### P

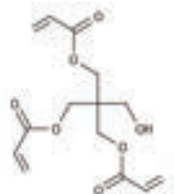
#### Pentaerythritol tetraacrylate CAS#: 4986-89-4 | HAZARD CODE: HO6g

**01547**


Crosslinking monomer.

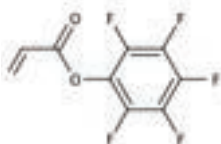
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 352.4, mp 18°C, n <sub>20</sub> /D 1.487, 350ppm MEHQ	100 g	01547-100

#### Pentaerythritol triacrylate CAS#: 3524-68-3 | HAZARD CODE: H4d

**04259**


Crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 298.3, mp 15°C, bp >315.5°C, T <sub>g</sub> 103°C, n <sub>20</sub> /D, 1.484 300–400ppm MEHQ	100 g	04259-100
	500 g	04259-500

**Pentafluorophenyl acrylate** CAS#: 71195-85-2 | HAZARD CODE: EHOV5d**06349**

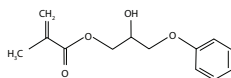
Low refractive index monomer. Polymer RI: 1.40

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 238.1, bp 145–149°C, n <sub>20</sub> /D D = ~1.433	5 g	06349-5

**1,5-Pentandiol dimethacrylate** CAS#: 13675-34-8 | HAZARD CODE: HU5d**04260**

Crosslinking aliphatic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 240.3, n <sub>20</sub> /D 1.455, 100 ppm HQ	25 g	04260-25

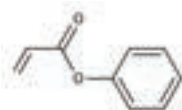
**3-Phenoxy 2 hydroxy propyl methacrylate (PHPM)** CAS#: 16926-87-7 | C<sub>13</sub>H<sub>16</sub>O<sub>4</sub> | HAZARD CODE: HO3bd**25506**Hydrophilic monomer useful in medical device and ophthalmic applications. *Technical Data Sheet #989*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Light yellow to slightly amber liquid. MW 236.26, 2500 ppm MEHQ; 1000 ppm BHT	100 g	25506-100
	500 g	25506-500

**2-Phenoxyethyl methacrylate** CAS#: 10595-06-9 | HAZARD CODE: U5g**02640**

UV-absorbing, aromatic, hydrophobic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 206.2, bp 130–132°C/8mm, T <sub>g</sub> 54°C, n <sub>20</sub> /D ~1.513, 200ppm HQ and 200 ppm MEHQ	100 g	02640-100

**Phenyl acrylate, min. 95%** CAS#: 937-41-7 | HAZARD CODE: HU7d**02642**

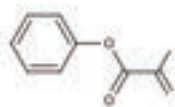
UV-absorbing, aromatic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 148.2, bp 87–94°C/12mm, T <sub>g</sub> 57°C, n <sub>20</sub> D ~1.58, 100ppm MEHQ	10 g	02642-10

## MONOMERS / ALPHABETICAL LISTING

### P

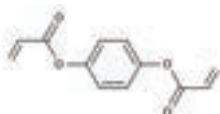
#### Phenyl methacrylate, >95% CAS#: 2177-70-0 | HAZARD CODE: BORVX7d 02644



Moderate UV-absorbing, aromatic, hydrophobic monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 162.2, bp 115–118°C/10mm, Tg 110°C, n20/D 1.5120, 100 ppm MEHQ	10 g	02644-10

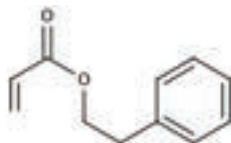
#### 1,4-Phenylene diacrylate CAS#: 6729-79-9 | HAZARD CODE: U5d 06389



Rigid aromatic crosslinking monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 218.2, mp 82–88°C, n20/D 1.531	10 g	06389-10

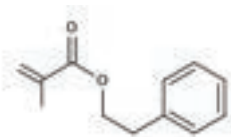
#### 2-Phenylethyl acrylate, min. 92% CAS#: 3530-36-7 | HAZARD CODE: HO5d 02834



Moderate UV-absorbing, aromatic, hydrophobic monomer useful for ophthalmic applications.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 176.2, bp 104–106°C/5mm, Tg -3°C, n20/D ~1.509, 100ppm PTZ	100 g	02834-100

#### 2-Phenylethyl methacrylate, min. 99% CAS#: 3638-12-3 | HAZARD CODE: H7d 02911



Moderate UV-absorbing, aromatic, hydrophobic monomer useful for ophthalmic applications.

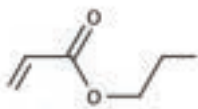
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 190.3, bp 119–120°C/11mm, Tg 26°C, n20/D = 1.55 ~ 400ppm MEHQ	100 g	02911-100

#### Phosphoric acid 2-hydroxyethyl acrylate ester CAS#: 37203-71-7 | HAZARD CODE: B4f 22468

Water-soluble phosphoric acid ester monomer. Adhesion promoter. Contains Bis(2-Acryloxyethyl) Phosphate.

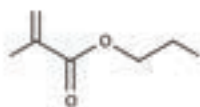
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 196.1, 2000ppm MEHQ	10 g	22468-10



**n-Propyl acrylate** CAS#: 925-60-0 | HAZARD CODE: HJ2g**03132**

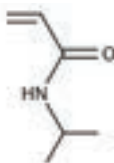
Neutral ester monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 114.2, bp 43–44°C/40mm, Tg -37°C, n20/D 1.413, 500ppm MEHQ	25 g	03132-25

**n-Propyl methacrylate** CAS#: 2210-28-8 | HAZARD CODE: EU5d**03174**

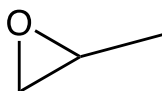
Neutral ester monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 128.2, bp 140–141°C, Tg 35°C, n20/D 1.419, 100ppm MEHQ	100 g	03174-100

**N-iso-Propylacrylamide** CAS#: 2210-25-5 | HAZARD CODE: H5d**02455**

Water-soluble, hydrophilic, monomers. Polymers are water-soluble at room temperature but are insoluble at slightly higher temperatures.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 113.2, mp 64–65°C, Tg 85°C	25 g	02455-25
	100 g	02455-100

**Propylene Oxide** CAS#: 75-56-9 | HAZARD CODE: BCHV6g**00236**Solvent used in the last stage of dehydration of tissue for epoxy embedding. Appropriate for EM use. *Requires posion pack.*

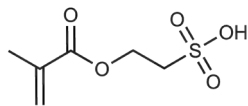
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 58.08, bp 34°C, n20/D 1.366 d 0.83	1 pint	00236-1

## MONOMERS / ALPHABETICAL LISTING

### S

#### 2-Sulfoethyl methacrylate, >90% CAS#: 10595-80-9 | HAZARD CODE: B4d

02597

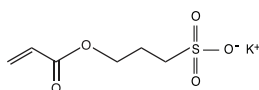


Water-soluble monomer. Used to introduce polar sites into polymer chains, confer shear stability to aqueous polymer dispersions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 194.1, n <sub>20</sub> /D 1.477 d 1.3245 3000 ppm MEHQ	50 g	02597-50

#### 3-Sulfopropyl acrylate, potassium salt CAS#: 31098-20-1 | HAZARD CODE: H2g

17209

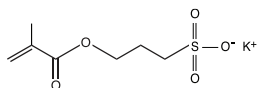


Water-soluble monomer. Used to introduce polar sites into polymer chains, confer shear stability to aqueous polymer dispersions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 232.3, mp 302°C (dec.)	100 g	17209-100
	1 kg	17209-1

#### 3-Sulfopropyl methacrylate, potassium salt, 98% CAS#: 31098-21-1 | HAZARD CODE: H5g

17210

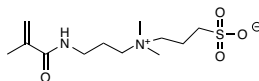


Water-soluble monomer. Used to introduce polar sites into polymer chains, confer shear stability to aqueous polymer dispersions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 246.3, mp 295°C (dec.)	100 g	17210-100
	1 kg	17210-1

#### 3-Sulfopropyl dimethyl-3-methacrylamidopropylammonium, inner salt CAS#: 5205-95-8 | HAZARD CODE: U4g

16570



Polar water-soluble monomer. Zwitterionic detergent and crosslinker.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(Dimethyl[3-methacrylamidopropyl]-3-sulfopropylammonium, inner salt) MW 292.4, mp 199 – 200°C	5 g	16570-5

**Tetraethylene glycol diacrylate****(TetEGDA)** CAS#: 17831-71-9 |  $\text{CH}_2=\text{C}(\text{CH}_3)\text{CO}(\text{OCH}_2\text{CH}_2)_4\text{O}_2\text{CC}(\text{CH}_3)=\text{CH}_2$  | HAZARD CODE: BHJ5g**01668**

Tetraethylene glycol diacrylate (TetEGDA) is a long-chain hydrophilic, crosslinking monomer. PEG-based cross-linked polymeric materials (hydrogels) are suitable carriers for drug delivery and various other biomedical applications.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 302.32	100 g	01668-100
	1 kg	01668-1

**Tetraethylene glycol dimethacrylate** CAS#: 109-17-1 | HAZARD CODE HJO4d**02654**

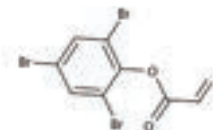
Crosslinking aliphatic monomer.



CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 330.3, bp 220°C, n <sub>20</sub> /D 1.463 75ppm HQ	50 g	02654-50
	250 g	02654-250

**2,4,6-Tribromophenyl acrylate** CAS#: 3741-77-3 | HAZARD CODE: U5d**03330**

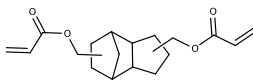
For high refractive index (n ~1.60), brominated aromatic, polymers.



CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 384.9, mp 77 – 78°C	10 g	03330-10

**Tricyclodecane dimethanol diacrylate** CAS#: 42594-17-2 | HAZARD CODE: HJO3bm**25110**

High refractive index monomer which exhibits low volume shrinkage in polymerization. Used in optical lens and optical fiber applications due to its high refractive index. Has also been used in dental composite applications for its low volume shrinkage.



CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 304.38, n <sub>20</sub> /D 1.506 d 1.10 g/mL at 25°C Clear liquid.	50 g	25110-50
	100 g	25110-100

**Triethylene glycol diacrylate** CAS#: 1680-21-3 | HAZARD CODE: BHO4g**02655**

Crosslinking monomer. Used in UV curing coatings.



CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 258.3, mp 125°/2mm, T <sub>g</sub> 70°C, n <sub>20</sub> /D 1.461 1170ppm HQ	25 g	02655-25
	250 g	02655-250

## MONOMERS / ALPHABETICAL LISTING

### T

#### Triethylene glycol dimethacrylate CAS#: 109-16-0 | HAZARD CODE: A2d

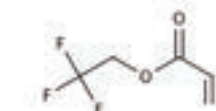


Crosslinking aliphatic monomer. Used in UV curing coatings, soft contact lenses.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 286.2, bp 162°C/1.2mm 80ppm HQ - min. 95%	100 g	24034-100
	1 kg	24034-1
MW 286.2, bp 162°C/1.2mm 80ppm HQ - min. 88%	250 g	01319-250
	1 kg	01319-1

#### 2,2,2-Trifluoroethyl acrylate CAS#: 407-47-6 | HAZARD CODE: CH6d

**01718**



Fluorinated, aliphatic. For reduced refractive index (1.407) polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 154.1, bp 91–92°C/749mm, Tg -10°C, n20/D 1.350 100 ppm MEHQ	25 g	01718-25

#### Trimethylene Carbonate (1, 3-Dioxan-2-one) CAS#: 2453-03-4 | HAZARD CODE: A3be

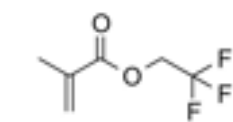
**25768**

Trimethylene carbonate is a monomer used to manufacture biodegradable polymers used in medical devices. Polysciences' trimethylene carbonate has purity >99.0%.

UNIT SIZE	CATALOG #
5 g	25768-5
100 g	25768-100

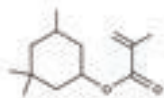
#### 2,2,2-Trifluoroethyl methacrylate CAS#: 352-87-4 | HAZARD CODE: CH4f

**02622**



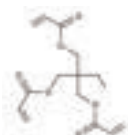
Fluorinated, aliphatic. For reduced refractive index (1.437) polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 168.1, bp 30°C/40mm, Tg 80°C, n20/D 1.361 100ppm MEHQ	25 g	02622-25

**3,3,5-Trimethylcyclohexyl methacrylate** CAS#: 7779-31-9 | HAZARD CODE: H4d**02660**

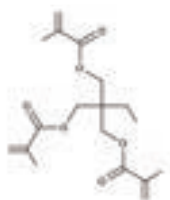
Ester monomer having a bulky alkyl group.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 210.1, bp 80–82°C/2mm, n <sub>20</sub> /D 1.456 200ppm MEHQ	25 g	02660-25

**1,1,1-Trimethylolpropane triacrylate (TriMPTA)** CAS#: 15625-89-5 | HAZARD CODE: H4g**02658**

Crosslinking monomer. Useful for UV cure.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 296.3, bp 316°C, n <sub>20</sub> /D 1.474 100ppm MEHQ and <20 ppm HQ	250 g	02658-250

**1,1,1-Trimethylolpropane trimethacrylate** CAS#: 3290-92-4 | HAZARD CODE: HO2d**02659**

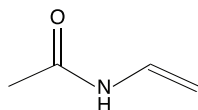
Crosslinking monomer. Useful for UV cure.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 338.4, bp 185°C/5mm, n <sub>20</sub> /D 1.472 65ppm HQ	250 g	02659-250

## MONOMERS / ALPHABETICAL LISTING

### V

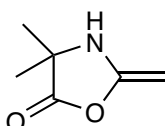
#### N-vinyl acetamide (NVA) CAS#: 5202-78-8 | HAZARD CODE: H4gK

**24806**

Polymers produced from NVA offer a balance of hydrophilic and hydrophobic properties and find applications ranging from adhesives and thickeners to formulating aids to binders for inorganics. Specific Gravity: 1.05 @ 20°C.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 85.1, mp 54°C, bp 96°C, (10mm Hg), Appearance: White solid.	50 g	24806-50

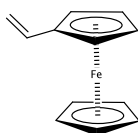
#### Vinyl azlactone CAS#: 29513-26-6 | HAZARD CODE: EHU6f

**21329**

Reactive heterocyclic monomer. Hydrolyzed to N-acryloyl-2-methylalanine

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 139.2, mp 6°C, bp 52°C (9mm Hg), n <sub>20</sub> /D 1.4575	5 g	21329-5

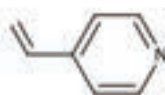
#### Vinylferrocene CAS#: 1271-51-8 | HAZARD CODE: U5g

**04503**

Organometallic monomer.

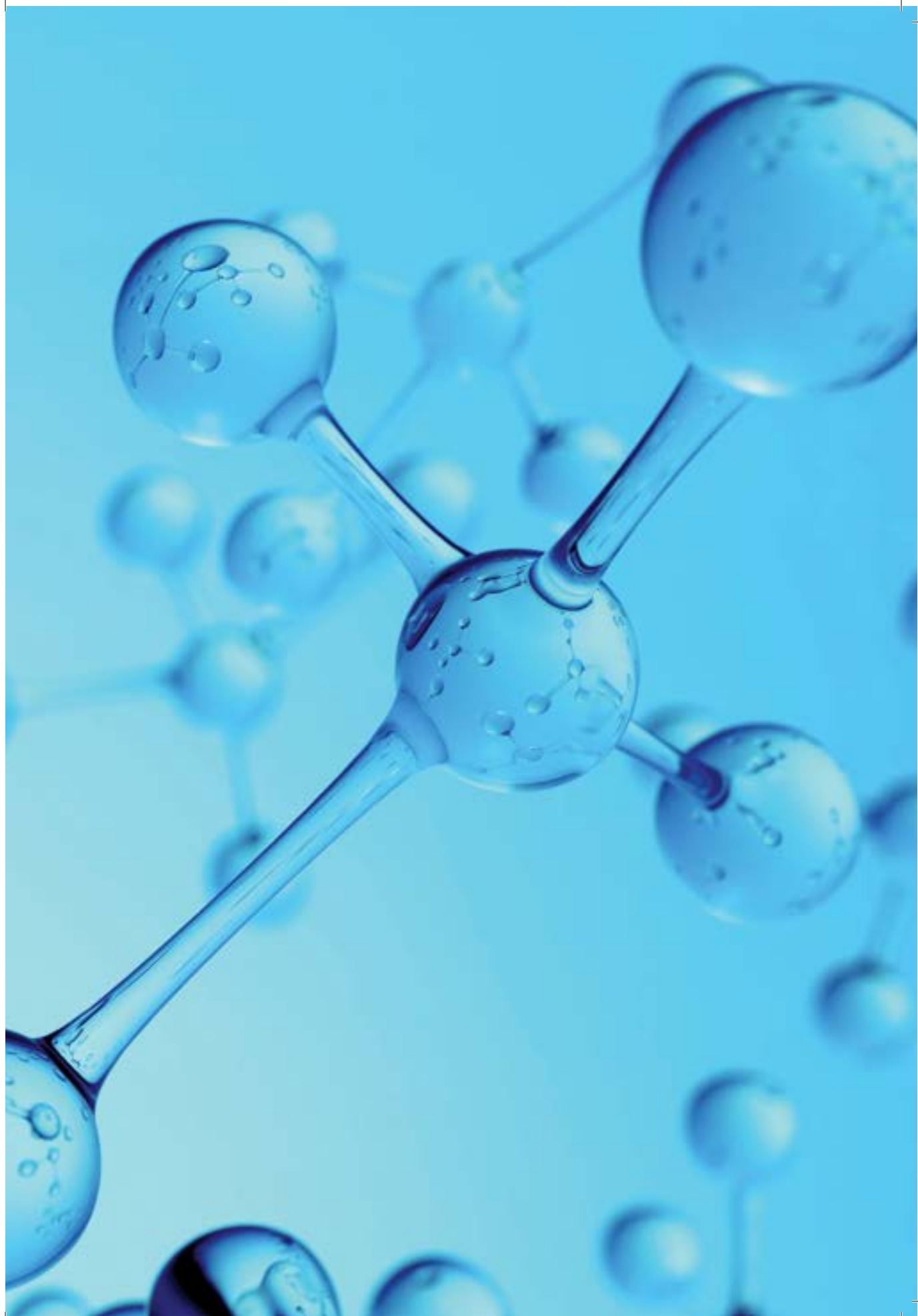
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 212.1, mp 50–53°C, bp 80°C/0.2mm, T <sub>g</sub> 187°C	1 g	04503-1

#### 4-Vinylpyridine CAS#: 100-43-6 | HAZARD CODE: BEVWX7f

**02668**

Aromatic amine monomer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 105.1, bp 62–65°C/15mm, n <sub>20</sub> /D 1.550 100 ppm HQ, T <sub>g</sub> 142°C	100 g	02668-100









## POLYMERS

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## POLYMERS / QUICK REFERENCE GUIDE

### ACID FUNCTIONAL POLYMERS & SALTS

Acidic groups are often used to convey solubility to polymers in aqueous media. These versatile moieties can be converted to a wide range of alternative functional groups. Acid groups can be utilized as catalysts for chemical reactions. Additionally, they are employed in polymers as the functional group, which enables improved adhesion to a variety of substrates through hydrogen bonding or metal chelation.

### CARBOXYLIC ACIDS

PRODUCT NAME	CATALOG #
Poly(acrylic acid)	06513
	06519
	00627
	03326
	03312
	06500
	06501
Poly(acrylic acid) sodium salt	06568
	18608
	06567
	18611
	18613
Poly(butadiene/maleic acid) 1:1 (42% soln. in water)	07787
Poly(ethylene/maleic anhydride) 1:1 (molar)	02308
Poly(maleic acid), 50% soln. in water	09732
Poly(methacrylic acid)	00578
Poly(methacrylic acid) ammonium salt, 30% soln. in water	21169
Poly(methacrylic acid) sodium salt, 30 % soln. in water	21170
Poly(methyl methacrylate/ methacrylic acid)	08207
	19629
	08208
	08221

### PHOSPHORIC ACIDS

PRODUCT NAME	CATALOG #
Poly(vinyl phosphoric acid), sodium salt	04391

### SULFONIC ACIDS

PRODUCT NAME	CATALOG #
Poly(styrenesulfonic acid)	08770
Poly(styrenesulfonic acid), sodium salt	08772
	08773

### ACRYLATE & METHACRYLATE POLYMERS

PRODUCT NAME	CATALOG #
Poly(benzyl methacrylate)	06562
Poly(iso-butyl methacrylate) fine powder, [η] = 0.60	02452
Poly(2-hydroxyethyl methacrylate/ methacrylic acid) [90:10]	08725
Poly(methyl methacrylate)	04554
	04553
	17913
	04552
Poly(iso-propyl methacrylate)	07052
Poly(tert-butyl methacrylate)	07037

### AMIDES

PRODUCT NAME	CATALOG #
Polyacrylamide	19901
	21485
	02806
	22581
Poly(acrylamide/sodium acrylate) [70:30]	18522
Poly(acrylamide/acrylic acid), Na Salt	04652
	18545
Polycaprolactam	18179
Poly(2-ethyl-2-oxazoline)	24066
	24882
	17810
Poly(N-iso-propylacrylamide)	21458

### AMINE FUNCTIONAL POLYMERS

PRODUCT NAME	CATALOG #
Chitosan	21161
Poly(diallyldimethylammonium chloride)	19898
	17338

PRODUCT NAME	CATALOG #
Poly(allyl amine)	24826
Poly(allylamine hydrochloride)	25673
Poly(4-aminostyrene)	02823
Polyaniline, Emeraldine form	24043
Poly(ethylene glycol) bis (2-amino-ethyl)	24303
Polyethylenimine, branched	02371
	06088
	06089
	19850
	17938
	06090
Polyethylenimine, branched	26292
	25449
Polyethylenimine, Linear	25449
	23966
	25414
	24313
Polyethylenimine Hydrochloride, Linear (MW 4,000)	24314
	24885
Polyethylenimine Hydrochloride, Linear (MW 160,000)	25439
Poly(l-lysine hydrobromide)	18619
	09730
	21430
	25724
Poly(N-methylvinylamine)	24038
Poly(vinylamine) hydrochloride	23965
Poly(2-vinyl-1-methylpyridinium bromide, 20% soln. in water)	21477
Poly(2-vinylpyridine)	19238
	21382
	17770
Poly(4-vinylpyridine)	00112
	22176
Poly(2-vinylpyridine N-oxide)	01564

PRODUCT NAME	CATALOG #
Poly(N-vinylpyrrolidone)	16693
	24737
	03315
	01051
	01052
	06067

BIODEGRADABLE POLYMERS

PRODUCT NAME	CATALOG #
Hydroxypropyl Cellulose	25727
	25728
	25729
	25730
Polycaprolactone	26287
	26288
	26289
	26290
Polycaprolactone, IV 0.2 dL/g	50001
Polycaprolactone, IV 0.4 dL/g	50002
Polycaprolactone, IV 0.8 dL/g	50003
Polycaprolactone, IV 1.2 dL/g	50004
Polycaprolactone, IV 1.7 dL/g	50005
Polycaprolactone, IV 2.0 dL/g	50006
Polycaprolactone, IV 2.2 dL/g	50007
Polycaprolactone, IV 2.6 dL/g	50008
Poly(Caprolactone-co-glycolide), 95:5, IV 1.4 dL/g	50009
Polycaprolactone diol	09706
Poly(glycolic acid) [i.v. 1.0-2.0]	06525
Poly[(R)-3-hydroxybutyrate]	16930
	16932
	16934
	16936
	16938
	16940
Poly[(-)3-hydroxybutyric acid]	16916

## POLYMERS / QUICK REFERENCE GUIDE

### POLY(DL-LACTIDE/GLYCOLIDE) POLYMERS

PRODUCT NAME	CATALOG #
Poly(dl-lactide/glycolide)	19076
	19077
	19247
	23987
	23986
	23989
	25107
	26297
Poly(l-lactide/glycolide) [70:30]	16587

### POLY(DL-LACTIC ACID) & POLY(L-LACTIC ACID) POLYMERS

PRODUCT NAME	CATALOG #
Poly(dl-lactic acid)	22505
	16585
	23976
Poly(L-lactic acid)	18580
	06529
	18402
	18582
	21512
	26405

### POLYCAPROLACTONE & POLYETHYLENE GLYCOL DIBLOCK POLYMERS

PRODUCT NAME	CATALOG #
PCL(1,000)-b-PEG(1,000)	25010
PCL(1,000)-b-PEG(2,000)	25011
PCL(1,000)-b-PEG(5,000)	25012
PCL(5,000)-b-PEG(1,000)	25022
PCL(5,000)-b-PEG(2,000)	25023
PCL(5,000)-b-PEG(5,000)	25024

### POLYCAPROLACTONE & POLYETHYLENE GLYCOL TRIBLOCK POLYMERS

PRODUCT NAME	CATALOG #
PCL(1,000)-b-PEG(1,000)-b-PCL(1,000)	25019
PCL(1,000)-b-PEG(2,000)-b-PCL(1,000)	25020
PCL(1,000)-b-PEG(6,000)-b-PCL(1,000)	25021
PCL(1,000)-b-PEG(10,000)-b-PCL(1,000)	25013
PCL(5,000)-b-PEG(1,000)-b-PCL(5,000)	25014
PCL(5,000)-b-PEG(2,000)-b-PCL(5,000)	25015
PCL(5,000)-b-PEG(5,000)-b-PCL(5,000)	25016
PCL(5,000)-b-PEG(10,000)-b-PCL(5,000)	25025

### POLYLACTIC ACID & POLYETHYLENE GLYCOL DIBLOCK POLYMERS

PRODUCT NAME	CATALOG #
PEG(350)-b-PLA(300)	24375
PEG(1000)-b-PLA(750)	24378
PEG(1000)-b-PLA(5000)	24381
PEG(5000)-b-PLA(1000)	24386
PEG(5000)-b-PLA(5000)	24389
PEG(5000)-b-PLA(10,000)	25018
PEG(10,000)-b-PLA(5,000)	25017

### POLYLACTIC ACID & POLYETHYLENE GLYCOL TRIBLOCK POLYMERS

PRODUCT NAME	CATALOG #
PLA(1000)-b-PEG(1000)-b-PLA(1000)	24500
PLA(2000)-b-PEG(1000)-b-PLA(2000)	24501
PLA(5000)-b-PEG(1000)-b-PLA(5000)	24502
PLA(1000)-b-PEG(4000)-b-PLA(1000)	24503
PLA(1000)-b-PEG(10,000)-b-PLA(1000)	24509
PLA(5,000)-b-PEG(10,000)-b-PLA(5,000)	25026
PLA(10,000)-b-PEG(10,000)-b-PLA(10,000)	25027

### BLOCK COPOLYMERS

PRODUCT NAME	CATALOG #
Poly(dimethylsiloxane-b-ethylene oxide), methyl terminated	09780
	21870
Poly(ethylene oxide-b-propylene oxide)	16273
	16276

**CONDUCTIVE POLYMERS**

PRODUCT NAME	CATALOG #
Polyaniline, Emeraldine form	24043
Poly(3,4-ethylenedioxythiophene) / poly(styrenesulfonate), aqueous dispersion (PEDT/PSS)	24215

**HALOGEN-CONTAINING POLYMERS**

PRODUCT NAME	CATALOG #
Fluorinated Ethylene Propylene Copolymer	24778
Halocarbon 200 Oil [Poly(chlorotrifluoroethylene)]	25073
Halocarbon 400 Oil [Poly(chlorotrifluoroethylene)]	25074
Halocarbon 700 Oil [Poly(chlorotrifluoroethylene)]	25075
Halocarbon 1000N Oil [Poly(chlorotrifluoroethylene)]	25076
Poly(2-chloro-1,3-butadiene)	21289
Poly(chlorotrifluoroethylene)	15176
Polyethylene, chlorinated, 25% Cl	01814
Poly(tetrafluoroethylene)	21539
	08816
Poly(vinylidene fluoride)	18734

**LIQUID CRYSTAL POLYMERS**

Organic compounds capable of responding to small amounts of radiant energy and undergo a phase transition with selective reflection of light. Specific colors are obtained depending on the wavelength of light which is determined by the organic crystal array “pitch length.” Application areas range from thermally activated displays to sensors, and detection devices to cosmetics.

PRODUCT NAME	CATALOG #
Cholesteryl Nonanoate	24817
Cholesteryl Oleyl Carbonate	24815

**PHENOL-FUNCTIONAL POLYMERS**

PRODUCT NAME	CATALOG #
Poly(4-vinylphenol)	06527
	18980
	25447

**PHOTOACTIVE POLYMERS**

PRODUCT NAME	CATALOG #
Poly(vinyl alcohol), N-methyl-4 (4'-formylstyryl)pyridinium methosulfate acetal	22570
Poly(vinyl cinnamate)	02648

**POLY(ETHYLENE GLYCOL) POLYMERS**

PRODUCT NAME	CATALOG #
Poly(ethylene glycol)	00684
	00682
	00679
	06102
	06103
	22567
	25360
	22568
	17243
	01109
Poly(ethylene glycol) (200) adipate	21509
Poly(ethylene glycol) bis (2-aminoethyl)	24303
Poly(ethylene glycol)-bisphenol A diglycidyl ether adduct	04686
Poly(ethylene glycol) (n) diacrylate	00669
	01871
	15246
Poly(ethylene glycol) (n) diglycidyl ether	08209
	08210
	08211
	24047
Poly(ethylene glycol) (n) dimethacrylate	00096
	15179
	15178
Poly(ethylene glycol) (n) distearate	01048
	19234
Poly(ethylene glycol) (n) monomethacrylate	16712
	16713

*Poly(ethylene glycol) Polymers continued on next page*

## POLYMERS / QUICK REFERENCE GUIDE

PRODUCT NAME	CATALOG #
Poly(ethylene glycol) monomethyl ether	04457
	04242
	05986
Poly(ethylene glycol) (n) monomethyl ether monomethacrylate	16664
	16665
	16666
Poly(ethylene glycol terephthalate)	04301

### REACTIVE POLYMERS

PRODUCT NAME	CATALOG #
Poly(butadiene/maleic anhydride) 1:1 (molar)	07788
Poly(ethylene/maleic anhydride) 1:1 (molar)	02308
Poly(maleic anhydride), (PMA)	02348

### CARBOXYLIC ACID CHLORIDE FUNCTIONAL POLYMERS

PRODUCT NAME	CATALOG #
Poly(acryloyl chloride), 25% soln. in dioxane	04293
Poly(methacryloyl chloride), 25% soln. in dioxane	04315

### HYDROXYL-FUNCTIONAL POLYMERS

PRODUCT NAME	CATALOG #
Poly(2-hydroxyethyl methacrylate)	09689
Poly(vinyl alcohol)	22225
	02975
	04397
	15132
	15130
	15129
	04324
	04398
	02815

### STYRENIC POLYMERS

PRODUCT NAME	CATALOG #
Polystyrene	00574
	23637
	18544

### WATER SOLUBLE POLYMERS

PRODUCT NAME	CATALOG #
Cellulose, hydroxyethyl ether	05570
	05569
	05568
Cellulose, methyl hydroxyethyl ether	21275
Chitosan	21161
Dextran	01341
	05056
	22500
Dextran sulfate, sodium salt	00407
Polyacrylamide	22581
	19901
	21485
	02806
Poly(acrylamide/sodium acrylate) [70:30]	18522
Poly(acrylamide/acrylic acid), Na Salt	04652
	18545
Poly(acrylic acid)	06513
	06519
	00627
	03326
	03312
	06500
	06501
24771	
Poly(acrylic acid) sodium salt	06568
	18608
	06567
	18611
	18613
Poly(diallyldimethylammonium chloride)	17338

PRODUCT NAME	CATALOG #
Poly(diallyl dimethyl ammonium chloride)	24828
	19898
Poly(allyl amine)	24826
Poly(butadiene/maleic acid) 1:1 (molar)	07787
Poly(ethylene oxide)	04031
Poly(ethylene oxide)	06104
	17503
	06106
	21295
	04030
	21296
	04031
	04031
Poly(ethylene oxide-b-propylene oxide)	16273
	16276
Poly(2-ethyl-2-oxazoline)	24066
	24882
	17810
Poly(2-hydroxyethyl methacrylate/ methacrylic acid) [90:10]	08725
Poly(L-lysine hydrobromide)	18619
	09730
	21430
	25724
Poly(maleic acid), 50% soln. in water	09732
Poly(methacrylic acid)	00578
Poly(methacrylic acid) ammonium salt, 30% soln. in water	21169
Poly(methacrylic acid) sodium salt, 30 % soln. in water	21170
Poly(oxyethylene) sorbitan monolaurate (Tween 20®)	06110
Poly(N-iso-propylacrylamide)	21458
Polypropylene, Chromatographic Grade	04342
Polypropylene	23968
Polypropylene, Isotactic	06536
Poly(styrenesulfonic acid)	08770
Poly(styrenesulfonic acid), sodium salt	08772
	08773
Poly(vinyl acetate)	06069
Poly(vinyl acetate), 40% hydrolyzed	17561

PRODUCT NAME	CATALOG #
Poly(vinyl alcohol)	22225
	02975
	04397
	15132
	15130
	15129
Poly(vinyl alcohol), N-methyl-4(4' formylstyryl)pyridinium methosulfate acetal	04324
	04398
	02815
	22570
Poly(vinylamine) hydrochloride	23965
Poly(vinyl methyl ether), 50% aqueous solution	03032
Poly(2-vinyl-1-methylpyridinium bromide, 20% soln. in water	21477
Poly(vinylphosphonic acid), 30% Soln.	24297
Poly(vinyl phosphoric acid), sodium salt	04391
	19238
	21382
Poly(2-vinylpyridine)	17770
	00112
Poly(4-vinylpyridine)	22176
	01564
Poly(2-vinylpyridine N-oxide)	01564
Poly(N-vinylpyrrolidone)	16693
	24737
	03315
	01051
	01052
Poly(N-vinylpyrrolidone/vinyl acetate), 50% soln. in isopropanol	06067
	09718
Poly(N-vinylpyrrolidone/vinyl acetate), 50% soln. in isopropanol	09716
	04392
Poly(vinylsulfonic acid) sodium salt	04392

## POLYMERS / ALPHABETICAL LISTING

### C

#### **Cellulose, cyanoethyl ether** CAS#: 9004-41-5 | $\text{CH}_2\text{CH}_2\text{CN}$ | HAZARD CODE: A3g

**04687**

Solvent-soluble cellulose ether. High dielectric constant. Soluble in polar solvents, acetone, chloroform and pyridine.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 90,000–117,000, Tg 180°C	10 g	04687-10

#### **Cellulose, hydroxyethyl ether** CAS#: 9004-62-0 | $\text{CH}_2\text{CH}_2\text{OH}_2$ | HAZARD CODE: H5g

Water-soluble cellulose ether, used as a binder and thickening agent.

CHARACTERISTICS	UNIT SIZE	CATALOG #
powder / ~90,000, Viscosity 5% AQ = 75–150 cps	100 g	05570-100
	500 g	05570-500
powder / ~720,000, Viscosity 2% AQ = 4,500–6,500 cps	100 g	05569-100
	500 g	05569-500
powder / ~1,000,000, Viscosity 1% AQ = 1,500–2,500 cps	100 g	05568-100
	500 g	05568-500

#### **Cellulose, methyl hydroxyethyl ether** CAS#: 9032-42-2 | $\text{CH}_2\text{CH}_2\text{O}x\text{H}$ , $\text{CH}_3$ | HAZARD CODE: A2g

**21275**

Water-soluble cellulose derivative.

CHARACTERISTICS	UNIT SIZE	CATALOG #
8,000 cps (2% soln. in $\text{H}_2\text{O}$ )	500 g	21275-500

#### **Chitosan** CAS#: 9012-76-4 | HAZARD CODE: A2g

**21161**

Cationic polymer prepared by deacetylation of chitin. Soluble in water at low (4–6) pH. Soluble in water at low (4–6) pH; dilute organic and inorganic acids.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Purified Powder. MW ~15,000, Degree of deacetylation ~84%	50 g	21161-50



**Cyclic Olefin Copolymers (COC)** CAS#: 26007-43-2 | HAZARD CODE: A2g

(Ethylene-Norbornene Copolymer)

Cyclic Olefin Copolymers are high transparency, low specific gravity, high heat resistant and have excellent optical properties and superior water vapor barrier characteristics. Combined with outstanding stiffness/strength and favorable sterilization properties, they have found applications ranging from FDA approvals for pharmaceutical and food applications to optical applications and electronics materials. Whether used by itself or as a modifier for other resins, the ethylene-norbornene copolymer offers the optical clarity of polymethylmethacrylate (PMMA), the heat resistance of polycarbonate (PC) and superior dimensional stability.

**Properties:**

- High transparency
- Outstanding moisture barrier
- High rigidity and strength
- Variable heat distortion resistance up to 170°C
- Excellent biocompatibility
- Low density
- Very good electrical insulation properties
- Exceptionally low moisture absorption
- Low birefringence
- Very good resistance to acids and alkalis and polar organic solvents

CHARACTERISTICS	UNIT SIZE	CATALOG #
HDT = 75°C, Tg 80°C, d 1.02	100 g	24750-100
HDT = 130°C, Tg 140°C, d 1.02	100 g	24749-100
HDT = 150°C, Tg 160°C, d 1.02	100 g	24748-100
HDT = 170°C, Tg 180°C, d 1.02	100 g	24746-100
HDT = Heat Deflection Temperature		

## D

**Dextran** CAS#: 9004-54-0 | C<sub>6</sub>H<sub>10</sub>O<sub>5</sub> | HAZARD CODE: A2g

(poly[(1,6)-α-d-glucose]) Water soluble carbohydrate with many pharmaceutical and technical uses. Soluble in lower alcohols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Powder. MW 15K–20K, i.v. 0.10–0.14	10 g	01341-10
	100 g	01341-100
Nonpyrogenic, powder. MW 100K–200K, i.v. 0.34	10 g	05056-10
	100 g	05056-100
Powder. MW 200K–300K, i.v. 0.4–0.5/37°C	10 g	22500-10
	100 g	22500-100

## POLYMERS / ALPHABETICAL LISTING

### D

**Dextran, FITC** CAS#: 60842-46-8 | HAZARD CODE: A2d

**15759**

(Fluorescein isothiocyanate) Valuable materials for studying permeability and microcirculation *in vivo*. These are used to trace neuronal projections and active transport in live and unfixed tissue and as neuronal tracers in a variety of species.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 150,000, Yellow-orange crystalline powder	500 mg	15759-500

**Dextran sulfate, sodium salt** CAS#: 9011-18-1 |  $C_6H_9O_4(OSO_3Na)$  | HAZARD CODE: A2g

**00407**

Anionic dextran derivative.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 500,000, Viscosity 0.1–0.7 in 1M AQ NaCl Sulfur 19%, pH of AQ 6.9	100 g	00407-100

### E

#### EPOXY RESINS

**Araldite® resins (modified epoxy resins)**  $C_6H_4-1,2,-[CO_2(CH_2)_3CH_3]_2$

*Technical Data Sheet #128*

CHARACTERISTICS	UNIT SIZE	CATALOG #
Grade 502, WPE 233–250 CAS#: 84-74-2   HAZARD CODE: HO5g	500 g	00552-500
Grade 6005, WPE 182–189 CAS#: 3101-60-8   HAZARD CODE: HO7g	500 g	02116-500

**D.E.R. (Dow epoxy resins)** CAS#: 26142-30-3 | HAZARD CODE: U4g

CHARACTERISTICS	UNIT SIZE	CATALOG #
Grade 732, WPE 310–330, MW ~600, Viscosity 55–100 cps   HAZARD CODE: HO7g	450 g	02922-450
Grade 736, WPE 175–205, MW ~300, Viscosity 30–60 cps   HAZARD CODE: H2g	450 g	02923-450

**Epon® Resin 828** CAS#: 25068-38-6 | HAZARD CODE: HO2g

**02334**

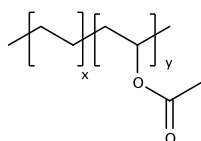
(Bisphenol A diglycidyl ether) Standard epoxy resin used in formulation, fabrication and fusion technology. Widely used for embedding and potting. When cross-linked or hardened with appropriate amine curing agents, very good mechanical adhesive, dielectric and chemical resistance properties are obtained.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~377, Viscosity 10,000–16,000 cps, WPE: 185–192	500 mg	02334-500

**Epon® Resin 1001F** CAS#: 25036-25-3 | HAZARD CODE: A2g**24305**

(Bisphenol A diglycidyl ether) Higher MW epoxy resin cured by amine catalyst and used for embedding. Viscous liquid.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 1075, Viscosity 7.0–9.6 cps, WPE: 525–550	500 g	24305-500

**Ethylene Vinyl Acetate** CAS#: 24937-78-8 | HAZARD CODE: H4g**24763**

Copolymer available as a free flowing powder that can easily be redispersed to form a latex dispersion. Powder is stabilized with a vinyl alcohol to allow it to remain free flowing but easily redispersible in water.

**Composition:** Approximately 20 weight % ethylene and 80 weight % vinyl acetate.  
**Particle size:** 1–7 micron dominant sizes; max 4% over 40 mesh.

CHARACTERISTICS	UNIT SIZE	CATALOG #
White, free flowing powder / Tg -7°C (Soft, flexible polymer), Solids Content: 99 +/- 1%	50 g	24763-50
	1 kg	24763-1

## F

**Fluorinated Ethylene Propylene Copolymer** | HAZARD CODE: AH4g**24778**

Fluorinated copolymers of ethylene and propylene improve overall performance when formulated into plastics, elastomeric polymers, paints and coatings or inks and lubricants.

**Advantages:**

This product exhibits high release characteristics, excellent wear and mar resistance and slip resistance properties when used alone or in blends with other materials. The inherent toughness and high fluorine content imparts improved tear resistance, surface smoothness and flammability resistance in coating and ink formulations.

**Properties:**

- Service Temperature Range: (ASTM-D1457) -200°–260°C
- Mean Particle Size: 4 microns
- Polymer Specific Gravity: 2.2–2.3
- Bulk Density: 350–550 grams/liter

CHARACTERISTICS	UNIT SIZE	CATALOG #
Fine white powder mp (ASTM-D1457) 240 +/- 9°C, Melt Flow Index 10–35 MI	100 g	24778-100

## POLYMERS / ALPHABETICAL LISTING

### H

#### **Halocarbon 200 Oil [Poly(chlorotrifluoroethylene)]** CAS#: 9002-83-9 | HAZARD CODE: H3g **25073**

Inert, non-flammable lubricating oil. Polymer is a blend of oligomers. Also used as an inert medium in transgenic studies of fruit fly *Drosophila* embryos.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Clear, colorless liquid. d 1.95 g/mL, Cloud Point: 35°F (2°C), Pour Point: 10° F (-12° C), Viscosity at 100°F (37.8°C), 200 centistokes (390 cPs), n <sub>20</sub> /D 1.412	50 ml	25073-50
	100 ml	25073-100

#### **Halocarbon 400 Oil [Poly(chlorotrifluoroethylene)]** CAS#: 9002-83-9 | HAZARD CODE: H3g **25074**

Inert, non-flammable lubricating oil. Polymer is a blend of oligomers. Also used as an inert medium in transgenic studies of fruit fly *Drosophila* embryos.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Clear, colorless liquid. d 1.95 g/mL, Cloud Point: 50°F (10°C), Pour Point: 15° F (+/- 10); -9°C (+/- 5), Viscosity at 100°F (37.8°C), 400 centistokes (780 cPs), n <sub>20</sub> /D 1.412	50 ml	25074-50
	100 ml	25074-100

#### **Halocarbon 700 Oil [Poly(chlorotrifluoroethylene)]** CAS#: 9002-83-9 | HAZARD CODE: H3g **25075**

Inert, non-flammable lubricating oil. Polymer is a blend of oligomers. Also used as an inert medium in transgenic studies of fruit fly *Drosophila* embryos

CHARACTERISTICS	UNIT SIZE	CATALOG #
Clear, colorless liquid. d 1.95 g/mL, Cloud Point: 55°F (13°C), Pour Point: 40° F (+/- 10); 5°C (+/- 5), Viscosity at 100°F (37.8°C), 700 centistokes (1,365 cPs), n <sub>20</sub> /D 1.414	50 ml	25075-50
	100 ml	25075-100

#### **Halocarbon 1000N Oil [Poly(chlorotrifluoroethylene)]** CAS#: 9002-83-9 | HAZARD CODE: H3g **25076**

Inert, non-flammable lubricating oil. Polymer is a blend of oligomers. Also used as an ultraviscous solvent for <sup>1</sup>H NMR spectroscopy to better identify individual components in a complex mixture. The ultraviscous polymer solvent (mixed as 80% Halocarbon / 20% CDCl<sub>3</sub>) greatly reduces the molecular tumbling of small molecules, thereby making the nuclear Overhauser effect (NOE) very large and of negative sign. In a NOESY experiment, the spectrum of the target molecule can be cleanly extracted from the mixture.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Clear, colorless liquid. d 1.95 g/mL, Pour Point: 50°F (+/- 10); 10°C (+/- 5), Viscosity at 100°F (37.8°C) 1,000 centistokes (1,950 cPs), n <sub>20</sub> /D 1.415	50 ml	25076-50
	100 ml	25076-100

P

**PEO(5800)-b-PPO(3000)-b-PEO(5800) dimethacrylate** | HAZARD CODE: U4abd**25430**

Long-chain hydrophilic, crosslinking macromonomer. Triblock copolymer with methacrylate endgroups contains blocks of PEO and PPO to provide a balance of hydrophilic and hydrophobic properties.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 14,600, mp 56°C, White solid.	1 g	25430-1

**Polyacrylamide** CAS#: 9003-05-8 |  $\text{CH}_2\text{CH}(\text{CONH}_2)$ 

Important nonionic water-soluble polymer. High MW polymer is used primarily as a flocculant. Unit weights are weights of solution. Tg of high MW (>100,000) polymers = 165°C. Unit weights are weights of solution. Soluble in water, morpholine.

CHARACTERISTICS	UNIT SIZE	CATALOG #
d 1.302 for AQ Solution, Tg 165°C, MW 10K (25g polymer), Viscosity of 15% AQ 5.5 - 9 cps   HAZARD CODE: H4g 50% soln. in water	100 g	22581-100
d 1.302 for AQ Solution, Tg 165°C, MW 400K - 1M   HAZARD CODE: H6d, 10% soln. in water	250 g	19901-250
	1 kg	19901-1
d 1.302 for AQ Solution, Tg 165°C, MW 5M (2.5g polymer), Viscosity of 0.1% AQ 3.8 cps   HAZARD CODE: A2g, 1% soln. in water	250 g	21485-250
Tg 165°C, MW 5M - 6M, Viscosity of 0.1% AQ 2.2 - 2.7 cps   HAZARD CODE: A2g, Powder	50 g	02806-50
	250 g	02806-250

**Poly(acrylamide/sodium acrylate) [70:30]** CAS#: 9003-05-8 | HAZARD CODE: A2g**18522**

Soluble in water, morpholine.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Powder, MW 18M, d 1.302 for AQ Solution, Viscosity of 0.2% AQ 1200 cps	50 ml	18522-100

**Poly(acrylamide/acrylic acid), Na Salt** CAS#: 25085-02-3

Anionic acrylamide polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<0.03% anionic acrylamide polymer, 90:10, MW 200,000, Viscosity 10% AQ 150 - 170 cps   HAZARD CODE: H2g	250 g	04652-250
60:40, MW >10,000,000   HAZARD CODE: H4g	250 g	18545-250

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(acrylic acid)** CAS#: 9003-01-4 | $[-CH_2CH(CO_2H)-]_n$

Important anionic water-soluble polymer. Can be crosslinked covalently or ionically to form hydrogels.

CHARACTERISTICS		UNIT SIZE	CATALOG #
polymers = 106°C, 1.527 Tg of High MW (>100,000) n25/D	MW ~2K, Viscosity 400 – 1400 63% AQ, (157.5g polymer) Mw/Mn 2.4 HAZARD CODE: H3g	250 g	06513-250
		1 kg	06513-1
	MW ~5,000, 50% soln. in water, (125g polymer)   HAZARD CODE: H2g	250 g	06519-250
		1 kg	06519-1
	MW ~30K, 30% AQ, mp -4°C   HAZARD CODE: H4g	250 g	24771-250
	MW ~50K, Viscosity 25% AQ, (62.5g polymer), Mw/Mn 2.9 HAZARD CODE: H4g	50 g	00627-50
		250 g	00627-250
		1 kg	00627-1
	MW ~345K, Viscosity 400 – 1200 cps 25% AQ (62.5g polymer) Mw/Mn 6.2   HAZARD CODE: A2g	250 g	03326-250
	MW ~450K, Viscosity 4 wt% AQ 700 cps, powder   HAZARD CODE: H4g	100 g	03312-100
	MW ~1M, Viscosity 4% AQ 4K – 11K cps, powder HAZARD CODE: H4g	10 g	06500-10
		100 g	06500-100
1 kg		06500-1	
MW ~4M, Viscosity 0.5 wt% AQ 40K – 60K cps, powder HAZARD CODE: H4g	10 g	06501-10	
	100 g	06501-100	

#### **Ultrapure Poly(Acrylic Acid)** CAS#: 9003-01-4 | $[-CH_2CH(CO_2H)-]_n$

Polysciences offers ultrapure poly(acrylic acid) for use as an electronics industry CMP slurry dispersant.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Poly(Acrylic Acid) Ultrapure - MW 2,000	Contact us.	14433-B
Poly(Acrylic Acid) Highly pure - MW 2,000	Contact us.	14176-B
Poly(Acrylic Acid) Highly pure - MW 10,000	Contact us.	13511-B

#### **Polyacrylonitrile, co-polymer with 6% methyl acrylate** CAS#: 26658-88-8 | HAZARD CODE: A3g

**25562**

Acrylonitrile copolymer with 6% methyl acrylate in presence of sodium 2-methyl-2-propene-1-sulfonate. Soluble in DMF, DMAc, DMSO.

CHARACTERISTICS	UNIT SIZE	CATALOG #
White powder, Average particle size of 40 micron, MW 80,000	100 g	25562-100
	500 g	25562-500

**Polyacrylonitrile (PAN 200, 000)** CAS#: 25014-41-9 | HAZARD CODE: A3g**25563**

Acrylonitrile homopolymer with approx. MW 200,000. Soluble in DMF, DMAC, DMSO.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Polymer powder, Average particle size of 40 micron, MW ~200,000	100 g	25563-100
	500 g	25563-500

**Poly(acrylic acid) sodium salt** CAS#: 9003-04-7 |  $[-CH_2CH(CO_2Na)-]_n$  | HAZARD CODE: A2g

Used at low molecular weights as pigment dispersant and at higher molecular weights as a flocculant. Polymer can form complexes with poly(ethylene oxide) and with nucleotides.

CHARACTERISTICS	UNIT SIZE	CATALOG #	
Water-soluble anionic polymer	MW ~2K, Viscosity of 25% AQ 320 cps, Mw/Mn 2.15, Powder	250 g	06568-250
		1 kg	06568-1
	MW ~3K, 40% AQ (100g polymer), Mw/Mn 1.5	250 g	18608-250
		1 kg	18608-1
	MW ~6K, Powder	250 g	06567-250
	MW ~60K, 35% AQ (87.5g polymer), Mw/Mn 2.4	250 g	18611-50
	MW ~225K, 20% AQ (50g polymer), Mw/Mn 6.1	250 g	18613-250

**Poly(acryloyl chloride), 25% soln. in dioxane** CAS#: 25189-84-8 | HAZARD CODE: CHM6d**04293**

Reactive polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~10,000	10 g	04293-10

**Poly(allylamine)** CAS#: 30551-89-4 | HAZARD CODE: BH4d**24826**

Water soluble cationic polymer with primary amino groups (free base types) for chemical reactions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 15,000, 15% solid in H <sub>2</sub> O	25 g	24826-25
	100 g	24826-100

**Poly(allylamine hydrochloride)** CAS#: 71550-12-4 |  $[-CH_2CH(CH_2NH_2xHCl)-]_n$  | HAZARD CODE: B3g**25673**

Polymeric primary amine.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 120,000–200,000, 40% AQ solution	1 g	25673-1
	25 g	25673-25
	100 g	25673-100

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(diallyldimethylammonium chloride)** CAS#: 26062-79-3

Linear, cationic, aliphatic, quaternary ammonium cyclopolymer. Soluble in H<sub>2</sub>O, MeOH, possibly other polar solvents.

CHARACTERISTICS		UNIT SIZE	CATALOG #
MW 240,000 Polydispersity 2-3	d 1.032, Dry powder   HAZARD CODE: KU5g	10 g	17338-10
	d 1.072, 28% AQ (70g polymer), Viscosity ~1000 cps; pH (as is) 25°C ~2 HAZARD CODE: A2d	250 g	19898-250

#### **Poly(diallyldimethylammoniumchloride)** CAS#: 26062-79-3 | HAZARD CODE: H4g

**24828**

Copolymer based on diallyl amine that generates a variety of cyclic tertiary amine structures. Supplied as ammonium salts.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 8,500, 28% solids in water	100 g	24828-100

#### **Poly(4-aminostyrene)** CAS#: 25086-42-4 | HAZARD CODE: A2g

**02823**

Polymeric aromatic primary amine. Prone to oxidative crosslinking. Insoluble in: organic solvents and mineral acids.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW > 150,000, Nitrogen content ~11%	1 g	02823-1

#### **Polyaniline, Emeraldine form** CAS#: 5612-44-2 | HAZARD CODE: A3g

**24043**

Soluble in: Me SO<sub>3</sub>H, DMF, NMP. Conductive polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Powder, undoped, MW ~15,000, d 1.36, Conductivity 10-10 S/cm	5 g	24043-5

#### **Poly(benzyl methacrylate)** CAS#: 25085-83-0 | [-CH<sub>2</sub>C(CH<sub>3</sub>)(CO<sub>2</sub>CH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>)-]<sub>n</sub> | HAZARD CODE: A2g

**06562**

Aromatic methacrylate ester polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
n <sub>20</sub> /D 1.568, T <sub>g</sub> 54°C	10 g	06562-10

#### **Poly[methylene(polyphenyl) isocyanate]** CAS#: 9016-87-9 | [-C<sub>6</sub>H<sub>3</sub>(NCO)CH<sub>2</sub>-]<sub>n</sub> | HAZARD CODE: H5g

**03099**

Low molecular weight polyisocyanate, reacts with glycols, polyamines to form gels. Soluble in: acetone, THF, toluene.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~360, d.24, NCO content ~30%	100 g	03099-100



**Polybutadiene** CAS#: 9003-17-2 |  $[-CH_2CH=CHCH_2-]$  | HAZARD CODE: A2g

Solid polyene that can be cured with sulfur or peroxides. Soluble in hydrocarbons, chloroform, THF.

CHARACTERISTICS	UNIT SIZE	CATALOG #
d 0.89, MW 1,600, n20/D, 1.515 liquid, vinyl-1,2 = 80%, Viscosity 40K±10K cps @ 45°C	100 g	22395-100
d 0.89, MW 3,000, n20/D, 1.500 liquid, vinyl-1,2 = 80%, Viscosity 65K cps @ 45°C	100 g	06081-100
d 0.89, MW 200,000, n20/D, 1.518 36% cis, 55% trans and 9% vinyl-1,2	10 g	19808-10

**Poly(butadiene/maleic acid) 1:1 (molar)** CAS#: 28265-35-2 | HAZARD CODE: BH6g**07787**

(210g Polymer) Anionic, water-soluble, polymer capable of reaction through acid groups or backbone unsaturation.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 10,000–15,000, Tg 57°C, Viscosity 2500 cps (42% soln. in water)	500 g	07787-500

**Poly(butadiene/maleic anhydride) 1:1 (molar)** CAS#: 25655-35-0 | HAZARD CODE: CHWX5g**07788**

(125g Polymer) Reactive polymer capable of reacting at anhydride or backbone unsaturation.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 10,000–15,000, Tg 70°C, Viscosity 12cps (25% soln. in acetone)	500 g	07788-500

**Poly(iso-butyl methacrylate)** CAS#: 9011-15-8 |  $(-CH_2C(CH_3)(CO_2CH_2CH(CH_3)_2)-)_n$  | HAZARD CODE: A2g**02452**

Firm, water-insensitive, polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Fine powder, $[\eta] = 0.60$ , d 1.045, MW 200,000, n20/D 1.477, Tg 53°C, Viscosity 12cps (25% soln. in acetone)	500 g	02452-500

**Poly(n-butyl methacrylate)** CAS#: 9003-63-8 |  $(-CH_2C(CH_3)(CO_2(CH_2)_3CH_3)-)_n$  | HAZARD CODE: A2g**02061**

Firm, water-insensitive, polymer. Soluble in acetone, chloroform, IPA, MEK, THF, toluene.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Fine powder, $[\eta] = 0.50$ , d 1.06, MW ~180,000, n20/D 1.483, Tg 20°C	100 g	02061-100

**Polycaprolactam** CAS#: 25038-54-4 | HAZARD CODE: A2g**18179**

Widely used in fibers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~35,000 (Nylon 6), mp 215–250°C, n20/D 1.530	250 g	18179-250

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(2-chloro-1,3-butadiene)** CAS#: 9010-98-4 | $[-\text{CH}_2\text{CH}=\text{C}(\text{Cl})\text{CH}_2-]_n$ | HAZARD CODE: A2g **21289**

(Neoprene®) Widely used rubber for applications requiring good solvent resistance.

CHARACTERISTICS	UNIT SIZE	CATALOG #
d 1.23, Tg -48°C, Viscosity 34–41 @ 100°C	100 g	21289-100

#### **Poly(chlorotrifluoroethylene)** CAS#: 9002-83-9 | $[-\text{CF}_2\text{CF}(\text{Cl})-]_n$ | HAZARD CODE: A2g **15176**

Inert liquid for high temperature baths.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 500–600, Tg -40°, 52° (static method), Tg 100°C (mechanical method), Viscosity 12 cps @ 37°C	100 g	15176-100

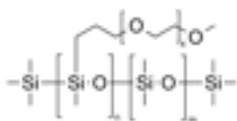
#### **Poly(2,6-dimethyl-1,4-phenylene oxide)** CAS#: 25134-01-4 | $[-\text{C}_6\text{H}_2(\text{CH}_3)_2\text{O}-]_n$ | HAZARD CODE: A2g **08794**

High softening point (90°C), polydispersity ~2.5. Soluble in toluene, chloroform, chlorobenzene.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 50,000, Mn 20,000, Tg 209°C, d 1.06, n20/D 1.575	100 g	08794-100

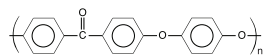
#### **Poly(dimethylsiloxane ethylene oxide), methyl terminated** CAS#: 68937-54-2

Surfactant-like diblock copolymers.



CHARACTERISTICS	UNIT SIZE	CATALOG #
d 1.07, MW 600, n20/D 1.442, [25:75], Viscosity 20 cps HAZARD CODE: H4g	100 g	09780-100
d 1.07, MW 3,000, n20/D 1.454, [20:80], Viscosity 80–150 cps HAZARD CODE: EH6g	100 g	21870-100

#### **Poly ether ether ketone (PEEK)** CAS#: 29658-26-2 | HAZARD CODE: A2g **23969**



High temperature resistant polymer. Granules are dusted with a nominal 0.01% Calcium Stearate as a processing lubricant.

CHARACTERISTICS	UNIT SIZE	CATALOG #
mp 340°C, d 1.30, Tg 140°C	50 g	23969-50

#### **Polyethylene** CAS#: 9002-88-4 | $[-\text{CH}_2\text{CH}_2-]_n$ | HAZARD CODE: A2g

Hydrophobic, easily processed or fabricated, resin. Soluble in xylene, tetralin.

CHARACTERISTICS	UNIT SIZE	CATALOG #
TCE @ 50–60°C, Mw/Mn = 1.10, MW 2,000, n20/D 1.545, mp 124°C, d 0.97, Tg -125°C, Lumps	100 g	07652-100
TCE @ 50–60°C, Mw/Mn = 1.10, MW 135,000, n20/D 1.510, mp 140°C, d 0.915, 20µ powder chromatographic (reversed phase HPLC) grade	100 g	15184-100
	500 g	15184-500

**Polyethylene, chlorinated, 25% Cl** CAS#: 64754-90-1 |  $\text{H}(\text{OCH}_2\text{CH}_2)_n\text{OH}$  | HAZARD CODE: A2g**01814**

Useful as primer or coating resin due to good adhesion properties. Randomly chlorinated HDPE.

UNIT SIZE	CATALOG #
100 g	01814-100

**Poly(3,4-ethylenedioxythiophene)/poly(styrenesulfonate), aqueous dispersion (PEDT/PSS)** CAS#: 155090-83-8 | HAZARD CODE: U5g**24215**

Conductive polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Surface resistivity 730 KOhm/sq, Solid content 1.24%, sodium 280 ppm	100 g	24215-100

**Poly(ethylene glycol)** CAS#: 25322-68-3 |  $\text{H}(\text{OCH}_2\text{CH}_2)_n\text{OH}$  | HAZARD CODE: A2g

Water-soluble, nonionic, relatively inert, liquids or solids. Confers slip and humectant properties to coatings. The terms poly(ethylene glycol) and poly(ethylene oxide) refer to polymers that are chemically identical. Polymer chains are hydroxyl-terminated at both ends. At all except the lowest molecular weights, poly(ethylene glycol) has a broad molecular weight distribution ranging from ~0.5x to 1.5x the values shown. Molecular Weight (MW) is approximate. For higher molecular weights, see Poly(ethylene oxide). Soluble in alcohol, acetone, chloroform, toluene, dichloromethane.

CHARACTERISTICS	UNIT SIZE	CATALOG #
n20/D 1.4563, Tg -41°C, Viscous liquid, MW 400, mp 4–8, Viscosity 7.3 cps @ 100°C	250 g	01109-250
n20/D 1.4563, Tg -41°C, Viscous liquid, MW 600, mp 20–25, Viscosity 10.5 cps @ 100°C	250 g	00684-250
n20/D 1.4563, Tg -41°C, Waxy solid, MW 1,000, mp 37–40, Viscosity 17.4 cps @ 100°C	250 g	00682-250
n20/D 1.4563, Tg -41°C, Waxy solid, MW 1,450, mp 43–46, Viscosity 25–32 cps @ 100°C	250 g	00679-250
n20/D 1.4563, Tg -41°C, Flakes, MW 2,000, mp 68, Viscosity 38–49 cps @ 100°C	250 g	25360-250
n20/D 1.4563, Tg -41°C, Waxy solid, pharma grade, MW 3,400, mp 54–58, Viscosity 75–110 cps @ 100°C	250 g	06102-250
Waxy solid, MW 7,500, mp 60–63, Viscosity 700–900 cps @ 100°C	250 g	06103-250
Hard solid, MW 10-16K, mp 129	250 g	22567-250
Hard solid, MW 20,000, mp 61–64	250 g	22568-250
Waxy solid, pharma grade, MW 8,000, mp 60–63, Viscosity 700–900 cps @ 100°C	100 g	17243-100
2000 dimethacrylate, Mn: ~ 2000 Conversion: NLT 80 %	1 g	26415-1

**Poly(ethylene glycol) (200) adipate** CAS#: 68647-16-5 |  $\text{H}(\text{OCH}_2\text{CH}_2)_n\text{O}_2\text{C}(\text{CH}_2)_4\text{CO}(\text{OCH}_2\text{CH}_2)_n\text{OH}$  | HAZARD CODE: A2g**21509**

Water-soluble, biodegradable, polymer. Reaction product of one molecule of adipic acid and two molecules of PEG 200.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 530	100 g	21509-100

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(ethylene glycol) bis (2-aminoethyl)** CAS#: 24991-53-5 | HAZARD CODE: H4d

**24303**

A bifunctional Poly(ethylene glycol) derivative that can be used to conjugate proteins and drug substances for targeted drug delivery studies. Soluble in H<sub>2</sub>O, MeOH, possibly other polar solvents.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 10,000, Polydispersity 2 – 3	1 g	24303-1

#### **Poly(ethylene glycol)-bisphenol A diglycidyl ether adduct**

CAS#: 37225-26-6 | (CH<sub>3</sub>)<sub>2</sub>C[C<sub>6</sub>H<sub>4</sub>-H-[OCH<sub>2</sub>CH(OH)CH<sub>2</sub>(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>OH]]<sub>2</sub> | HAZARD CODE: H6g

**04686**

Polymer contains more hydroxyl groups (4 or more) than poly(ethylene glycol).

CHARACTERISTICS	UNIT SIZE	CATALOG #
Hard solid, MW 18,500	250 g	04686-250

#### **Poly(ethylene glycol) (n) diacrylate** CAS#: 26570-48-9 | H<sub>2</sub>C=CHCO(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>O<sub>2</sub>CCH=CH<sub>2</sub>

Long-chain, hydrophilic, crosslinking monomers. (n) value is MW of PEG unit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 200, n20/D 1.464, d. 1.122, 750 ppm MEHQ, Viscosity 25 cps @ 25°C   HAZARD CODE: HJ05d	100 g	00669-100
	250 g	00669-250
	1 kg	00669-1
MW 400, n20/D 1.4655, d 1.117, 500 ppm MEHQ, Viscosity 57 cps @ 25°C   HAZARD CODE: H5d	250 g	01871-250
	1 kg	01871-1
MW 1,000, mp 35 - 37°C   HAZARD CODE: H5d	1 g	25485-1
	5 g	25485-5
MW 4,000, mp 56 - 60°C   HAZARD CODE: H5d	1 g	15246-1
	10 g	15246-10
(PEGDA 10K), MW 10,000   HAZARD CODE: H5d	1 g	26279-1
	5 g	26279-5
(PEGDA 20K), MW 20,000   HAZARD CODE: HJ2d	1 g	26280-1
	5 g	26280-5

**Poly(ethylene glycol) (n) diglycidyl ether** CAS#: 72207-80-8 | HAZARD CODE: H5d

Crosslinker for amine-, hydroxyl-, and carboxyl-functional polymers. (n) value is MW of PEG unit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 200, WPE ~195	10 g	08209-10
	100 g	08209-100
	1 kg	08209-1
MW 400, WPE ~280	100 g	08210-100
	1 kg	08210-1
MW 600, WPE ~400	100 g	08211-100
	1 kg	08211-1000
MW 1,000, WPE ~600	100 g	24047-100

**Poly(ethylene glycol) methylether acrylate, MW 10000** CAS#: 32171-39-4 | HAZARD CODE: HJ2d**26277**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Purity (NMR): >95%, MEHQ: 20-50 ppm	1 g	26277-1

**Poly(ethylene glycol) methylether methacrylate, MW 10000** CAS#: 26915-72-0 | HAZARD CODE: HJ2d**26278**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Purity (NMR): >95%, MEHQ: 20-50 ppm	1 g	26278-1

**Poly(ethylene glycol) diacrylate** CAS#: 26570-48-9

CHARACTERISTICS	UNIT SIZE	CATALOG #
Purity (NMR): >95%, MEHQ: 20-50 ppm (PEGDA 10K) MW 10,000 HAZARD CODE: H5d	1 g	26279-1
	5 g	26279-5
Purity (NMR): >95%, MEHQ: 20-50 ppm (PEGDA 20K) MW 20,000 HAZARD CODE: HJ2d	1 g	26280-1
	5 g	26280-5

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(ethylene glycol) (n) dimethacrylate** CAS#: 25852-47-5 | $\text{H}_2\text{C}=\text{C}(\text{CH}_3)\text{CO}(\text{OCH}_2\text{CH}_2)_n\text{O}_2\text{C}(\text{CH}_3)=\text{CH}_2$ | HAZARD CODE: H5g

Long-chain hydrophilic, crosslinking monomers. (n) value is MW of PEG unit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 200, n20/D 1.460, d 1.08, 75 ppm HQ, Viscosity 15 cps @ 25°C   HAZARD CODE: H5g	100 g	00096-100
MW 400, n20/D 1.465, d 1.117, 245 ppm MEHQ, Viscosity 85 cps @ 25°C   HAZARD CODE: H5g	100 g	15179-100
	1 kg	15179-1
MW 600, n20/D 1.466, d 1.101, 1,000 ppm MEHQ, Viscosity 7 cps @ 25°C   HAZARD CODE: H5g	100 g	02364-100
MW 1,000, n20/D 1.460, d 1.10, 90 ppm MEHQ & 250 ppm BHT, Viscosity 76 cps @ 40°C   HAZARD CODE: H4g	10 g	15178-10
	100 g	15178-100
	1 kg	15178-1
MW 8,000, mp 54-57°C, White solid   HAZARD CODE: U2b	2 g	25428-2
	10 g	25428-10
MW Mn ~20K, White solid   HAZARD CODE: U5d	5 g	25406-5
	25 g	25406-25

#### **Poly(ethylene glycol) (n) distearate** CAS#: 9005-08-7 | $\text{CH}_3(\text{CH}_2)_{16}\text{CO}(\text{OCH}_2\text{CH}_2)_n\text{O}_2\text{C}(\text{CH}_2)_{16}\text{CH}_3$ | HAZARD CODE: A2g

Waxy, water dispersible solid. n = value is MW of PEG unit. Soluble in IPA, hot water, mineral oil.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 400, mp 35–37°C	100 g	01048-100
	500 g	01084-500
MW 6,000, mp 52–57°C	100 g	19234-100

#### **Poly(ethylene glycol) monomethacrylate** CAS#: 25736-86-1 | $\text{H}_2\text{C}=\text{C}(\text{CH}_3)\text{CO}(\text{OCH}_2\text{CH}_2)_n\text{OH}$

Long-chain hydrophilic macromonomers. Used to introduce hydrophilic sites into polymers, to stabilize emulsion polymers, and to prepare comb polymers. (n) value is MW of PEG unit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 440, 800 ppm PBQ, 1000 ppm MEHQ inhibitor   HAZARD CODE: H5ad	100 g	24890-100
	1 kg	24890-1000
MW 200, n20/D 1.105, up to 700ppm MEHQ inhibitor   HAZARD CODE: H3d	100 g	16712-100
MW 400, n20/D 1.114, 800-1,00 ppm MEHQ inhibitor   HAZARD CODE: H5ad	100 g	16713-100
MW 2,000, mp 48 - 51°C   HAZARD CODE: H2abgs	1 g	25427-1
	5 g	25427-5

**Poly(ethylene glycol) monomethyl ether** CAS#: 9004-74-4 |  $\text{CH}_3(\text{OCH}_2\text{CH}_2)_n\text{OH}$ 

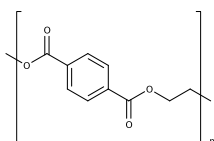
Neutral, water-soluble, polymers with hydroxyl group at one end only.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 550, mp 20°, d 1.091, n <sub>25</sub> /D 1.455, Viscosity 7.5 cps @ 100°C	500 g	04457-500
MW 1,900, mp 52°, d 1.102, Viscosity 63 cps @ 100°C	500 g	04242-500
MW 5,000, mp 59°, d 1.106, Viscosity 613 cps @ 100°C	500 g	05986-5000

**Poly(ethylene glycol) (n) monomethyl ether monomethacrylate** CAS#: 26915-72-0 |  $\text{H}_2\text{C}=\text{C}(\text{CH}_3)\text{CO}_2(\text{CH}_2\text{CH}_2\text{O})_n\text{CH}_3$ 

Hydrophilic monomer used to introduce hydrophilic sites into polymers, to stabilize polymer emulsions and synthesis of comb polymers. (n) value is MW of PEG unit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 200, n <sub>25</sub> /D 1.449, 100ppm MEHQ and 300 ppm BHT inhibitor   HAZARD CODE: BHJO6D	10 g	16664-10
	100 g	16664-100
	500 g	16664-500
MW 400, n <sub>25</sub> /D 1.457, T <sub>g</sub> -62°C, 100ppm MEHQ and 200 ppm BHT inhibitor   HAZARD CODE: BHJO6D	10 g	16665-10
	100 g	16665-100
	500 g	16665-500
MW 1,000, n <sub>25</sub> /D 1.46, T <sub>g</sub> 40°C, 100ppm MEHQ and 300 ppm BHT inhibitor   HAZARD CODE: HU2d	100 g	16666-100
	500 g	16666-500
MW of PEG Block 5,000, mp 58-60°C   HAZARD CODE: H2abs	1 g	25426-1
	5 g	25426-5

**Poly(ethylene glycol terephthalate)** CAS#: 25038-59-9 | HAZARD CODE: H4g**04301**

Polymer widely used in films, fibers and drink bottles. Low gas permeability.

UNIT SIZE	CATALOG #
250 g	04301-250

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(ethylene oxide)** CAS#: 25322-68-3 | $(-\text{CH}_2\text{CH}_2\text{O}-)_n$

Water-soluble polymer used to impart viscosity to and modify flow of aqueous solutions. Poly(ethylene oxide) has a broad molecular weight distribution ranging from ~0.5x to 1.5x the values shown. For lower molecular weights, see Poly(ethylene glycol). Soluble in acetone, alcohol, chloroform, toluene, dichloromethane.

CHARACTERISTICS		UNIT SIZE	CATALOG #
White, free flowing powder	MW 100,000, Viscosity 5% AQ 30–50 cps   HAZARD CODE: H2g	500 g	06104-500
	MW 200,000, Viscosity 5% AQ 65–115 cps   HAZARD CODE: H2g	500 g	17503-500
	MW 600,000, Viscosity 5% AQ 4,500–6,800 cps   HAZARD CODE: H2g	500 g	06106-500
	MW 1,000,000, Viscosity 2% AQ 400–800 cps   HAZARD CODE: H2g	500 g	21295-500
	MW 4,000,000, Viscosity 1% AQ 1,650–5,500 cps   HAZARD CODE: H2g	500 g	04030-500
	MW 5,000,000, Viscosity 1% AQ 5,500–7,500 cps   HAZARD CODE: H2g	500 g	04031-500
	MW 8,000,000, Viscosity 1% AQ 10,000–15,000 cps   HAZARD CODE: H2g	500 g	21296-500

#### **Poly(ethylene oxide-b-propylene oxide)** CAS#: 9003-11-6 | $\text{H}(-\text{OCH}_2\text{CH}_2-)_x[-\text{OCH}(\text{CH}_3)\text{CH}_2-]_y(-\text{OCH}_2\text{CH}_2)_2\text{OH}$ | HAZARD CODE: H4g

Water-soluble or water-dispersible polymers with surfactant properties. Chains are hydroxyl terminated. Polymers are p(EO/PO/EO) triblocks.

CHARACTERISTICS	UNIT SIZE	CATALOG #
[0.15:1] Liquid, MW 1,100, n20/D 1.4515, d 1.02, Viscosity 165 cps @ 100°C	100 g	16273-100
[3:1] Waxy solid, MW 13,300, d 1.02, Viscosity 3100 cps @ 100°C	100 g	16276-100

#### **Poly(ethylene/vinyl acetate)** CAS#: 24937-78-8 | $(-\text{CH}_2\text{CH}_2-)_x[-\text{CH}_2\text{CH}(\text{O}_2\text{CCH}_3)-]_y$ | HAZARD CODE: A2g

Used as a hot-melt adhesive, wax additive, and precursor to poly(ethylene/vinyl alcohol) resins. Soluble in toluene, xylene, TCE, THF, MEK, n-butanol.

CHARACTERISTICS	UNIT SIZE	CATALOG #
60:40 (wt), mp 104°C, d .964, Antioxidant 540 ppm BHT	500 g	06107-500
72:28 (wt), mp 127°C, d 0.95, ~500 ppm BHT	500 g	06108-500

#### **Poly(ethylene/maleic anhydride) 1:1 (molar)** CAS#: 9006-26-2 | HAZARD CODE: H3g

**02308**

Reactive with alcohols, amines. Hydrolyzes in water to a water-soluble anionic polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 400,000, Viscosity 2% 5cps	50 g	02308-50

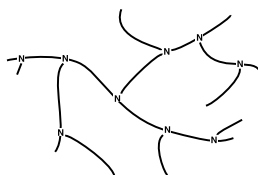


**Polyethylenimine, Branched, Mw 70,000, 50% w/v aq. soln.** CAS#: 9002-98-6 | HAZARD CODE: H5g**26292**

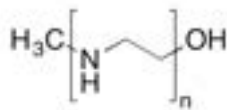
CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 70,000, d. 1.08 g/cm <sup>3</sup> @ 20°C	25 g	26292-25
	250 g	26292-250
	1 kg	26292-1

**Polyethylenimine, branched** CAS#: 9002-98-6

Highly branched polyamine with high charge density. Liquid polymers. Soluble in water at all molecular weights, also soluble in lower alcohols, glycols and THF.

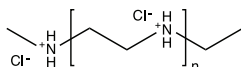


CHARACTERISTICS	UNIT SIZE	CATALOG #
99%+, MW 600, d 1.029-1.038, Viscosity 500–2500 cps, Polydispersity 1.08   HAZARD CODE: H6g	100 g	02371-100
	500 g	02371-500
99%+, MW 1,200, d 1.029-1.038, Viscosity 3500–7500 cps, Polydispersity 1.08   HAZARD CODE: H6g	25 g	06088-25
	100 g	06088-100
	500 g	06088-500
99%+, MW 2,000, d 1.029-1.038, Viscosity 8500–15,000 cps, Polydispersity 1.14   HAZARD CODE: H6g	100 g	06089-100
	500 g	06089-500
99%+, MW 10,000, d 1.029-1.038, Viscosity >10,000 cps   HAZARD CODE: BH6g	25 g	19850-25
	100 g	19850-100
	500 g	19850-500
50% soln. in water, MW 70,000, d 1.029-1.038, Viscosity 10,000 - 20,000 cps @ 25°C   HAZARD CODE: H5g	25 g	26292-25
	250 g	26292-250
	1 kg	26292-1
30% soln. in water, MW 10,000, d 1.029-1.038, Viscosity 100–200 cps   HAZARD CODE: H6g	100 g	17938-100
30% soln. in water, MW 50K–100K, d 1.029-1.038, Viscosity 900–1500 cps   HAZARD CODE: H6g	25 g	06090-25
	100 g	06090-100
	500 g	06090-500
33% soln. in water, MW 750,000, d 1.029-1.038, Viscosity 1,400 cps @ 20°C   HAZARD CODE: H5g	100 g	25449-100
	500 g	25449-500

**Polyethylenimine, Linear** CAS#: 9002-98-6 |  $(\text{CH}_2\text{CH}_2\text{NH})_n$ 

Linear polyethylenimines (PEIs) contain all secondary amines, in contrast to branched PEIs which contain primary, secondary and tertiary amino groups. The linear PEIs are solids at room temperature where branched PEIs are liquids at all molecular weights. Soluble in hot water, cold water at low pH, methanol and ethanol. Insoluble in benzene, ethyl ether, acetone and cold water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Powder, MW 2,500, mp 73–79°C   HAZARD CODE: HU4g	2 g	24313-2
Powder, MW 25,000, mp 73–75°C   HAZARD CODE: H5g	1 g	23966-1
Powder, MW 100,000, mp 73–75°C   HAZARD CODE: H6g	2 g	25414-2
Powder, MW 250,000, mp 73–75°C   HAZARD CODE: H6g	2 g	24314-2

**Polyethylenimine Hydrochloride, Linear (MW 4,000)** CAS#: 9002-98-6 | HAZARD CODE: H6g**24885**

Nominal 4,000 MW in hydrochloride salt form. Comparable to (Cat.#24313) - Polyethylenimine, Linear, MW 2,500 which is not in the hydrochloride salt form.

Polyethylenimine HCl, Linear, MW 4,000 (L-PEI HCl 4000) is a fully hydrolyzed (deacylated), highly water soluble hydrochloride salt form of our Polyethylenimine, Linear, MW 2,500 (Catalog # 24313).

L-PEI 4000 is supplied as a hydrochloride salt for ease of handling and high water solubility. PEI 4000 can be converted into the linear free amine (L-PEI) form by neutralization with base containing longer contiguous ethyleneimine segments than L-PEI 2500.

CHARACTERISTICS	UNIT SIZE	CATALOG #
White to off-white free flowing solid, MW ~2,200 (free base form)	2 g	24885-2

**MAXgene® GMP Transfection Reagent****26406**

MAXgene® GMP Transfection Reagent is a cGMP transfection reagent for the development and manufacturing of viral vectors for cell- and gene-based therapies. It is an ideal reagent in HEK293 and CHO systems for the manufacture of AAVs, LVs and recombinant proteins. MAXgene® GMP capitalizes on the efficiency and scalability of Polysciences' PEI MAX® while adding the validation process and regulatory components necessary for moving into clinical and commercial manufacturing. It is manufactured in accordance with cGMP under an ISO 13485 Quality Management System. Please contact us at [info@polysciences.com](mailto:info@polysciences.com) for MAXgene produced in accordance with 21 CFR 210, 211.

**Features:**

- Compatible with different virus production platforms
- High transfection efficiency
- Reliable and scalable performance
- cGMP & ISO 13485
- Validated manufacturing processes
- Fully synthetic, animal-origin-free
- Cost-effective

CHARACTERISTICS	UNIT SIZE	CATALOG #
Ready-to-Use Solution	1 liter	26406-1
Powder	1 g	26435-1

**PEI MAX® - Transfection Grade Linear Polyethylenimine Hydrochloride****24765**

Polyethylenimine "Max" (PEI MAX) is a powerful, trusted, and cost-effective reagent designed for process development that is widely considered a gold standard for both *in vitro* and *in vivo* transfection. PEI MAX has a high density of protonatable amino groups, with amino nitrogen as every third atom. This imparts a high buffering ability at nearly any pH. Hence, once inside the endosome, PEI MAX disrupts the vacuole and releases the genetic material into the cytoplasm. Stable complexation with DNA, efficient entry into the cell and ability to escape the endosome make PEI MAX a highly efficient transfection reagent for a wide range of cell lines/types including HEK293 and CHO cells grown in adherent and suspension cultures. PEI MAX is capable of yielding high efficiency cell lines without compromising cell viability compared to other PEI and liposomal transfection reagents available in the market.

UNIT SIZE	CATALOG #
1 g	24765-1
100 mg	24765-100

**Transporter 5® Transfection Reagent****26008**

Transporter 5 is a ready-to-use solution that is designed for process development to produce high viral titers, it is the R&D grade version of MAXgene.

UNIT SIZE	CATALOG #
1 mL	26008-1A
5 ml	26008-5
50 ml	26008-50

## POLYMERS / ALPHABETICAL LISTING

### P

#### PEI 25K™ (Polyethylenimine, Linear, MW 25000, Transfection Grade)

**23966**

PEI 25K is a powerful, trusted and cost-effective transient transfection reagent. In HEK293 and CHO expression systems, PEI offers high gene expression on a wide scale.

UNIT SIZE	CATALOG #
1 g	23966-1
100 mg	23966-100

#### Polyethylenimine Hydrochloride, Linear (MW 160,000) CAS#: 49553-93-7 | HAZARD CODE: H6g

**25439**

Molecular Weight (MW): MW in free base form. Nominal 160,000 MW in hydrochloride salt form. Comparable to (Cat. #25414) Polyethylenimine, Linear, MW 100,000 which is not in the hydrochloride salt form. Soluble in cold, room temperature water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 100,000	2 g	25439-2

#### Poly(2-ethyl-2-oxazoline) CAS#: 25805-17-8 | $[-N(COC_2H_5)CH_2CH_2-]_n$

Neutral, water soluble, polymer. Also soluble in DMF, lower alcohols, methyl ethyl ketone and methylene chloride.

CHARACTERISTICS	UNIT SIZE	CATALOG #
n20/D 1.520, d 1.14, Tg 70°C MW 5,000, Viscosity 100% AQ @ 30° = 2.1 CST   HAZARD CODE: A2g	50 g	24066-50
n20/D 1.520, d 1.14, Tg 70°C MW 200,000, Polydispersity ~3.4, Viscosity 10% AQ @ 30° = 18-24 CST HAZARD CODE: A2g	100 g	24882-100
n20/D 1.520, d 1.14, Tg 70°C MW 500,000, Polydispersity ~3.4, Viscosity 10% AQ @ 30° = 72.3 CST HAZARD CODE: A3g	100 g	17810-100

#### Poly(furfuryl alcohol) CAS#: 25212-86-6 | HAZARD CODE: H6g

**15794**

Dark, viscous, fluid with double bonds in the polymer backbone. Soluble in acetone, alcohol, esters, toluene.

CHARACTERISTICS	UNIT SIZE	CATALOG #
n20/D 1.36, Viscosity 14,500±2500 cps	100 g	15794-100

#### Poly(2-hydroxyethyl methacrylate) CAS#: 25249-16-5 | $[CH_2C(CH_3)(CO_2CH_2CH_2OH)-]_n$ | HAZARD CODE: A2g

**09689**

Polymer is water-insoluble but water-swellable. Used as a hydrogel. See 2-hydroxyethyl methacrylate. Soluble in 95% lower alcohols (5% water), DMF.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Powder. MW ~200,00, n20/D 1.512, Tg 55°C	25 g	09689-25

**Poly(2-hydroxyethyl methacrylate/methacrylic acid) [90:10]** CAS#: 31693-08-0 | HAZARD CODE: A2g **08725**

Hydrophilic polymer, more readily water-soluble than poly(2-hydroxyethyl methacrylate), in the presence of alkali and aqueous 90% methanol.

UNIT SIZE	CATALOG #
10 g	08725-10

**Poly(2-hydroxypropyl methacrylate)** CAS#: 25703-79-1 |  $(\text{CH}_2\text{C}(\text{CH}_3)[\text{CO}_2\text{CH}_2\text{CH}(\text{OH})\text{CH}_3]_n)$  | HAZARD CODE: A2g **09690**

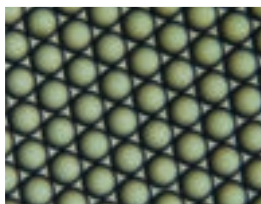
Hydrophilic polymer. Soluble in lower alcohols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
T <sub>g</sub> 76°C	10 g	09690-10
	50 g	09690-50

**Polyisobutylene** CAS#: 9003-27-4 |  $[-\text{CH}_2\text{C}(\text{CH}_3)_2-]_n$  | HAZARD CODE: A2g

Generally inert, tacky, polymers. Primarily used as tackifying agent in polymer formulations.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Liquid. n <sub>20</sub> /D 1.505 - 1.510, T <sub>g</sub> -73°C, MW 500, Viscosity 210–227 cps @ 38°C	100 g	09894-100
Viscous liquid. n <sub>20</sub> /D 1.505 - 1.510, T <sub>g</sub> -73°C, MW 1,350, Viscosity 30,000 cps @ 38°C	100 g	09896-100

**Poly(Lactic Acid-co-Glycolic Acid) Uniform Dry Microspheres** | HAZARD CODE: HK5cd

(PLGA) Polysciences' synthesis capabilities include PLGA microspheres with discrete diameters in the range of ~100µm. PLGA formulations may be customized to your specifications for controlled degradation rate measurements, or prototype scaffolds or devices. Contact us to learn more.

**Poly(L-lysine hydrobromide)** CAS#: 25988-63-0

Cationic polymer. Used to improve cell adhesion to solid surfaces.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 50,000, Powder   HAZARD CODE: U5d	50 mg	18619-50
MW 275,000   HAZARD CODE: U5g	100 mg	25724-100
MW 80,000, 0.1% soln. in water   HAZARD CODE: U5g	25 ml	09730-25
	250 ml	09730-250
MW 120,000, Powder   HAZARD CODE: U5g	100 mg	21430-100

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(maleic acid), 50% soln. in water** CAS#: 26099-09-2 | HAZARD CODE: H5g

**09732**

Polyacid, water-soluble.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 800 – 1200, d 0.97	10 g	09732-10

#### **Poly(maleic anhydride), (PMA)** CAS#: 24937-72-2 | HAZARD CODE: U5g

**02348**

Polymer reacts with amines, alcohols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~10,000	5 g	02348-5

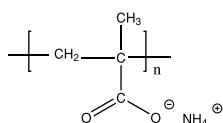
#### **Poly(methacrylic acid)** CAS#: 25087-26-7 | HAZARD CODE: HU7g

**00578**

Water-soluble polymer. Soluble in water, methanol, alkaline water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~100,000, T <sub>g</sub> 228°C	10 g	00578-10

#### **Poly(methacrylic acid) ammonium salt, 30% soln. in water** CAS#: 30875-88-8 | HAZARD CODE: H5g

**21169**


(7.5g polymer) Low molecular weight, water-soluble polymer. Forms insoluble polysalts with polyamines. Used as a pigment dispersant.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 15,000, Viscosity 75 – 200cps, pH 8.0 – 9.5	25 g	21169-25

#### **Poly(methacrylic acid) sodium salt, 30 % soln. in water** CAS#: 25086-62-8 | HAZARD CODE: H2g

**21170**

Low molecular weight, water-soluble polymer. Forms insoluble polysalts with polyamines. Used as a pigment dispersant.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 15,000, Viscosity 200 cps, pH 10, 7.5g polymer	25 g	21170-25
MW 15,000, Viscosity 200 cps, pH 10, 30g polymer	100 g	21170-100

#### **Poly(methacryloyl chloride), 25% soln. in dioxane** CAS#: 26937-45-1 | HAZARD CODE: CHM6g

**04315**

(2.5g polymer) Polymer reacts readily with alcohols and amines. Can be used to prepare polymers bearing bioactive molecules.

UNIT SIZE	CATALOG #
10 g	04315-10

**Poly(methyl methacrylate)** CAS#: 9011-14-7 |  $[-CH_2C(CH_3)(CO_2CH_3)-]_n$  | HAZARD CODE: A2g

Hard, stable, non-yellowing polymer used in coating and in molded clear plastic objects. Soluble in acetone, toluene, chloroform, MEK, THF.

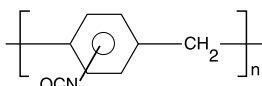
CHARACTERISTICS	UNIT SIZE	CATALOG #
n20/D 1.49, d 1.20, Tg 105°C, MW 25,000, i.v. 0.18, atactic beads, 200µm, Polydispersity ~3.0	500 g	04554-500
n20/D 1.49, d 1.20, Tg 105°C, MW 75,000, i.v. 0.40, atactic beads, 200µm, Polydispersity ~2.8	500 g	04553-500
n20/D 1.49, d 1.20, Tg 105°C, MW 100,000, atactic pellets	500 g	17913-500
n20/D 1.49, d 1.20, Tg 105°C, MW 500,000, i.v. 1.25, atactic beads, 200µm, Polydispersity 2.7	500 g	04552-500

**Poly(methyl methacrylate/methacrylic acid)**

CAS#: 25086-15-1 |  $[-CH_2C(CH_3)(CO_2CH_3)-]_x[-CH_2C(CH_3)(CO_2H)-]_y$  | HAZARD CODE: A2g

Random copolymer. Used in positive electron beam photoresists. Soluble in ethyl cellosolve acetate, 9:1 IPA-water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
[75:25], MW ~1.2 million	100 g	08208-100
[80:20]	100 g	08221-100
[90:10], MW ~100,000	50 g	08207-50
[95:5], MW ~500,000, Powder. Dispersity ~4	100 g	19629-100

**Poly[methylene(polyphenyl)isocyanate]** CAS#: 9016-87-9 | HAZARD CODE: H5g**03099**

Low molecular weight polyisocyanate, reacts with glycols, polyamines to form gels. NCO content ~30%. Soluble in acetone, THF, toluene.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~360, d 1.24	100 g	03099-100

**Poly(N-methylvinylamine)** CAS#: 31245-56-4 | HAZARD CODE: U2g**24038**

Water-soluble all-secondary polyamine.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~500,000	5 g	24038-5

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(N-iso-propylacrylamide)** CAS#: 25189-55-3 | HAZARD CODE: A2g **21458**

Polymer is water-soluble at room temperature, insoluble above ~40°C. Solubility ceiling has been used in mold and cell growth techniques as cells adhere to polymer film at incubation temperatures and are released as medium is cooled and polymer is dissolved. Soluble in THF, dioxane, DMF, cold water, chloroform.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~40,000, mp >200°C, Tg 85°C	1 g	21458-1
	10 g	21458-10

#### **Polypropylene** [-CH<sub>2</sub>CH(CH<sub>3</sub>)-]<sub>n</sub> | HAZARD CODE: A2g

Widely used polyolefin. Soluble in chlorinated hydrocarbons, aromatic hydrocarbons and isoamyl acetate.  
*Technical Data Sheet #920*

CHARACTERISTICS	UNIT SIZE	CATALOG #
CAS#: 9003-07-0, Tg -13°C, mp 165°C, Chromatographic Grade 25–85µm	100 g	04342-100
CAS#: 9003-07-0, Chromatographic Grade 150µm	100 g	06068-100
Atactic, Tg -13°C, n <sub>20</sub> /D 1.474	100 g	23968-100
CAS#: 25085-53-4, Tg -8°C, mp 176–186°C, Isotactic MW 220,000 / Mn 40,000 flakes	100 g	06536-100

#### **Poly(propylene glycol) (600) diglycidyl ether** CAS#: 26142-30-3 | HAZARD CODE: U4g **24046**

Crosslinker for amine-, hydroxyl- and carboxyl-functional polymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity 60–180 cps, WPE ~530	100 g	24046-100
	500 g	24046-500

#### **Poly(propylene glycol) dimethacrylate**

CAS#: 25852-49-7 | H<sub>2</sub>C=C(CH<sub>3</sub>)CO(OC<sub>3</sub>H<sub>6</sub>)<sub>n</sub>O<sub>2</sub>CC(CH<sub>3</sub>)=CH<sub>2</sub> | HAZARD CODE: H07d

**04380**

Water-insoluble crosslinking monomer. (n) value is MW of PEG unit.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW of PEG Block = 400, bp >300°C, n <sub>20</sub> /D 1.452, d 1.01, 100 ppm MEHQ & 100 ppm BHT	250 g	04380-250
	1 kg	04380-1

#### **Poly(iso-propyl methacrylate)** CAS#: 26655-94-7 | (-CH<sub>2</sub>C(CH<sub>3</sub>)[CO<sub>2</sub>CH(CH<sub>3</sub>)<sub>2</sub>]-)<sub>n</sub> | HAZARD CODE: A2g

**07052**

CHARACTERISTICS	UNIT SIZE	CATALOG #
n <sub>20</sub> /D 1.473, Tg 79°C	10 g	07052-10



**Polystyrene** CAS#: 9003-53-6 |  $[-\text{CH}_2\text{CH}(\text{C}_6\text{H}_5)-]_n$  | HAZARD CODE: A2g

Widely used high Tg polymer. Soluble in toluene, MEK, THF, dioxane, xylene.

CHARACTERISTICS	UNIT SIZE	CATALOG #
mp 240°C, atactic flakes, MW 800–5,000, softening point 125°C	100 g	23637-100
mp 240°C, atactic flakes, MW 50,000, bimodal with MW ~50,000 & 1500 (50:50)	100 g	18544-100
mp 240°C, atactic flakes, MW 125,000–250,000, (atactic pellets)	100 g	00574-100

**Poly(styrene/butadiene) [85:15]** CAS#: 9003-55-8 |  $[-\text{CH}_2\text{CH}(\text{C}_6\text{H}_5)-]_x(-\text{CH}_2\text{CH}=\text{CHCH}_2-)_y$  | HAZARD CODE: A2g**07073**

Rubber modifier, random copolymer. Soluble in aromatic and chlorinated hydrocarbons, ketones.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~110,000, d 1.05, Tg 33-41°C	500 g	07073-500

**Poly(styrenesulfonic acid)** CAS#: 28210-41-5 | HAZARD CODE: B6g**08770**

(75g polymer) Water-soluble ionic polymer in acid form. Soluble in lower alcohols, glycols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 70,000, d 1.10, Viscosity ~200 cps	250 g	08770-250

**Poly(styrenesulfonic acid), sodium salt** CAS#: 25704-18-1 |  $[-\text{CH}_2\text{CH}(\text{C}_6\text{H}_4\text{SO}_3\text{Na})-]_n$  | HAZARD CODE: A2g

Water-soluble ionic polymer in salt form.

CHARACTERISTICS	UNIT SIZE	CATALOG #
d 0.801 g/mL at 25°C, MW 75,000, Polydispersity 3–5, Viscosity 20% AQ 15–55 cps	25 g	08772-25
d 0.801 g/mL at 25°C, MW 1,000,000, Polydispersity 3–30	25 g	08773-25

**Poly(tert-butyl methacrylate)** CAS#: 25189-00-8 |  $[-\text{CH}_2\text{C}(\text{CH}_3)[\text{CO}_2\text{C}(\text{CH}_3)_3]-]_n$  | HAZARD CODE: U4g**07037**

Hard, thermally sensitive, methacrylate ester. Decomposes thermally to poly(methacrylic acid).

CHARACTERISTICS	UNIT SIZE	CATALOG #
Tg 107°C	25 g	07037-25

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(trimethylene carbonate), 1.8 dL/g** CAS#: 31852-84-3

**26404**

CHARACTERISTICS	UNIT SIZE	CATALOG #
Inherent Viscosity (0.1 % in chloroform): 1.5 dL/g - 2.0 dL/g	10 g	26404-10

#### **Poly(tetrafluoroethylene)** CAS#: 9002-84-0 | $(-CF_2CF_2)_n$

Inert polymer. Soluble in perfluoro kerosene. *Technical Data Sheet #920*

CHARACTERISTICS	UNIT SIZE	CATALOG #
n20/D 1.350–1.380, d 2.28, Tg -113°C (Teflon® 30B), 60% nonionic disp. in H <sub>2</sub> O Viscosity ~20 cps HAZARD CODE: H2d	100 g	21539-100
	500 g	21539-500
n20/D 1.350–1.380, d 2.28, Tg -113°C (Teflon® 7A) powder   HAZARD CODE: A2g	100 g	08816-100

#### **Poly(vinyl acetate)** CAS#: 9003-20-7 | $[-CH_2CH(O_2CCH_3)-]_n$ | HAZARD CODE: A2g

**06069**

Water-sensitive resin, readily hydrolyzed. Used to prepare poly(vinyl alcohol) of varying degrees of hydrolysis. Soluble in toluene, acetone, chloroform, alcohol, THF.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 90,000, n20/D 1.462, d 1.18, Tg 32°C	500 g	06069-500

#### **Poly(vinyl acetate), 40% hydrolyzed** CAS#: 25213-24-5 | HAZARD CODE: A2g

**17561**

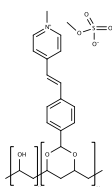
Hydrophilic polymer, highly swollen in water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 72,000	25 g	17561-25

**Poly(vinyl alcohol)** CAS#: 9002-89-5

Water-soluble resins of low toxicity. Resins at high % hydrolysis require heating at ~96°C in water for solution. Resins of lower % hydrolysis can be dissolved at progressively lower temperatures with 88% hydrolyzed resin requiring only 85°C for solution.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~6K, 80 mol% hydrolyzed, Polydispersity ~1.7, Viscosity 2.5–3.5% @ 4% AQ cps   HAZARD CODE: H2g	100 g	22225-100
	500 g	22225-500
mp >220°C, d 1.29, Tg 85°C, MW ~25K, 88 mol% hydrolyzed, Polydispersity ~1.9, Viscosity 5.2–6.2% @ 4% AQ cps   HAZARD CODE: A2g	100 g	02975-100
	500 g	02975-500
mp >220°C, d 1.29, Tg 85°C, MW ~25K, 98 mol% hydrolyzed, Polydispersity ~2.0, Viscosity 5.5–6.0% @ 4% AQ cps   HAZARD CODE: H2g	100 g	04397-100
	500 g	04397-500
mp >220°C, d 1.29, Tg 85°C, MW ~78K, 88 mol% hydrolyzed, i.v. 0.15–0.30, Viscosity 23–27% @ 4% AQ cps   HAZARD CODE: H5g	100 g	15132-100
	500 g	15132-500
mp >220°C, d 1.29, Tg 85°C, MW ~78K, 98 mol% hydrolyzed, Polydispersity ~1.7, Viscosity 28.5–32.5% @ 4% AQ cps   HAZARD CODE: H5g	100 g	15130-100
	500 g	15130-500
mp >220°C, d 1.29, Tg 85°C, MW ~78K, 99+ mol% hydrolyzed, Polydispersity ~1.7, Viscosity 28–32% @ 4% AQ cps   HAZARD CODE: H5g	100 g	15129-100
	500 g	15129-500
mp >220°C, d 1.29, Tg 85°C, MW ~108K, 99+ mol% hydrolyzed, Polydispersity ~1.7, Viscosity 62–72% @ 4% AQ cps   HAZARD CODE: H5g	100 g	04324-100
	500 g	04324-500
mp >220°C, d 1.29, Tg 85°C, MW ~125K, 88 mol% hydrolyzed, Polydispersity ~2.0, Viscosity 45–55% @ 4% AQ cps   HAZARD CODE: A2g	100 g	04398-100
	500 g	04398-500
mp >220°C, d 1.29, Tg 85°C, MW ~133K, 99 mol% hydrolyzed, Polydispersity ~2.4, Viscosity 62–72% @ 4% AQ cps   HAZARD CODE: A2g	100 g	02815-100
	500 g	02815-500

**Poly(vinyl alcohol), N-methyl-4(4'-formylstyryl)pyridinium methosulfate acetal** CAS#: 107845-59-0 | HAZARD CODE: U5acd**22570**

(10g polymer) (sbQ-PVA) Polymer has high dielectric constant. Water-soluble, photocrosslinkable, polymer. Used in making silkscreen print screens. Soluble in organic solvents such as acetone.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~45,000, 4.1 mol SbQ	75 g	22570-75

**Poly(vinylamine) hydrochloride** CAS#: 26336-38-9 | HAZARD CODE: U5g**23965**

Water-soluble all-primary polyamine.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 25,000	1 g	23965-1
	5 g	23965-5

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(vinyl cinnamate)** CAS#: 9050-06-0 | $[-CH_2CH(O_2CCH=CHC_6H_5)-]_n$ | HAZARD CODE: A2g **02648**

Photocrosslinkable polymer. Soluble in THF, NMP (may contain some insoluble material).

UNIT SIZE	CATALOG #
10 g	02648-10

#### **Poly(vinylidene fluoride)** CAS#: 24937-79-9 | $(-CH_2CF_2)_n$ | HAZARD CODE: A2g **18734**

Inert coating resin. Soluble in DMF, DMAc, DMSO, ethylene carbonate. Melt viscosity 28–34K poise

CHARACTERISTICS	UNIT SIZE	CATALOG #
mp 155–160°C, n <sub>25D</sub> 1.420, d 1.76, T <sub>g</sub> -40°C, Polydispersity 2.5–3.0	100 g	18734-100

#### **Poly(vinyl methyl ether), 50% aqueous solution** CAS#: 9003-09-2 | $[-CH_2CH(OCH_3)-]_n$ | HAZARD CODE: H4gm **03032**

Tacky resin. Water-insoluble above 28°C. Used to prepare heat-sensitive latex. Soluble in aromatic and chlorinated hydrocarbons, alcohols, esters, glycols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~90,000, n <sub>20/D</sub> 1.467, d 1.030, T <sub>g</sub> -34°C	500 g	03032-500

#### **Poly(2-vinyl-1-methylpyridinium bromide, 20% soln. in water)** CAS#: 29471-77-0 | HAZARD CODE: H4g **21477**

(2g polymer) Cationic quaternary ammonium polymer. Degree of quaternization ~50%.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 50,000	10 g	21477-10

#### **Poly(4-vinylphenol)** CAS#: 24979-70-2 | $[-CH_2CH(C_6H_4OH)-]_n$ | HAZARD CODE: A2g

Reactive polyphenol. Has applications in photoresists. Soluble in THF, lower alcohols, dioxane.

*Technical Data Sheet #198*

CHARACTERISTICS	UNIT SIZE	CATALOG #
n <sub>20/D</sub> 1.600, d 1.2, T <sub>g</sub> 150°C, MW 1,500–7,000, Polydispersity 1.5–2.2	10 g	06527-10
	50 g	06527-50
n <sub>20/D</sub> 1.600, d 1.2, T <sub>g</sub> 150°C, MW 22,000, Polydispersity ~5	10 g	18980-10
	50 g	18980-50
n <sub>20/D</sub> 1.600, d 1.2, T <sub>g</sub> 150°C, MW 9,000–11,000, Polydispersity ~3	10 g	25447-10

#### **Poly(vinylphosphonic acid), 30% Soln.** CAS#: 27754-99-0 | HAZARD CODE: BH4g **24297**

Water-soluble polymeric phosphonic acid.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 24,000, Polydispersity ~1.24	10 g	24297-10

**Poly(2-vinylpyridine)** CAS#: 25014-15-7 | HAZARD CODE: A2g

Water-soluble at low pH has adhesive-promoting properties. Soluble in acetic acid, t-butanol, DMF, DMSO, lower alcohols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
mp >200°C, Tg 104°C, MW 40,000, Viscosity 20% isopropanol 30–90 cps	10 g	21382-10
mp >200°C, Tg 104°C, MW 200K–400K, Viscosity 20% methanol 300–1800 cps	10 g	19238-10
mp >200°C, Tg 104°C, MW 300K–400K	10 g	17770-10

**Poly(vinyl phosphoric acid), sodium salt** CAS#: 82063-35-2 | HAZARD CODE: A2g**04391**

Water-soluble polymeric phosphate ester. Uncrosslinked.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW >200,000, Phosphorous content min 5%	5 g	04391-5

**Poly(4-vinylpyridine)** CAS#: 25232-41-1

Water-soluble at low pH, has adhesive-promoting properties. Soluble in acetic acid, t-butanol, DMF, DMSO, lower alcohols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
d 1.10, Tg 142°C, MW 50,000, Viscosity 20% methanol solution 15–50 cps   HAZARD CODE: H5g	50 g	00112-50
d 1.10, Tg 142°C, MW 150,000–200,000   HAZARD CODE: A2g	50 g	22176-50

**Poly(2-vinylpyridine N-oxide)** CAS#: 9016-06-2 | HAZARD CODE: A2g**01564**

Water-soluble cationic resin. Soluble in alcohols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 300,000–400,000	10 g	01564-10

**Poly(vinylferrocene)** CAS#: 34801-99-5 | HAZARD CODE: U4g**09746**

CS<sub>2</sub>, THF, MDC, chloroform, benzene, chlorobenzene

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~50,000, Tg:184-194°C	1 g	09746-1

## POLYMERS / ALPHABETICAL LISTING

### P

#### **Poly(N-vinylpyrrolidone)** CAS# 9003-39-8 | HAZARD CODE: A2g

Water-soluble polymer used as a thickener, protective colloid. Soluble in alcohols, chloroform, nitroparaffins, water, MDC.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 2,500, Polydispersity 1.9, 5% AQ 1.25 – 1.37, Tg ~90°C	250 g	16693-250
MW 4,000 – 6,000	250 g	24737-250
MW 10,000, Polydispersity 3.6, 1% AQ 1.21 – 1.28, Tg 155°C	250 g	03315-250
MW 40,000, Polydispersity 3.33, 1% AQ 2.7, Tg 168°C	250 g	01051-250
MW 40,000, pharma. grade, Polydispersity 3.33, Tg 168°C	250 g	01052-250
MW 1,000,000, Polydispersity ~2.00, 1% AQ 4.90, Tg >175°C	250 g	06067-250

#### **Poly(N-vinylpyrrolidone/vinyl acetate), 50% soln. in isopropanol** CAS#: 25086-89-9 | HAZARD CODE: CHV6g

Hydrophilic neutral polymer. Soluble in alcohols, THF, water, dioxane, ketones, MDC, toluene.

CHARACTERISTICS	UNIT SIZE	CATALOG #
[30:70] MW 25,000, (50g polymer) d 0.955, Tg 108°C	100 g	09718-100
[70:30] MW 66,000, (50g polymer) d 0.955, Tg 108°C	100 g	09716-100

#### **Poly(vinylsulfonic acid) sodium salt, 25% soln. in water** CAS#: 9002-97-5 | HAZARD CODE: A2g

**04392**

Water-soluble anionic polymer. Has been used as a pigment dispersant 25% soln. in water. May contain a small percentage of insoluble material. 25% in a water solution.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(25g polymer) MW 4,000 – 6,000	100 g	04392-100

#### **Pullulan, desalinized** CAS#: 9057-02-7 | HAZARD CODE: A2g

**21115**

Natural polysaccharide from *Aureobasidium pullulans*.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity 10% AQ solution at 30°C 100 – 180 cps	50 g	21115-50

Polysciences Inc., provides a comprehensive series of carefully characterized, ultrapure, polymer and particle standards for use in calibrating columns and instruments. We utilize the NIST Standard for determining melt flow rate in polymers. Melt flow rate is widely used in polymer technology as a product specification since this value, which includes a statement of the load and temperature under which it is obtained, gives an indication of the processing properties of the polymer.<sup>1,2</sup>

Polymer molecular weight standards were prepared by techniques which yield narrow molecular weight distribution and when this is not possible by fractionation of polymers of broader molecular weight distribution. We have listed standards of a range of molecular weights for widely studied polymers. For your special needs we can prepare quotes on items not listed. Each catalog listing for a molecular weight standard describes the polymer by an approximate Molecular Weight (MW) and an approximate polydispersity value (Mw/Mn). The Molecular Weight averages have been rounded for descriptive purposes. 1. ASTM D 123800; Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer; ASTM Standards, Vol. 08.01, American Society for Testing and Materials, West Conshohocken, PA (2001) 2. Taylor, B.N.; Guide for the Use of the International System of Units (SI); NIST Special Publication 811; Ed. (April 1995)

**Polyethylene, branched** CAS#: 9002-88-4 | HAZARD CODE: A2g

**08227**

Soluble in solvents: (hydrocarbons, tetrahydrofuran, higher ketones, higher aliphatic esters). Limiting viscosity number = 0.8132 dl/g in 1-chloronaphthalene.

UNIT SIZE	CATALOG #
1 g	08227-1

**Polyethylene, linear** CAS#: 9002-88-4 | HAZARD CODE: A2g

**09829**

MW 52,000, Mw/Mn ~2.90. Soluble in 1-chloronaphthalene, 1, 2, 4-trichlorobenzene, decalin above 80°C.

UNIT SIZE	CATALOG #
1 g	09829-1

**Poly(ethylene glycol)** CAS#: 25322-68-3 | HAZARD CODE: A2g

**17172**

MW ~20,000, Mw/Mn ~1.13. Soluble in water, benzene, chloroform, dimethylformamide, esters, alcohols.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~20,000, Mw/Mn ~1.13	1 g	17172-1

**Poly(methyl methacrylate)** CAS#: 9011-14-7 | HAZARD CODE: A2g

Soluble in solvents: aromatic hydrocarbons, chlorinated hydrocarbons, methyl ethyl ketone, ethyl acetate.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~75,000, Mw/Mn ~1.04	250 mg	08287-250
MW ~185,000, Mw/Mn ~1.10	250 mg	18756-250

## POLYMERS / MOLECULAR WEIGHT STANDARDS

### Molecular Weight Standards

#### **Poly(methyl methacrylate), isotactic** CAS#: 25188-98-1 | HAZARD CODE: A2g

**21489**

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~100,000	250 mg	21489-250

#### **Polystyrene** CAS#: 9003-53-6 | HAZARD CODE: A2g

Soluble in solvents: aromatic hydrocarbons, chlorinated hydrocarbons, tetrahydrofuran, esters.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~600, Mw/Mn ~1.30	250 mg	08279-250
MW ~1,000, Mw/Mn ~1.30	250 mg	16227-250
MW ~9,000, Mw/Mn ~1.04	250 mg	16231-250
MW ~20,000, Mw/Mn ~1.06	250 mg	01844-250
MW ~50,000, Mw/Mn ~1.06	100 g	18544-100
MW ~100,000, Mw/Mn ~1.06	250 mg	00867-250
MW ~20,000,000, Mw/Mn ~1.30	250 mg	16244-250
MW ~30,000,000, Mw/Mn ~1.30	250 mg	16315-250

#### **Poly(styrene sulfonic acid), sodium salt** CAS#: 9080-79-9 | HAZARD CODE: A2g

Soluble in water.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~1,000, Mw/Mn ~1.20	250 mg	24812-250
MW ~4,600, Mw/Mn ~1.10	250 mg	16248-250
MW ~8,000, Mw/Mn ~1.10	250 mg	16249-250
MW ~18,000, Mw/Mn ~1.10	250 mg	16250-250
MW ~220,000, Mw/Mn ~1.10	250 mg	16254-250
MW ~450,000, Mw/Mn ~1.20	250 mg	26252-250




**Hydroxypropyl Cellulose** CAS#: 9004-64-2 | HAZARD CODE: A3gk

(hydroxypropyl ether) HPC is a hydrophilic polymer used for drug encapsulants, ophthalmic lubricants and transdermal patches. Also used as a general thickener.

CHARACTERISTICS		UNIT SIZE	CATALOG #
White to pale yellow powder. Viscosity measured as a 2% solution in water at 20°C	[3–6 cP]	100 g	25727-100
		250 g	25727-250
	[6–10 cP]	100 g	25728-100
		250 g	25728-250
	[150–400 cP]	100 g	25729-100
		250 g	25729-250
	[1,000–4,000 cP]	100 g	25730-100
		250 g	25730-250

**Polycaprolactone** CAS#: 24980-41-4 |  $[-O(CH_2)_5CO-]_n$  | HAZARD CODE: AK2bg

Polycaprolactone (PCL) is a biodegradable polyester that is easy to manufacture, manipulate and blend. PCL can be used as an additive for resins to improve their processing characteristics and end-use properties. PCL adheres well to a large number of surfaces. It is easily fabricated, easily melted and is non-toxic. Additionally, PCL blends have been extensively studied to reduce cost and improve biodegradability by mixing with starch and other low-cost organic fillers.

PCL as a bioresorbable polymer has received great deal of attention in use as long-term degradable implants as it can be easily manipulated physically, chemically and biologically to suit a specific requirement. It is also studied as a scaffold for tissue repair via tissue engineering.

PCL is degraded by hydrolysis of its ester linkages under physiological conditions at much slower rate than polyglycolide (PGA), poly d,l-lactide (PDLA) and its copolymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
mp 55–65°C, ~3mm pellets, MW 25,000	50 g	26287-50
	500 g	26287-500
mp 55–65°C, ~3mm pellets, MW 37,000	50 g	26288-50
	500 g	26288-500
mp 55–65°C, ~3mm pellets, MW 50,000	50 g	26289-50
	500 g	26289-500
mp 55–65°C, ~3mm pellets, MW 80,000	50 g	26290-50
	500 g	26290-500

**Polycaprolactone diol** CAS#: 36890-68-3 |  $H[-O(CH_2)_5CO-]_nOCH_2CH_2OCH_2CH_2O[-CO(CH_2)_5O-]_nH$  | HAZARD CODE: AK2bg **09706**

Biodegradable polymer. Can be used to make block copolymers.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Liquid, MW 1,250, d 1.07, Viscosity 65–100cps @ 55°C	500 g	09706-500
	2.5 kg	09706-2.5

**Polycaprolactone, IV** CAS# 24980-41-4 | (C<sub>6</sub>H<sub>10</sub>O<sub>2</sub>)<sub>n</sub>

Polycaprolactone (PCL) is a semi-crystalline, hydrophobic, biodegradable polyester that has gained popularity as a biomedical polymer due to its biocompatibility, ease of manipulation both chemically and physically, and tunable degradation rates. It is a versatile polymer that can be processed into various forms, including films, fibers, and 3D printed scaffolds, making it suitable for a wide range of applications in tissue engineering and drug delivery.

PCL is degraded by hydrolysis of its ester linkages under physiological conditions at a slower rate than other common biodegradable polymers such as polyglycolide (PGA), poly lactic acid (PLA), and their copolymers, thus making it useful for longer term implants. In general, PCL with higher molecular weight will have a slower degradation rate. Temperature, pH, presence of enzymes, surface area-to-volume ratio, and the specific application will also impact the degradation rate of PCL.

The low melting point (~60°C) of PCL enables a high degree of malleability which makes it useful for 3D printing, film-forming, and heat molding. Appearance: white to off-white solid. Protect from moisture. Store at -20°C.

PCL's biodegradation also makes it an environmentally friendly replacement for many ecologically persistent plastics in a variety of applications.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Molecular Weight (Da): ~12,000, Viscosity: ~0.2 dL/g [i.v.], Biodegradation Time: ~ 6 - 12 months	5 g	50001-5
	25 g	50001-25
Molecular Weight (Da): ~25,000, Viscosity: ~0.4 dL/g [i.v.], Biodegradation Time: ~ 1 - 2 years	5 g	50002-5
	25 g	50002-25
Molecular Weight (Da): ~51,000, Viscosity: ~0.8 dL/g [i.v.], Biodegradation Time: ~ > 2 years	5 g	50003-5
	25 g	50003-25
Molecular Weight (Da): ~72,000, Viscosity: ~1.2 dL/g [i.v.], Biodegradation Time: ~ > 2 years	5 g	50004-5
	25 g	50004-25
Molecular Weight (Da): ~106,000, Viscosity: ~1.7 dL/g [i.v.], Biodegradation Time: ~ > 2 years	5 g	50005-5
	25 g	50005-25
Molecular Weight (Da): ~124,000, Viscosity: ~2.0 dL/g [i.v.], Biodegradation Time: ~ > 2 years	5 g	50006-5
	25 g	50006-25
Molecular Weight (Da): ~140,000, Viscosity: ~2.2 dL/g [i.v.], Biodegradation Time: ~ > 2 years	5 g	50007-5
	25 g	50007-25
Molecular Weight (Da): ~160,000, Viscosity: ~2.6 dL/g [i.v.], Biodegradation Time: ~ > 2 years	5 g	50008-5
	25 g	50008-25

**Poly(Caprolactone-co-glycolide)**  $(C_6H_{10}O_2)_m(C_2H_2O_2)_n$

Poly(Caprolactone-co-glycolide) (PCLGA) is a biodegradable and biocompatible copolymer made by the copolymerization of the monomers caprolactone and glycolide. PCLGA has a wide range of potential applications in the biomedical and pharmaceutical industries including medical devices, tissue engineering, 3D printing, and controlled release implants.

The monomer ratio of PCLGA has a significant impact on the degradation rate of the material with a higher proportion of glycolide leading to more rapid degradation rate due to the glycolide having a greater degree of hydrophilicity and lower crystallinity compared to caprolactone, thus making it more susceptible to hydrolysis and enzymatic degradation.

We offer several PCLGA products of varying monomer ratios and molecular weights.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.4 dL/g [i.v.], Biodegradation Time: ~Months	5 g	50009-5
	25 g	50009-25
Viscosity: ~0.8 dL/g [i.v.], Biodegradation Time: ~Months	5 g	50010-5
	25 g	50010-25
Viscosity: ~1.6 dL/g [i.v.], Biodegradation Time: ~Months	5 g	50011-5
	25 g	50011-25
Viscosity: ~1.7 dL/g [i.v.], Biodegradation Time: ~Months	5 g	50012-5
	25 g	50012-25
Viscosity: ~1.8 dL/g [i.v.], Biodegradation Time: ~Months	5 g	50013-5
	25 g	50013-25

**Poly(Caprolactone-co-L-lactide)** | CAS# 70524-20-8 |  $(C_6H_{10}O_2)_m(C_2H_2O_2)_n$

Poly(Caprolactone-co-L-lactide) (PCLLA) is a biodegradable and biocompatible copolymer that has a range of potential applications in the biomedical and pharmaceutical industries and is commonly used as a material for medical devices, 3D printed tissue engineering scaffolds, and drug delivery.

The biodegradation rate of PCLLA is influenced by monomer ratio and molecular weight. PCLLA is composed of the monomers caprolactone and L-lactide, with higher ratio of caprolactone resulting in a slower degradation rate due to it being more hydrophobic than L-lactide, and thus less susceptible to ester hydrolysis. Generally, a higher molecular weight also denotes a slower degradation rate.

We offer several PCLLA products of varying monomer ratios and molecular weights.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~2.1 dL/g [i.v.], Biodegradation Time: ~ Months	5 g	50014-5
	25 g	50014-25
Viscosity: ~2.0 dL/g [i.v.], Biodegradation Time: ~ Months	5 g	50015-5
	25 g	50015-25
Viscosity: ~1.8 dL/g [i.v.], Biodegradation Time: ~ Months	5 g	50016-5
	25 g	50016-25
Viscosity: ~1.6 dL/g [i.v.], Biodegradation Time: ~ Months	5 g	50017-5
	25 g	50017-25

**Poly(D,L-lactic acid)** CAS#: 26680-10-4 | HAZARD CODE: AK2bf

Poly(D,L-lactide) (PDLLA) is an ubiquitous biodegradable polymer. It is typically used to fabricate medical devices that predictably degrade over months in physiological conditions. The well-researched release profile also allows for drug-release functionalization with calculable results. Owing to its extensive history, PDLLA is one of the most understood and affordable biodegradable polymers for medical devices today. Synonyms: PDLLA, DL-PLA, PDLA.

CHARACTERISTICS	UNIT SIZE	CATALOG #
d 1.25, T <sub>g</sub> 55°C, MW 15,000, i.v. 0.10–0.30	1 g	22505-1
	10 g	22505-10
d 1.25, T <sub>g</sub> 55°C, MW 20,000–30,000, i.v. 0.35–0.45	1 g	16585-1
	10 g	16585-10
d 1.25, T <sub>g</sub> 55°C, MW 300,000–600,000, i.v. 1.6–2.4	1 g	23976-1
	10 g	23976-10

**Poly(D,L-lactide-co-glycolide), acid-terminated, IV 0.2 dl/g, MW 15000**

Poly(D,L-lactide-co-glycolide) (PLGA) is a well-established biodegradable polymer used in medical devices and drug delivery applications. In comparison to poly(L-lactide) (PLLA), PLGA offers control over degradation rate and reduced glass transition temperatures (by increasing glycolide content). The control of these properties makes PLGA especially well-suited for applications where medical devices are only needed for weeks (e.g. drug delivery). Acid-terminated PLGA allows for easy conjugation to drugs with nucleophilic functionalities. Synonyms: PDLGA, PLGA, DL-PLGA.

CHARACTERISTICS	UNIT SIZE	CATALOG #
75/25 - MW 15,000	1 g	26268-1
	10 g	26268-10
50/50 - MW 15,000	1 g	26269-1
	10 g	26269-10
50/50 - MW 35,000	1 g	26270-1
	10 g	26270-10

## POLYMERS / BIODEGRADABLE POLYMERS

### D

#### **Polydioxanone** | CAS#:31621-87-1 | $(C_4H_6O_3)_n$

Polydioxanone (PDO) is a polylactone ester with high degrees of crystallinity and is known for its use in filament sutures, meshes, clips, and other flexible absorbable devices. PDO is available as colorless or dyed homopolymer or copolymerized with PLA and/or PGA. A systematic review of implantable PDO products has shown high levels of safety in use. The well-known safety profile of PDO has led to further research on PDO-based bio-materials with modified properties for tissue engineering and drug/gene delivery applications.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.7 dL/g [i.v.], Biodegradation Time: ~ < 6 months	5 g	50066-5
	25 g	50066-25
Viscosity: ~1.85 dL/g [i.v.], Biodegradation Time: ~ < 6 months	5 g	50067-5
	25 g	50067-25
Viscosity: ~2.5 dL/g [i.v.], Biodegradation Time: ~ 6 - 12 months	5 g	50068-5
	25 g	50068-25
Viscosity: ~1.6 dL/g [i.v.], Biodegradation Time: ~ < 6 months	5 g	50069-5
	25 g	50069-25
Viscosity: ~2.0 dL/g [i.v.], Biodegradation Time: ~ < 6 months	5 g	50070-5
	25 g	50070-25
Viscosity: ~2.2 dL/g [i.v.], Biodegradation Time: ~ < 6 months	5 g	50071-5
	25 g	50071-25
Viscosity: ~3.1 dL/g [i.v.], Biodegradation Time: ~ 6 - 12 months	5 g	50072-5
	25 g	50072-25

#### **Poly(Dioxanone-co-glycolide)** | $(C_4H_6O_3)_m(C_2H_2O_2)_n$

Poly(Dioxanone-co-glycolide) (PDOGA) is a biodegradable copolymer tuned for quick absorption and has applications with biomedical devices including surgical sutures, staples, meshes, and controlled drug delivery. Compared to PDO homopolymer, PDOGA has faster degradation with no little change in mechanical properties.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.9 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50073-5
	25 g	50073-25
Viscosity: ~2.1 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50074-5
	25 g	50074-25

#### **Poly(Dioxanone-co-lactide-co-glycolide)** | $(C_4H_6O_3)_m(C_3H_4O_2)_n$

Poly(Dioxanone-co-lactide-co-glycolide) (PDO-PLGA) is a biodegradable and biocompatible copolymer used in biomedical devices including staples, sutures, meshes, coatings, and controlled drug delivery. PDO-PLGA is degraded by hydrolysis via ester linkages and has a biodegradation timeframe in months. The addition of lactide and glycolide also denote greater flexibility to the polymer structure.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~2.2 dL/g [i.v.], Biodegradation Time: ~ Months	5 g	50079-5
	25 g	50079-25

**Poly(Dioxanone-co-lactide)** |  $(C_4H_6O_3)_m(C_3H_4O_2)_n$ 

Poly(dioxanone-co-L-lactide) (PDO-PLA) is a biodegradable and biocompatible copolymer used in biomedical devices including staples, sutures, meshes, coatings, and controlled drug delivery. PDO-PLA is degraded by hydrolysis via the ester linkages with a greater ratio of lactide denoting a longer biodegradation timeframe. Increased ratios of lactide also denote greater flexibility to the polymer structure.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.9 dL/g [i.v.], Biodegradation Time: ~ 6 - 12 months	5 g	50075-5
	25 g	50075-25
Viscosity: ~1.3 dL/g [i.v.], Biodegradation Time: ~ 7 - 12 months	5 g	50076-5
	25 g	50076-25
Viscosity: ~2.0 dL/g [i.v.], Biodegradation Time: ~ 8 - 12 months	5 g	50077-5
	25 g	50077-25
Viscosity: ~2.1 dL/g [i.v.], Biodegradation Time: ~ 9 - 12 months	5 g	50078-5
	25 g	50078-25

**Poly(dl-lactide/glycolide)** CAS#: 26780-50-7 |  $[-OCH(CH_3)CO-]_x[-OCH_2CO-]_y$  | HAZARD CODE: HK5bf

Poly(DL-lactide-co-glycolide) (PLGA) is a well-established biodegradable polymer used in medical devices and drug delivery applications. In comparison to poly(L-lactide) (PLLA), PLGA offers control over degradation rate and reduced glass transition temperatures (by increasing glycolide content). The control of these properties makes PLGA especially well suited for applications where medical devices are only needed for weeks (e.g. drug delivery).

CHARACTERISTICS	UNIT SIZE	CATALOG #
[90:10] i.v. 0.15–0.30, MW 10,000	1 g	19076-1
	5 g	19076-5
[85:15] i.v. 0.75–0.95, MW ~20,000, T <sub>g</sub> 50–55°C, d 1.27	1 g	23989-1
	5 g	23989-5
[75:25] i.v. 0.55–0.75, MW ~97,000, T <sub>g</sub> 50–55°C, d 1.30	1 g	25107-1
	5 g	25107-5
[80:20] i.v. 0.15–0.30, MW 10,000, T <sub>g</sub> 50–55°C	1 g	19077-1
	5 g	19077-5
[70:30] i.v. 0.12–0.3, MW 10,000	1g	19247-1
	5 g	19247-5
[50:50] i.v. 0.50–0.65, MW ~12K – 16K, T <sub>g</sub> 45–50°C, d 1.34	1 g	23986-1
	5 g	23986-5
[50:50] i.v. 0.8–1.2, MW 150,000, T <sub>g</sub> 45–50°C	1 g	23987-1
	5 g	23987-5
[50:50] i.v. 0.40 dl/g	1 g	26297-1
	10 g	26297-10

**Poly(ethylene glycol) / Poly(lactic acid) Diblock and Triblock Polymers (PEG/PLA)**

Polymer structures featuring polyethylene glycol (PEG), with biodegradable or biocompatible segments offering micellular, nano and microsphere morphologies that are useful for controlled release formulations. Molecular weights of blocks controlled by GPC. Alternative structures can be synthesized.

Historically there have been three basic building block monomers for degradable polymers: lactides, glycolides and caprolactone. All are in clinical use and show varying degrees of degradability based on backbone compositions, crystallinity and molecular weights.

Lactic acid is a “chiral” molecule having both (L) and (D) forms with (L) being the common metabolite. The family of lactic acid polymers includes the pure poly-L- lactic acid (L form of PLA), the pure poly-D-lactic acid and the poly-D,L- lactic acid (DL-PLA). Many other useful compositions occur when the polymer is organized into diblocks with ethylene glycol and/or glycolic acid comonomers or triblocks with ethylene glycol and/or glycolic acid. (Numbers in parenthesis refer to the MW of the segment.) For Poly(ε-caprolactone)-block-poly(ethylene glycol) Diblock & Triblock Polymers.

CHARACTERISTICS		UNIT SIZE	CATALOG #
<b>Diblock Polymers</b>	PEG(350)-b-PLA(300)   HAZARD CODE: AK2bf	0.5 g	24375-0.5
		1 g	24375-1
	PEG(1000)-b-PLA(750)   HAZARD CODE: AK2bf	0.5 g	24378-0.5
		1 g	24378-1
	PEG(1000)-b-PLA(5000)   HAZARD CODE: AK2bf	0.5 g	24381-0.5
		1 g	24381-1
	PEG(5000)-b-PLA(1000)   HAZARD CODE: AK2bf	0.5 g	24386-0.5
		1 g	24386-1
<b>Diblock Polymers</b>	PEG(5000)-b-PLA(5000)   HAZARD CODE: AK2bf	0.5 g	24389-0.5
		1 g	24389-1
	PEG(5000)-b-PLA(10,000)   HAZARD CODE: H7bg	0.5 g	25018-0.5
		1 g	25018-1
	PEG(10,000)-b-PLA(5,000)   HAZARD CODE: H7bg	0.5 g	25017-0.5
		1 g	25017-1

*Poly(ethylene glycol) / Poly(lactic acid) Diblock and Triblock Polymers (PEG/PLA) continued on next page*



*Poly(ethylene glycol) / Poly(lactic acid) Diblock and Triblock Polymers (PEG/PLA) continued*

CHARACTERISTICS		UNIT SIZE	CATALOG #
<b>Triblock Polymers</b>	PLA(1000)-b-PEG(1000)-b-PLA(1000)   HAZARD CODE: HU4bdg	0.5 g	24500-0.5
		1 g	24500-1
	PLA(2000)-b-PEG(1000)-b-PLA(2000)   HAZARD CODE: HU4bdg	0.5 g	24501-0.5
		1 g	24501-1
	PLA(5000)-b-PEG(1000)-b-PLA(5000)   HAZARD CODE: HU4bdg	0.5 g	24502-0.5
		1 g	24502-1
	PLA(1000)-b-PEG(4000)-b-PLA(1000)   HAZARD CODE: HU4bdg	0.5 g	24503-0.5
		1 g	24503-1
	PLA(1000)-b-PEG(10,000)-b-PLA(1000)   HAZARD CODE: HU4bdg	0.5 g	24509-0.5
		1 g	24509-1
	PLA(5,000)-b-PEG(10,000)-b-PLA(5,000)   HAZARD CODE: AK2bf	0.5 g	25026-0.5
		1 g	25026-1
PLA(10,000)-b-PEG(10,000)-b-PLA(10,000)   HAZARD CODE: AK2bf	0.5 g	25027-0.5	
	1 g	25027-1	

**Polyglycolide** | CAS# 26124-68-5 | (C<sub>2</sub>H<sub>2</sub>O<sub>2</sub>)<sub>n</sub>

Polyglycolide (PGA) is an aliphatic polyester with moderate to high crystallinity that is well known for extensive use in biomedical applications which require expedited biodegradation. The high mechanical strength of PGA denotes broad use in areas of implantable devices such as sutures, pins, screws, and rods.

Polysciences' PGA has seen use in the investigation of degradation rates in electrospun nanofiber meshes cultured with porcine smooth muscle cells. Further established and evolving research shows increased use cases when copolymerized with other bioresorbable polymers. Our line of PGA products includes the homopolymer, and copolymers with PCL, PLA, and PDO.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~0.5 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50033-5
	25 g	50033-25
Viscosity: ~1.15 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50034-5
	25 g	50034-25
Viscosity: ~1.6 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50035-5
	25 g	50035-25
Viscosity: ~2.0 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50036-5
	25 g	50036-25
Viscosity: ~2.5 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50037-5
	25 g	50037-25

## POLYMERS / BIODEGRADABLE POLYMERS

### G

**Poly(glycolic acid) [i.v. 1.0-2.0]** CAS#: 6124-68-5 |  $\text{H}(\text{OCH}_2\text{CO})_n\text{OH}$  | HAZARD CODE: AK2be

**06525**

Biodegradable polymer. Decomposes in 6 months at 37°C at pH 9.0. Soluble in HFIP, HFA-sesquihydrate.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW >100,000, Tg 36°C	5 g	06525-5
	25 g	06525-25

**Poly(glycolide-co-caprolactone)** |  $(\text{C}_2\text{H}_2\text{O}_2)_m(\text{C}_6\text{H}_{10}\text{O}_2)_n$

Poly(glycolide-co-caprolactone) (PGCL) is a biodegradable copolymer made by polymerizing glycolide and caprolactone. PGCL exhibits a range of properties that make it suitable for medical and pharmaceutical applications, such as drug delivery systems, tissue engineering, and wound healing.

The mechanical strength and degradation rate of PGCL can be tailored by adjusting the ratio of glycolide and caprolactone, with a higher glycolide content enabling a faster degradation rate, and a higher caprolactone content leading to slower degradation rate.

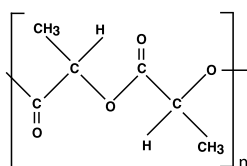
CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.6 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50041-5
	25 g	50041-25
Viscosity: ~1.4 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50042-5
	25 g	50042-25
Viscosity: ~1.3 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50043-5
	25 g	50043-25
Viscosity: ~1.5 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50044-5
	25 g	50044-25

**Poly(glycolide-co-lactide)** | CAS# 26780-50-7 |  $(\text{C}_2\text{H}_2\text{O}_2)_m(\text{C}_3\text{H}_4\text{O}_2)_n$

Poly(glycolide-co-lactide) (PGLA) is a biodegradable copolymer composed of glycolide and lactide monomers. Its physical and chemical properties can be tailored by adjusting the ratio of the two monomers with a higher glycolide content degrading faster and a higher lactide content degrading slower.

PGLA is widely used in medical applications, such as sutures, drug delivery systems, 3D printing, and tissue engineering, due to its excellent biocompatibility and controlled biodegradability. It is also used in the pharmaceutical industry as a biodegradable polymer matrix for drug delivery systems and in the food industry as a biodegradable packaging material.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.7 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50038-5
	25 g	50038-25
Viscosity: ~1.7 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50039-5
	25 g	50039-25
Viscosity: ~1.8 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50040-5
	25 g	50040-25

**Poly(L-lactic acid)** CAS#: 33135-50-1 | HAZARD CODE: AK2bf

Biodegradable polymer. Degradation rate is inversely related to polymer molecular weight. Crystalline polymer with higher molecular weight polymers having a crystallinity of about 70%.

CHARACTERISTICS	UNIT SIZE	CATALOG #
mp 173–178°C, Tg 60–65°C, MW ~1,600–2,400, i.v. 0.10–0.20	1 g	18580-1
	10 g	18580-10
mp 173–178°C, Tg 60–65°C, MW ~100,000, i.v. ~ 1.0 dL/g, d 1.24	1 g	06529-1
	10 g	06529-10
mp 173–178°C, Tg 60–65°C, MW ~80,000–100,000, i.v. 1.50–2.00	1 g	18402-1
	10 g	18402-10
mp 173–178°C, Tg 60–65°C, i.v. 2.4 dL/g	10 g	26405-10
mp 173–178°C, Tg 60–65°C, MW ~325,000–460,000, i.v. 4.30–5.50, d 1.15	1 g	18582-1
	10 g	18582-10
mp 173–178°C, Tg 60–65°C, MW ~700,000, i.v. >6.5	1 g	21512-1
	10 g	21512-10

**Poly(L-lactic acid) Molecular Weight Kit** | HAZARD CODE: AK2bg**18599**

Biodegradable polymer. Degradation rate is inversely related to polymer molecular weight.

CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Kit Contains:</b> 5g each of polymers with i.v. values of 0.10–0.20, 0.80–1.20, 1.30–1.60, 4.00–5.20	1 kit	18599-1

**Poly(L-lactide co-Caprolactone)** |  $(C_3H_4O_2)_m(C_6H_{10}O_2)_n$ 

Poly(L-lactide co-caprolactone) is a biodegradable copolymer with applications in various fields, including tissue engineering, drug delivery systems, and packaging materials due to its longer degradation profile and compatibility with biological systems. Composed of L-lactide and caprolactone monomers, it exhibits a unique combination of properties derived from its constituent components, including high flexibility, mechanical strength, and thermal stability.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.8 dL/g [i.v.], Biodegradation Time: ~ 1 - 3 years	5 g	50063-5
	25 g	50063-25
Viscosity: ~1.5 dL/g [i.v.], Biodegradation Time: ~ 1 - 3 years	5 g	50064-5
	25 g	50064-25
Viscosity: ~2.0 dL/g [i.v.], Biodegradation Time: ~ 1 - 3 years	5 g	50065-5
	25 g	50065-25

## POLYMERS / BIODEGRADABLE POLYMERS

### L

#### Poly(L-lactide) | CAS# 26161-42-2 | $(C_3H_4O_2)_n$

Poly(L-lactide) (PLLA) is a bioresorbable and biodegradable polymer that is highly sought-after in the biomedical industry due to its excellent biocompatibility and mechanical properties. It is widely used in the production of medical devices such as sutures, bone plates, tissue scaffolds, and drug delivery systems. PLA is also seeing increased use in tissue engineering applications due to its ability to support cell growth and promote tissue regeneration.

PLA is frequently leveraged in the biomedical industry due to its well-researched biodegradation mechanisms, with the primary biodegradation pathway being via hydrolysis of its ester linkages. The biodegradation rate can vary based on factors such as the specific application, molecular weight, thickness of the final material, pH, the degree of exposure to enzymes, along with other biological factors. Polysciences offers several PLA homopolymer and copolymer products with varying molecular weights that will suit your research needs.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~1.6 dL/g [i.v.], Biodegradation Time: ~ > 3 years	5 g	50045-5
	25 g	50045-25
Viscosity: ~2.0 dL/g [i.v.], Biodegradation Time: ~ > 3 years	5 g	50046-5
	25 g	50046-25
Viscosity: ~2.4 dL/g [i.v.], Biodegradation Time: ~ > 3 years	5 g	50047-5
	25 g	50047-25
Viscosity: ~3.2 dL/g [i.v.], Biodegradation Time: ~ > 3 years	5 g	50048-5
	25 g	50048-25
Viscosity: ~3.8 dL/g [i.v.], Biodegradation Time: ~ > 3 years	5 g	50049-5
	25 g	50049-25
Viscosity: ~0.4 dL/g [i.v.], Biodegradation Time: ~ Months to years	5 g	50050-5
	25 g	50050-25
Viscosity: ~0.5 dL/g [i.v.], Biodegradation Time: ~ Months to years	5 g	50051-5
	25 g	50051-25
Viscosity: ~0.6 dL/g [i.v.], Biodegradation Time: ~ Months to years	5 g	50052-5
	25 g	50052-25
Viscosity: ~0.9 dL/g [i.v.], Biodegradation Time: ~ Months to years	5 g	50053-5
	25 g	50053-25
Viscosity: ~1.2 dL/g [i.v.], Biodegradation Time: ~ 1.2 dL/g [i.v.]	5 g	50054-5
	25 g	50054-25
Viscosity: ~1.6 dL/g [i.v.], Biodegradation Time: ~ 1 - 2 years	5 g	50055-5
	25 g	50055-25
Viscosity: ~2.4 dL/g [i.v.], Biodegradation Time: ~ 2 - 3 years	5 g	50056-5
	25 g	50056-25
Viscosity: ~2.6 dL/g [i.v.], Biodegradation Time: ~ 2 - 3 years	5 g	50057-5
	25 g	50057-25
Viscosity: ~2.8 dL/g [i.v.], Biodegradation Time: ~ 2 - 3 years	5 g	50058-5
	25 g	50058-25
Viscosity: ~3.8 dL/g [i.v.], Biodegradation Time: ~ 3.8 dL/g [i.v.]	5 g	50059-5
	25 g	50059-25
Viscosity: ~6.0 dL/g [i.v.], Biodegradation Time: ~ 2 - 3 years	5 g	50060-5
	25 g	50060-25
Viscosity: ~3.8 dL/g [i.v.], Biodegradation Time: ~ 2 - 3 years	5 g	50061-5
	25 g	50061-25
Viscosity: ~5.8 dL/g [i.v.], Biodegradation Time: ~ 2 - 3 years	5 g	50062-5
	25 g	50062-25

**Poly(l-lactide/glycolide) [70:30]** CAS#: 30846-39-0 | HAZARD CODE: AK2bf**16587**

Biodegradable polymer.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW <10,000, i.v. 0.15–0.30, Polydispersity 1.8	5 g	16587-5

**Poly(trimethylene carbonate-co-L-lactide)** |  $(C_4H_6O_3)_m(C_3H_4O_2)_n$ 

Poly(trimethylene carbonate-co-L-lactide) (PTMCLLA) is a biodegradable copolymer that has gained popularity in various biomedical applications, including drug delivery, tissue engineering, and wound healing. This copolymer combines the unique properties of both monomers, resulting in a material with improved rigidity, increased biodegradability, and varied degradation compared to the homopolymers.

The biodegradation rate of PTMCLLA is typically greater compared to PTMC homopolymer due to the additional sites susceptible to hydrolytic degradation. The degradation rate of PTMCLLA is also influenced by other factors such as the molecular weight, crystallinity, pH, temperature, and presence of enzymes.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~0.7 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50024-5
	25 g	50024-25
Viscosity: ~0.9 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50025-5
	25 g	50025-25
Viscosity: ~1.1 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50026-5
	25 g	50026-25
Viscosity: ~1.0 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50027-5
	25 g	50027-25
Viscosity: ~1.2 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50028-5
	25 g	50028-25
Viscosity: ~0.9 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50029-5
	25 g	50029-25
Viscosity: ~1.1 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50030-5
	25 g	50030-25
Viscosity: ~1.1 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50031-5
	25 g	50031-25
Viscosity: ~0.9 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50032-5
	25 g	50032-25

## POLYMERS / BIODEGRADABLE POLYMERS

### T

#### **Poly(trimethylene carbonate)** | CAS# 31852-84-3 | $(C_4H_6O_3)_n$

Poly(trimethylene carbonate) (PTMC) is a highly amorphous, aliphatic polycarbonate in biomedical applications where a higher degree of flexibility is desired such as 3D printing flexible tissue scaffolds. Higher molecular weights denote higher degrees of rigidity. Unlike many other biodegradable polymers, PTMC is resistant to hydrolytic degradation of its ester linkages. Instead, it is more prone to surface erosion/enzymatic degradation. The ultimate byproducts of its biodegradation are CO<sub>2</sub> and water.

Copolymers of varying monomer ratios and molecular weights enable more control over rigidity and biodegradation rate to suit specific applications. Our line of PTMC products includes the homopolymer, and copolymers with PCL, PLLA, and PDLLA.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Viscosity: ~0.5 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50018-5
	25 g	50018-25
Viscosity: ~1.0 dL/g [i.v.], Biodegradation Time: ~ Weeks	5 g	50019-5
	25 g	50019-25
Viscosity: ~1.3 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50020-5
	25 g	50020-25
Viscosity: ~1.5 dL/g [i.v.], Biodegradation Time: ~ Weeks to months	5 g	50021-5
	25 g	50021-25

**Poly( $\epsilon$ -caprolactone)-block-poly(ethylene glycol)** | HAZARD CODE: AK2bf

Among the leading candidates for biodegradation are caprolactone-based materials due to their approved uses by the FDA for drug delivery systems, sutures, long term implants and adhesion barriers as well as new tissue scaffold host systems.

Caprolactone is a biodegradable polyester with a relatively low melting point (60°C) but a glass transition temperature (T<sub>g</sub>) around -60°C. The high crystallinity in the polyester accounts for this property balance. It is made by metal catalyzed ring opening polymerization of epsilon caprolactone. A typical molecular weight of standard polycaprolactone homopolymer is 188k Daltons. By comparison, a 100% polylactic acid homopolymer with MW 330k Daltons has a (T<sub>g</sub>) temperature of +55°C and a melting temperature T<sub>m</sub> of about 175°C.

Further modifications of polycaprolactone are possible by converting it into diblock (A-B) or triblock (A-B-A) copolymers with polyethylene glycol. Synthetic methods which lead to block structures allow the polymer to have controlled biodegradation rates as well as improved physiological compatibility characteristics. Additional custom synthesis materials are available upon request. Please contact us for a quotation for your custom synthesis needs.

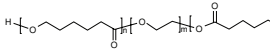
CHARACTERISTICS	UNIT SIZE	CATALOG #
<b>Diblock Polymers</b> 	PCL(1,000)-b-PEG(1,000)	0.5 g 25010-0.5
		1 g 25010-1
	PCL(1,000)-b-PEG(2,000)	0.5 g 25011-0.5
		1 g 25011-1
	PCL(1,000)-b-PEG(5,000)	0.5 g 25012-0.5
		1 g 25012-1
	PCL(5,000)-b-PEG(1,000)	0.5 g 25022-0.5
		1 g 25022-1
	PCL(5,000)-b-PEG(2,000)	0.5 g 25023-0.5
		1 g 25023-1
	PCL(5,000)-b-PEG(5,000)	0.5 g 25024-0.5
		1 g 25024-1

*Continued on next page*

## POLYMERS / BIODEGRADABLE POLYMERS

### Alpha/Numeric

*Poly( $\epsilon$ -caprolactone)-block-poly(ethylene glycol) continued*

CHARACTERISTICS	UNIT SIZE	CATALOG #	
<b>Triblock Polymers</b>  	PCL(1,000)-b-PEG(1,000)-PCL(1,000)	0.5 g 1 g	25019-0.5 25019-1
	PCL(1,000)-b-PEG(2,000)-PCL(1,000)	0.5 g 1 g	25020-0.5 25020-1
	PCL(1,000)-b-PEG(6,000)-PCL(1,000)	0.5 g 1 g	25021-0.5 25021-1
	PCL(1,000)-b-PEG(10,000)-PCL(1,000)	0.5 g 1 g	25013-0.5 25013-1
	PCL(5,000)-b-PEG(1,000)-PCL(5,000)	0.5 g 1 g	25014-0.5 25014-1
	PCL(5,000)-b-PEG(2,000)-PCL(5,000)	0.5 g 1 g	25015-0.5 25015-1
	PCL(5,000)-b-PEG(5,000)-PCL(5,000)	0.5 g 1 g	25016-0.5 25016-1
	PCL(5,000)-b-PEG(10,000)-PCL(5,000)	0.5 g 1 g	25025-0.5 25025-1

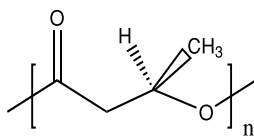
**Poly[(-)3-hydroxybutyric acid]** CAS#: 26063-00-3 |  $[-\text{COCH}_2\text{CH}(\text{CH}_3)\text{O}-]_n$  | HAZARD CODE: AK2bg

**16916**

Biodegradable polymer. Soluble in chloroform, MDC, benzene, ethylene carbonate.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW ~500,00, mp 168–176°C, Tg 15°C, Viscosity 14,500±2500 cps	10 g	16916-100

**Poly[(R)-3-hydroxybutyrate]** CAS#: 26063-00-3 |  $[-\text{COCH}_2\text{CH}(\text{CH}_3)\text{O}-]_n$  | HAZARD CODE: A2g

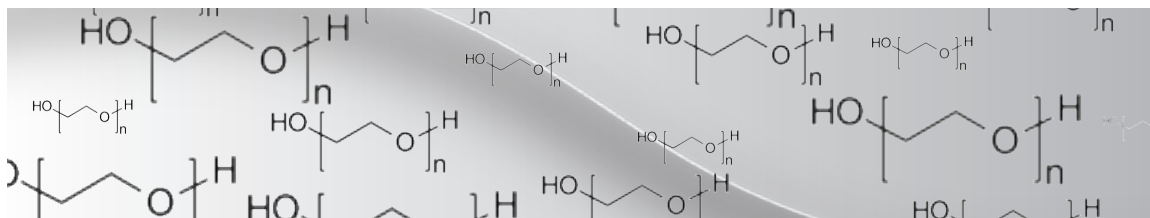


Polyhydroxybutyrates (PHBs) are the most common type of polyhydroxyalkanoates (PHAs) and were first discovered in prokaryotes as a high molecular weight storage molecule in cytoplasmic granules. There has been interest in the use of PHBs and PHB copolymers in the biodegradable plastics industry. The biodegradable and non-toxic effect of PHBs also make them a strong possibility for many medical applications, including drug release, bone regeneration, and nerve guidance. Purity 99.5%.

CHARACTERISTICS	UNIT SIZE	CATALOG #
White or faintly beige powder	MW ~500	1 g 16930-1
	MW ~1,000	1 g 16932-1
	MW ~2,000	1 g 16934-1
	MW ~3,000	1 g 16936-1
	MW ~5,000	1 g 16938-1
	MW ~10,000	1 g 16940-1



## Methoxy PEG/Monofunctional PEGs

**Methoxy PEG alkyne** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26019-1
Mp 2,000	1 g	26020-1
Mp 5,000	1 g	26021-1
Mp 10,000	1 g	26022-1
Mp 20,000	1 g	26023-1

**Methoxy PEG amine** CAS#: 80506-64-5 | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26024-1
	5 g	26024-5
Mp 2,000	1 g	26025-1
	5 g	26025-5
Mp 5,000	1 g	26026-1
	5 g	26026-5
Mp 10,000	1 g	26027-1
	5 g	26027-5
Mp 20,000	1 g	26028-1
	5 g	26028-5

**Methoxy PEG azide** CAS#: 89485-61-0 | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26029-1
Mp 2,000	1 g	26030-1
Mp 5,000	1 g	26031-1
Mp 10,000	1 g	26032-1
Mp 20,000	1 g	26033-1

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Methoxy PEG/Monofunctional PEGs

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#### Methoxy PEG carboxylic acid | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26034-1
	5 g	26034-5
Mp 2,000	1 g	26035-1
	5 g	26035-5
Mp 5,000	1 g	26036-1
	5 g	26036-5
Mp 10,000	1 g	26037-1
	5 g	26037-5
Mp 20,000	1 g	26038-1
	5 g	26038-5

#### Methoxy PEG aldehyde CAS#: 1173289-16-1 | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26039-1
	5 g	26039-5
Mp 2,000	1 g	26040-1
	5 g	26040-5
Mp 5,000	1 g	26041-1
	5 g	26041-5
Mp 10,000	1 g	26042-1
	5 g	26042-5
Mp 20,000	1 g	26043-1
	5 g	26043-5

## Methoxy PEG/Monofunctional PEGs

**Methoxy PEG bromide** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26044-1
	5 g	26044-5
Mp 2,000	1 g	26045-1
	5 g	26045-5
Mp 5,000	1 g	26046-1
	5 g	26046-5
Mp 10,000	1 g	26047-1
	5 g	26047-5
Mp 20,000	1 g	26048-1
	5 g	26048-5

**PEG monomethyl ether** CAS#: 9004-74-4 | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	5 g	26049-5
	25 g	26049-25
Mp 2,000	5 g	26050-5
	25 g	26050-25
Mp 5,000	5 g	26051-5
	25 g	26051-25
Mp 10,000	1 g	26052-1
	5 g	26052-5
Mp 20,000	1 g	26053-1
	5 g	26053-5

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Methoxy PEG/Monofunctional PEGs

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#### Methoxy PEG maleimide CAS#: 99126-64-4 | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26054-1
	5 g	26054-5
Mp 2,000	1 g	26055-1
	5 g	26055-5
Mp 5,000	1 g	26056-1
	5 g	26056-5
Mp 10,000	1 g	26057-1
	5 g	26057-5
Mp 20,000	1 g	26058-1
	5 g	26058-5

#### PEG methyl ether thiol CAS#: 134874-49-0 | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26059-1
	5 g	26059-5
Mp 2,000	1 g	26060-1
	5 g	26060-5
Mp 5,000	1 g	26061-1
	5 g	26061-5
Mp 10,000	1 g	26062-1
	5 g	26062-5
Mp 20,000	1 g	26063-1
	5 g	26063-5

## Methoxy PEG/Monofunctional PEGs

**Methoxy PEG NHS** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 750	1 g	26064-1
	5 g	26064-5
Mp 2,000	1 g	26065-1
	5 g	26065-5
Mp 5,000	1 g	26066-1
	5 g	26066-5
Mp 10,000	1 g	26067-1
	5 g	26067-5
Mp 20,000	1 g	26068-1
	5 g	26068-5

**Methoxy PEG silane** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26069-1
	500 mg	26069-500
Mp 5,000	1 g	26070-1
	500 mg	26070-500
Mp 10,000	1 g	26071-1
	500 mg	26071-500
Mp 20,000	1 g	26072-1
	500 mg	26072-500

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Homobifunctional PEGs

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#### HOMOBIFUNCTIONAL PEGS

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#### PEG diamine CAS#: 24991-53-5 | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26078-1
	5 g	26078-5
Mp 3,000	1 g	26079-1
	5 g	26079-5
Mp 6,000	1 g	26080-1
	5 g	26080-5
Mp 10,000	1 g	26081-1
	5 g	26081-5
Mp 20,000	1 g	26082-1
	5 g	26082-5

#### PEG dibromide HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26083-1
	5 g	26083-5
Mp 3,000	1 g	26084-1
	5 g	26084-5
Mp 6,000	1 g	26085-1
	5 g	26085-5
Mp 10,000	1 g	26086-1
	5 g	26086-5
Mp 20,000	1 g	26087-1
	5 g	26087-5

**PEG di(carboxylic acid)** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26088-1
	5 g	26088-5
Mp 3,000	1 g	26089-1
	5 g	26089-5
Mp 6,000	1 g	26090-1
	5 g	26090-5
Mp 10,000	1 g	26091-1
	5 g	26091-5
Mp 20,000	1 g	26092-1
	5 g	26092-5

**PEG dialdehyde** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26093-1
	5 g	26093-5
Mp 3,000	1 g	26094-1
	5 g	26094-5
Mp 6,000	1 g	26095-1
	5 g	26095-5
Mp 10,000	1 g	26096-1
	5 g	26096-5
Mp 20,000	1 g	26097-1
	5 g	26097-5

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Homobifunctional PEGs

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#### PEG dihydroxyl | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	25 g	26098-25
	5 g	26098-5
Mp 3,000	25 g	26099-25
	5 g	26099-5
Mp 6,000	25 g	26100-25
	5 g	26100-5
Mp 10,000	25 g	26101-25
	5 g	26101-5
Mp 20,000	25 g	26102-25
	5 g	26102-5

#### PEG dimaleimide | HAZARD CODE: H3f

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PEG dimaleimides are useful in sulfhydryl-selective coupling of PEG to proteins and other thiol substrates as well as for selective scavenging of thiol-containing peptides. These homobifunctional PEGs are from our specialty PEGs series, premium functional PEGs useful in various biomedical and biotechnology applications.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26103-1
	5 g	26103-5
Mp 3,000	1 g	26104-1
	5 g	26104-5
Mp 6,000	1 g	26105-1
	5 g	26105-5
Mp 10,000	1 g	26106-1
	5 g	26106-5
Mp 20,000	1 g	26107-1
	5 g	26107-5



## Homobifunctional PEGs

**PEG di(NHS)** CAS#: 186020-53-1 | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26113-1
	5 g	26113-5
Mp 3,000	1 g	26114-1
	5 g	26114-5
Mp 6,000	1 g	26115-1
	5 g	26115-5
Mp 10,000	1 g	26116-1
	5 g	26116-5
Mp 20,000	1 g	26117-1
	5 g	26117-5

**PEG di(OPSS)** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 2,000	1 g	26118-1
	5 g	26118-5
Mp 3,000	1 g	26119-1
Mp 6,000	1 g	26120-1
Mp 10,000	1 g	26121-1
Mp 20,000	1 g	26122-1

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Heterobifunctional PEGs

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#### HETEROBIFUNCTIONAL PEGs

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#### Amine PEG alkyne | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26123-100
	500 mg	26123-500
Mp 5,000	100 mg	26124-100
	500 mg	26124-500
Mp 10,000	100 mg	26125-100
	500 mg	26125-500
Mp 20,000	100 mg	26126-100
	500 mg	26126-500

#### NHS PEG alkyne | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26127-100
	500 mg	26127-500
Mp 5,000	100 mg	26128-100
	500 mg	26128-500
Mp 10,000	100 mg	26129-100
	500 mg	26129-500
Mp 20,000	100 mg	26130-100
	500 mg	26130-500

**Amine PEG Boc-amine** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26131-100
	500 mg	26131-500
	1 g	26131-1
Mp 5,000	100 mg	26132-100
	500 mg	26132-500
	1 g	26132-1
Mp 10,000	100 mg	26133-100
	500 mg	26133-500
	1 g	26133-1

**Amine PEG carboxylic acid hydrochloride** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26134-100
	500 mg	26134-500
Mp 5,000	100 mg	26135-100
	500 mg	26135-500
Mp 10,000	100 mg	26136-100
	500 mg	26136-500

**Amine PEG tritylthiol** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26137-100
	500 mg	26137-500
Mp 5,000	100 mg	26138-100
	500 mg	26138-500
Mp 10,000	100 mg	26139-100
	500 mg	26139-500

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Heterobifunctional PEGs

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#### Hydroxyl PEG azide | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26140-100
	500 mg	26140-500
Mp 5,000	100 mg	26141-100
	500 mg	26141-500
Mp 10,000	100 mg	26142-100
	500 mg	26142-500
Mp 20,000	100 mg	26143-100
	500 mg	26143-500

#### Boc-amine PEG carboxylic acid | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26156-100
	500 mg	26156-500
Mp 5,000	100 mg	26157-100
	500 mg	26157-500
Mp 10,000	100 mg	26158-100
	500 mg	26158-500

#### Biotin PEG amine

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26144-500
	1 g	26144-1

#### Boc-amine PEG thiol | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26159-100
	500 mg	26159-500
Mp 5,000	100 mg	26160-100
	500 mg	26160-500
Mp 10,000	100 mg	26161-100
	500 mg	26161-500

**Boc-amine PEG NHS** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26162-100
	500 mg	26162-500
Mp 5,000	100 mg	26163-100
	500 mg	26163-500
Mp 10,000	100 mg	26164-100
	500 mg	26164-500

**Fmoc-amine PEG carboxylic acid** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26165-100
	500 mg	26165-500
Mp 5,000	100 mg	26166-100
	500 mg	26166-500
Mp 10,000	100 mg	26167-100
	500 mg	26167-500

**Fmoc-amine PEG NHS** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26168-100
	500 mg	26168-500
Mp 5,000	100 mg	26169-100
	500 mg	26169-500
Mp 10,000	100 mg	26170-100
	500 mg	26170-500

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Heterobifunctional PEGs

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#### Hydroxyl PEG amine | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26171-100
	500 mg	26171-500
Mp 5,000	100 mg	26172-100
	500 mg	26172-500
Mp 10,000	100 mg	26173-100
	500 mg	26173-500

#### Hydroxyl PEG boc-amine | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26174-100
	500 mg	26174-500
Mp 5,000	100 mg	26175-100
	500 mg	26175-500
Mp 10,000	100 mg	26176-100
	500 mg	26176-500

#### Hydroxyl PEG Boc-hydrazine | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26177-100
	500 mg	26177-500
Mp 5,000	100 mg	26178-100
	500 mg	26178-500
Mp 10,000	100 mg	26179-100
	500 mg	26179-500

**Hydroxyl PEG carboxylic acid** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26180-100
	500 mg	26180-500
	1 g	26180-1
Mp 5,000	100 mg	26181-100
	500 mg	26181-500
	1 g	26181-1
Mp 10,000	100 mg	26182-100
	500 mg	26182-500
	1 g	26182-1

**Hydroxyl PEG thiol** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26183-100
	500 mg	26183-500
	1 g	26183-1
Mp 5,000	100 mg	26184-100
	500 mg	26184-500
	1 g	26184-1
Mp 10,000	100 mg	26185-100
	500 mg	26185-500
	1 g	26185-1

**Hydroxyl PEG tritylthiol** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26186-100
	500 mg	26186-500
Mp 5,000	100 mg	26187-100
	500 mg	26187-500
Mp 10,000	100 mg	26188-100
	500 mg	26188-500

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Heterobifunctional PEGs

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#### Iodoacetamide PEG azide | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26189-100
	500 mg	26189-500
Mp 5,000	100 mg	26190-100
	500 mg	26190-500
Mp 10,000	100 mg	26191-100
	500 mg	26191-500
Mp 20,000	100 mg	26192-100
	500 mg	26192-500

#### Iodoacetamide PEG alkyne | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26193-100
	500 mg	26193-500
Mp 5,000	100 mg	26194-100
	500 mg	26194-500
Mp 10,000	100 mg	26195-100
	500 mg	26195-500
Mp 20,000	100 mg	26196-100
	500 mg	26196-500

#### Maleimide PEG biotin | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26199-500
	1 g	26199-1
Mp 5,000	500 mg	26200-500
	1 g	26200-1
Mp 10,000	500 mg	26201-500
	1 g	26201-1



**Maleimide PEG carboxylic acid** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26202-100
	500 mg	26202-500
Mp 5,000	100 mg	26203-100
	500 mg	26203-500
Mp 10,000	100 mg	26204-100
	500 mg	26204-500

**Maleimide PEG NHS** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26205-100
	500 mg	26205-500
Mp 5,000	100 mg	26206-100
	500 mg	26206-500
MP 10,000	100 mg	26207-100
	500 mg	26207-500

**Biotin PEG OPSS** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
MP 3,000	500 mg	26208-500
	1 g	26208-1
MP 5,000	500 mg	26209-500
	1 g	26209-1
MP 10,000	500 mg	26210-500
	1 g	26210-1
MP 20,000	500 mg	26211-500
	1 g	26211-1

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Heterobifunctional PEGs

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#### THS PEG OPSS | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
MP 3,000	500 mg	26212-500
MP 5,000	500 mg	26213-500
MP 10,000	500 mg	26214-500
MP 20,000	500 mg	26215-500

#### Thiol PEG amine hydrochloride | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26216-100
	500 mg	26216-500
	1 g	26216-1
Mp 5,000	100 mg	26217-100
	500 mg	26217-500
	1 g	26217-1
Mp 10,000	100 mg	26218-100
	500 mg	26218-500
	1 g	26218-1

#### Thiol PEG Boc-hydrazine | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26219-500
Mp 5,000	100 mg	26220-100
	500 mg	26220-500
Mp 10,000	500 mg	26221-500

**Thiol PEG carboxylic acid** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26222-500
	1 g	26222-1
Mp 5,000	500 mg	26223-500
	1 g	26223-1
Mp 10,000	500 mg	26224-500
	1 g	26224-1

**Tritythiol PEG NHS** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26225-500
Mp 5,000	500 mg	26226-500
Mp 10,000	500 mg	26227-500

**Silane PEG alkyne** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26228-500
	1 g	26228-1
Mp 5,000	500 mg	26229-500
Mp 10,000	500 mg	26230-500
	1 g	26230-1
Mp 20,000	500 mg	26231-500
	1 g	26231-1

## POLYMERS / SPECIALTY FUNCTIONAL PEGS

### Heterobifunctional PEGs

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#### Silane PEG azide | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26232-500
	1 g	26232-1
Mp 5,000	500 mg	26233-500
	1 g	26233-1
Mp 10,000	500 mg	26234-500
	1 g	26234-1
Mp 20,000	500 mg	26235-500
	1 g	26235-1

#### NHS PEG Boc-amine alkyne | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26240-500
	1 g	26240-1
Mp 5,000	500 mg	26241-500
	1 g	26241-1
Mp 10,000	500 mg	26242-500
	1 g	26242-1
Mp 20,000	500 mg	26243-500
	1 g	26243-1

#### NHS PEG Fmoc-amine alkyne | HAZARD CODE: H3f

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CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	500 mg	26244-500
	1 g	26244-1
Mp 5,000	500 mg	26245-500
	1 g	26245-1
Mp 10,000	500 mg	26246-500
	1 g	26246-1
Mp 20,000	500 mg	26247-500

**Amine PEG azide** | HAZARD CODE: H3f

CHARACTERISTICS	UNIT SIZE	CATALOG #
Mp 3,000	100 mg	26248-100
	500 mg	26248-500
	1 g	26248-1
Mp 5,000	100 mg	26249-100
	500 mg	26249-500
	1 g	26249-1
Mp 10,000	100 mg	26250-100
	500 mg	26250-500
	1 g	26250-1
Mp 20,000	100 mg	26251-100
	500 mg	26251-500
	1 g	26251-1

## POLYMERS / SPECIALTY CHEMICALS & ADJUNCTS

A

A

### Acrylic cement, MC-Bond | HAZARD CODE: VWXM6g

16752

Solvent-type cement for acrylic, PETG, or polycarbonate sheet. Forms strong bonds after short contact time.  
*Technical Data Sheet #270*

UNIT SIZE	CATALOG #
4 x 1 qt	16752-4Q
4 x 0.5 gal	16752-0.5

### 3-Aminopropyltriethoxysilane CAS#: 919-30-2 | $\text{H}_2\text{N}(\text{CH}_2)_3\text{Si}(\text{OC}_2\text{H}_5)_3$ | HAZARD CODE: B7bg

01983

Reacts with glass and other silaceous surfaces creating aminopropyl substituents. Surfaces so modified have enhanced adhesion properties and can adsorb anionic matter.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 221.37, bp 217°C	250 g	01983-250

B

### Benzoin methyl ether (UV Catalyst) CAS#: 3524-62-7 | $\text{C}_6\text{H}_5\text{CH}(\text{OCH}_3)\text{COC}_6\text{H}_5$ | HAZARD CODE: H6g

00425

UV polymerization catalyst.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 226.3, mp 47 - 49°C	10 g	00425-10

### Benzoyl peroxide, 70% active (water wet) CAS#: 94-36-0 | $(\text{C}_6\text{H}_5\text{CO})_2\text{O}_2$ | HAZARD CODE: HF4gp

21446

Thermal polymerization catalyst.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 242.23, mp 105°C	100 g	21446-100

### Benzoyl Peroxide, Plasticized CAS#: 94-36-0 | $(\text{C}_6\text{H}_5\text{CO})_2\text{O}_2$ | HAZARD CODE: HG5d

24232

Thermal polymerization catalyst.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 242.23, Dry powder	100 g	24232-100

**N,N-Benzyltrimethylamine** CAS#: 103-83-3 |  $C_6H_5CH_2N(CH_3)_3$  | HAZARD CODE: BEH6g

00141

Low viscosity epoxy accelerator.

CHARACTERISTICS	UNIT SIZE	CATALOG #
(BDMA; N,N-Dimethylbenzylamine) MW 135.21 mp 75°C	100 g	00141-100

D

**Dibutyltin dilaurate** CAS#: 77-58-7 |  $[CH_3(CH_2)_{10}CO_2]_2Sn[(CH_2)_3CH_3]_2$  | HAZARD CODE: BH6g

01862

Catalyst for polymerizing lactide and glycolide and isocyanate reactions.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 631.6, mp 24°C, bp 205°C, n20/D 1.470, d 1.066, Yellowish liquid.	50 g	01862-50

**Dimethylaminoethanol (DMAE)** CAS#: 108-01-0 |  $HOCH_2CH_2N(CH_3)_2$  | HAZARD CODE: BE6g

01458

Curing agent for epoxy resins.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 89.14, bp 130° - 136°C	100 g	01458-100

**DMP-30** CAS#: 90-72-2 |  $[(CH_3)_2NCH_2]_3C_6H_2OH$  | HAZARD CODE: BH6g

00553

Curing catalyst for epoxy resins. 2,4,6-Tris-(dimethylaminomethyl)phenol (DMP-30) is a curing catalyst for epoxy resins. It is used as the accelerator in many of our embedding media kits (Cat #: 02600, 08792, and 21958).

DMP-30 is a Lewis Base catalyst that can be used both as a curing agent and as an activator for other curing agents in sealant and concrete adhesives applications. It is a catalyst and co-curing agent for room temperature cure of epoxides.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 265.4, bp 316°C, n20/D 1.515, Viscosity ~200cps, Straw to yellow liquid	100 g	00553-100

**Dodeceny succinic anhydride (DDSA)** CAS#: 26544-38-7 | HAZARD CODE: H2g

00563

Epoxy hardener, suitable for use in embedding procedures.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 266.38, bp 181°C/5mm, n20/D 1.479, d 1.005, Viscosity 440cps	450 g	00563-450
	4 x 450 g	00563-4

## POLYMERS / SPECIALTY CHEMICALS & ADJUNCTS

F

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F

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**FLORISIL®** CAS#: 1343-88-0 | MgO<sub>3</sub>Si | HAZARD CODE: A3g

**18319**

FLORISIL is a highly selective adsorbent that has extensive utility in preparative and analytical chromatography. Frequently referred to as a magnesium silicate. FLORISIL has become widely accepted in the analytical chromatography field for the separation and isolation of a variety of compounds.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 100.39	1 kg	18319-1
	20 kg	18319-20

N

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**Nadic Methyl Anhydride (NMA)** CAS#: 25134-21-8 | HAZARD CODE: HO6g

**00886**

Liquid anhydride for curing epoxy resins. This material is a mixture of methyl isomers of methylbicyclo[2.2.1] hept-5-ene-2,3-dicarboxylic anhydride. The larger the proportion of NMA used in the epoxy resin formula, the harder the resultant block.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 178.2, n25/D 1.505	100 g	00886-100
	500 g	00886-500

**Nonenyl Succinic Anhydride (NSA)** CAS#: 28928-97-4 | HAZARD CODE: H4g

**01542**

Curing agent for epoxy resins.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Acid Number min. 470 MW 224 n20/D 1.476 d 1.032	450 g	01542-450
	4 x 450 g	01542-4

O

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**Octenylsuccinic anhydride** CAS#: 26680-54-6 | HAZARD CODE: H7g

**19830**

Used as a replacement for hexenylsuccinic anhydride in Polysciences' Ultra Low Viscosity Epoxy Embedding Kit, (Cat. #17706). Acid Number min. 520.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 210.3, bp 320°C, n20/D 1.469, d 1.000	100 g	19830-100



P

**Persist Solvent Gel Kit™****25674**

Persist Solvent Gels have ideal properties for professional art cleaners. Available as single 100 mL jars, Standard Kits, Mix & Match Kits or in bulk quantities. Kits can be customized to include the specific gels and quantities desired. (for example; 3 xylene gels, 2 acetone gels and 1 NMP gel can be purchased in a Mix and Match Kit)

**Features:**

- Clean aged, discolored and soiled varnish
- 6 gels, with a range of polarities
- No mixing, formulating or chemical handling required
- Gel form increases the working time for coating removal

CHARACTERISTICS	UNIT SIZE	CATALOG #
Persist Solvent Gel Kit™   HAZARD CODE: BCEH7d	1 kit	25674-1
PolySol™ D60 Gel   HAZARD CODE: BE3d	100 ml	25675-100
Xylene Gel   HAZARD CODE: BCH7d	100 ml	25676-100
Benzyl Alcohol Gel   HAZARD CODE: H3d	100 ml	25677-100
Isopropanol Gel   HAZARD CODE: CH6d	100 ml	25678-100
Acetone Gel   HAZARD CODE: CH6d	100 ml	25679-100
NMP Gel   HAZARD CODE: H3d	100 ml	25680-100

S

**SAR-GEL® Water Indicating Paste****24615**

Water indicating paste provides a fast, reliable way to detect water bottoms in storage tanks containing gasoline and gasoline/alcohol blends, diesel, jet fuel, fuel oil, solvents and other materials.

**Benefits:**

- Easy to apply – no messy jars, no need to mix, easy cleanup
- No guessing – complete color change from orange to navy blue
- Faster reaction – immediate detection means less time wasted
- Easy to see water line – does not run
- Useful in detecting water content in laboratory recycled reagents, as well as other stain line reagents and solvents such as xylene and absolute alcohol

SIZE	CATALOG #
12 x 1 oz tubes	24615-12

## POLYMERS / SPECIALTY CHEMICALS & ADJUNCTS

T

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T

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**Tyramine, ≥ 98%** CAS#: 51-67-2

**26434**

Used in generation of hydrogels for biomedical applications.

SIZE	CATALOG #
5 g	26434-5

**12-Tungstosilicic Acid** CAS#: 12027-43-9 |  $H_4[W_{12}SiO_{40}]$  | HAZARD CODE: A2bg

**03424**

Catalyst for organic synthesis, minerals separation, reagent for alkaloids.

CHARACTERISTICS	SIZE	CATALOG #
(silicotungstic Acid) MW 3310.7 Soluble in water. Formula Weight: 2878.28 (anhy).	25 g	03424-25

U

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**Uvitex® 2B** CAS#: 27344-41-8 | HAZARD CODE: BH6g

**19517**

UV absorber. Ex. max: 350nm Em. max: 435nm in PBS Buffer.

CHARACTERISTICS	SIZE	CATALOG #
(C.I. Fluorescent Brightener 362; Derivative of stilbene disulfonic acid.) Yellow powder.	10 g	19517-10

## CHELATING RESINS

Chelating resins covers lead, copper, zinc, aluminium, cadmium, nickel, cobalt, magnesium, barium, strontium, iron and mercury. The use of chelation resins covers the large industrial uses as well as the small cartridge based units used in spark erosion type services.

**S957, Mixed Acid Cation Resin** | HAZARD CODE: H3g**50237**

Functional Group: Phosphonic and Sulfonic Acid Ionic Form as Shipped: H+>

UNIT SIZE	CATALOG #
250 ml	50237-250
1000 ml	50237-1

## HIGH PURITY RESINS

Ion exchange resins for ultra-pure water are specially manufactured to meet the exacting needs of the electronics industry for wafer and microchip production requiring the highest possible water quality (>18.2 MΩ·cm resistivity, with minimum rinse times), while eliminating contamination of the high purity circuits when ion exchange resin is first installed.

**UCW5072, Low TOC Strong Base Anion Resin** | HAZARD CODE: H3g**50240**

Polymer Structure: Gel polystyrene with divinylbenzene. Functional Group: Type 1 Quaternary Ammonium. Ionic Form as Shipped: OH->

UNIT SIZE	CATALOG #
250 ml	50240-250
1000 ml	50240-1

## MIXED BED RESINS

Ready-to-use mixed beds are specially prepared high quality resin mixtures designed for direct purification of water. The ratio of component resins has been specifically tailored to provide high capacity. Performance of the ready-to-use mixed bed will depend on the application. Several of the mixed beds are available with indicators that facilitate ease of operation where a simple visual indication of exhaustion is desired.

**MB3710, Standard Mixed Bed Resin** | HAZARD CODE: H3g**50227**

Polymer Structure: Gel polystyrene crosslinked with divinylbenzene. Functional Group: Sulfonic Acid and Type 1 Quaternary Ammonium. Ionic Form as Shipped: H+> / OH->

UNIT SIZE	CATALOG #
250 ml	50227-250
1000 ml	50227-1

## POLYMERS / SPECIALTY CHEMICALS & ADJUNCTS

### Resins

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#### UCW3700, Low TOC Mixed Bed | HAZARD CODE: H3g

**50229**

Polymer Structure: Gel polystyrene crosslinked with divinylbenzene. Functional Group: Sulfonic Acid and Type 1 Quaternary Ammonium. Ionic Form as Shipped: H<sup>+</sup> / OH<sup>-</sup>

UNIT SIZE	CATALOG #
250 ml	50229-250
1000 ml	50229-1

#### STRONG BASE ANION RESINS

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Strong-Base Anion (SBA) exchanger containing Type-II quaternary ammonium groups are used for dealkalization, deionization, demineralization, desilicizers and organic removal. SBA's have excellent operating capacity and good kinetics even when regenerant levels are comparatively low. Specially tailored size grades may be used with excellent results in most of the usual ion-exchange column configurations.

#### A400, Type 1 Porous Strong Base Anion Resin | HAZARD CODE: A3g

**50218**

Polymer Structure: Gel polystyrene crosslinked with divinylbenzene. Functional Group: Type 1 Quaternary Ammonium. Ionic Form as Shipped: Cl<sup>-</sup>

UNIT SIZE	CATALOG #
250 ml	50218-250
1000 ml	50218-1

#### A510, Type 2 Macroporous Strong Base Resin | HAZARD CODE: H3g

**50223**

Polymer Structure: Macroporous polystyrene crosslinked with divinylbenzene. Functional Group: Type 2 Quaternary Ammonium. Ionic Form as Shipped: Cl<sup>-</sup>

UNIT SIZE	CATALOG #
250 ml	50223-250
1000 ml	50223-1

#### WEAK BASE ANION RESINS

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Macroporous weak base anion resins from Purolite have excellent mechanical, osmotic, and chemical stability, combined with the capability of very fast rates of ion exchange, making them particularly suitable for the removal of high molecular weight organic materials from aqueous solutions. The particle size range can also be specially designed to suit continuous process operation, or for operation at higher than average flow rates.

#### A830, High Capacity Weak Base Acrylic Anion Resin | HAZARD CODE: A3g

**50226**

Polymer Structure: Macroporous polystyrene crosslinked with divinylbenzene. Functional Group: Complex Amine. Ionic Form as Shipped: Free Base

UNIT SIZE	CATALOG #
250 ml	50226-250
1000 ml	50226-1

**A835, Weak Base Anion Exchange Resin****50274**

Polymer Structure: Macroporous polystyrene crosslinked with divinylbenzene. Functional Group: Tertiary Amine. Ionic Form as Shipped: Free Base

UNIT SIZE	CATALOG #
250 ml	50274-250
1 liter	50274-1

## AMBERLITE® RESINS

**Amberlite® 200** CAS#: 12626-25-4 | HAZARD CODE: H4g**15617**

For separation of rare earths, amino acids. Strong acid (sodium sulfonate), 0.49mm, capacity 1.7 meq/ml (wet).

UNIT SIZE	CATALOG #
250 g	15617-250

## SELECTACEL® ION EXCHANGE CELLULOSE DERIVATIVES FOR CHROMATOGRAPHY

Selectacel ion exchangers are chemical derivatives of cellulose. These ion exchangers have been shown to be particularly effective in the fractionation of a variety of high molecular weight ionic substances including serum proteins, enzymes and nucleic acids. Their ability to perform these separations is due to their functionality and the highly hydrophilic and porous nature of the cellulose lattice. These ion exchangers possess properties that are not approached by other resin exchangers currently available. Their capacity for proteins is high, and elution may be carried out under mild conditions which prevent denaturation.

**Cellulose, phosphate (Selectacel® phosphate)** CAS#: 9015-14-9 | HAZARD CODE: H2g**19792**

Standard Flow time(sec/10ml): 280 - 460, Specific Volume(ml/g,wet): 5 - 6.5, Capacity(Meq/g [±.1]): 0.9

UNIT SIZE	CATALOG #
100 g	19792-100

## POLYMERS / SPECIALTY CHEMICALS & ADJUNCTS

### Cartridges

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MISC./OTHER

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**De-Hibit 200** CAS#: 9003-70-7 | HAZARD CODE: H2g

**24013**

Resin for removal of phenolic inhibitors (hydroquinone monomethyl ether or t-butylcatechol) from neutral monomers, e.g., Methacrylate esters or styrene derivatives. *Technical Data Sheet #256*

UNIT SIZE	CATALOG #
500 g	24013-500

High quality of cartridge components and precision manufacturing techniques allow us to provide you with the highest quality, best performing Ion Exchange Resin Cartridges. We offer cartridges in many configurations such as Barnstead, Millipore® and US Filter® to fit most popular ultra-pure water systems.

Purolite® Ion Exchange Resin Cartridges are made from virgin polypropylene, using the latest heat welding techniques without using any chemical bonding agents. Assembly is performed under clean manufacturing conditions using proven statistical Process Control to ensure product quality. Model and lot numbers are heat stamped into each cartridge to provide traceability without the concern of possible contamination from ink or labels.

#### AMETEK - SLIMLINE STYLE CARTRIDGES

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Length: 9.8125" (24.9 cm), Diameter: 2.923" (7.42 cm), Maximum Differential Pressure: 60 psi, Recommended Storage Temperature: 0° – 35°C

**PCL-2010 Cartridge** | HAZARD CODE: H3g

**50146**

Style: Cartridge - Ametek/Continental. Replaces: Continental Model DISB 1000-4

UNIT SIZE	CATALOG #
1 unit	50146-1
4 pack	50146-4

**PCL-2011 Cartridge** | HAZARD CODE: H3g

**50148**

Style: Cartridge - Ametek/Continental. Replaces: Continental/Ametek Model DIMN 1000-4 / PCF1-10MB

UNIT SIZE	CATALOG #
1 unit	50148-1
4 pack	50148-4

**PCL-2111 Cartridge**

**50159**

Cartridge type: 20" Mixed Bed Style: Cartridge — Ametek/Continental. Replaces: Continental/Ametek Model DIMN 2000-2 / PCF1-20MB

UNIT SIZE	CATALOG #
2 units	50159-2

## Cartridges

## BARNSTEAD - HOSE BARB STYLE CARTRIDGES

Length: 18.7" (47.5 cm), Diameter: 3.4" (8.6 cm), Maximum Differential Pressure: 60 psi, Recommended Storage Temperature: 0° – 35°C

**PCL-1919 Cartridge****50145**

Replaces: Barnstead Model D8822

UNIT SIZE	CATALOG #
1 unit	50145-1

## BARNSTEAD - PCS-STYLE CARTRIDGES

Length: 17.2" (43.7 cm), Diameter: 3.4" (8.6 cm), Maximum Differential Pressure: 60 psi, Recommended Storage Temperature: 0° – 35°C

**PCL-1010 Cartridge** | HAZARD CODE: H3g**50100**

Style: PCS Cartridge. Replaces: Barnstead Model D0803

UNIT SIZE	CATALOG #
1 unit	50100-1

**PCL-1011 Cartridge** | HAZARD CODE: H3g**50101**

Style: PCS Cartridge. Replaces: Barnstead Model D0809, D5027

UNIT SIZE	CATALOG #
2 units	50101-1

**PCL-1020 Cartridge** | HAZARD CODE: H3g**50110**

Replaces: Barnstead Model D08811

UNIT SIZE	CATALOG #
1 unit	50110-1

## POLYMERS / SPECIALTY CHEMICALS & ADJUNCTS

### Cartridges

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#### MILLIPORE® DOUBLE OPEN-END CARTRIDGE WITH DOUBLE 222 O-RINGS

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Length: 17.2" (43.7 cm), Diameter: 3.4" (8.6 cm), Maximum Differential Pressure: 60 psi, Recommended Storage Temperature: 0° – 35°C

#### **PCL-5011 Cartridge** | HAZARD CODE: H3g

**50179**

Replaces: Millipore Model CPMB 012 02

UNIT SIZE	CATALOG #
1 unit	50179-1

#### **PCL-5013 Cartridge** | HAZARD CODE: H3g

**50181**

Replaces: Millipore Model CDFC 012 04

UNIT SIZE	CATALOG #
1 unit	50181-1

#### MILLIPORE® KITS

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#### **PCL-5536 Cartridge** | HAZARD CODE: H3g

**50195**

Replaces: Millipore Model CDMF 012 04

UNIT SIZE	CATALOG #
1 unit	50195-1

#### **PCL-6110 Cartridge** | HAZARD CODE: H3g

**50201**

Replaces: Millipore Model QGARDD00D2

UNIT SIZE	CATALOG #
1 unit	50201-1

#### **PCL-6120 Cartridge** | HAZARD CODE: H3g

**50202**

Replaces: Millipore Model QGARDD00R1

UNIT SIZE	CATALOG #
1 unit	50202-1



## Cartridges

## MILLIPORE® QPAK SYSTEM CARTRIDGES

Maximum Differential Pressure: 60 PSI, Recommended Storage Temperature: 0° – 35°C

**PCL-5450 Cartridge** | HAZARD CODE: H3g

**50189**

Replaces: Millipore Model CPMQ 004 R1

UNIT SIZE	CATALOG #
1 unit	50189-1

**PCL-5452 Cartridge** | HAZARD CODE: H3g

**50191**

Replaces: Millipore Model DPMQ 004 D2

UNIT SIZE	CATALOG #
1 unit	50191-1

**PCL-6310 Cartridge** | HAZARD CODE: H3g

**50208**

Cartridge type: Quantum EX Cartridge. Replaces: Millipore Model QTUMOOEX

UNIT SIZE	CATALOG #
1 unit	50208-1

## PCS STYLE CARTRIDGES - CUSTOM

**PCL-1023 Cartridge** | HAZARD CODE: H3g

**50113**

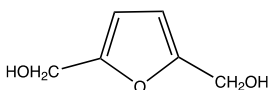
Style: PCS Cartridge

UNIT SIZE	CATALOG #
1 unit	50113-1

Furan-based synthons are finding uses in organic and polymer synthesis applications including the pharmaceutical, flavors and fragrances, graphic arts and organic intermediate industries.

**Bis-(hydroxymethyl) Furan** CAS#: 1883-75-6 | C<sub>6</sub>H<sub>8</sub>O<sub>3</sub> | HAZARD CODE: H4d

**24723**



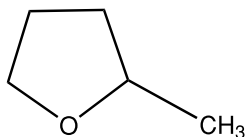
2,5 Position Disubstituted Furan. Application: Specialty Diol

UNIT SIZE	CATALOG #
10 g	24723-10

## POLYMERS / SPECIALTY CHEMICALS & ADJUNCTS

### Furan Based Organic Blocks

#### 2-Methyl Tetrahydrofuran CAS#: 96-47-9 | C<sub>5</sub>H<sub>10</sub>O | HAZARD CODE: CH4g

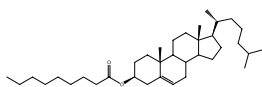
**24707**

2 Position Substituted Furan. Applications: Grignard solvent, organometallic chemistry, extraction solvent, dichloromethane replacement solvent.

CHARACTERISTICS	UNIT SIZE	CATALOG #
MW 86.13, mp -136°C, bp 80°C -11.1, Solubility in water w(g/100 g at 25°C): 13	100 g	24707-100

### LIQUID CRYSTAL POLYMERS

#### Cholesteryl Nonanoate CAS#: 1182-66-7 | HAZARD CODE: HU4g

**24817**

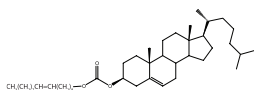
(5-cholestene-3β-ol nonanoate) Applications: Thermally activated displays, sensors and detection devices, cosmetics.

##### Transition Temperature:

- Crystal - smectic at 77.5°C
- Smectic - cholesteric 79°C
- Cholesteric - isotropic 90°C

CHARACTERISTICS	UNIT SIZE	CATALOG #
White, free-flowing powder	50 g	24817-50

#### Cholesteryl Oleyl Carbonate CAS#: 17110-51-9 | HAZARD CODE: HU4g

**24815**

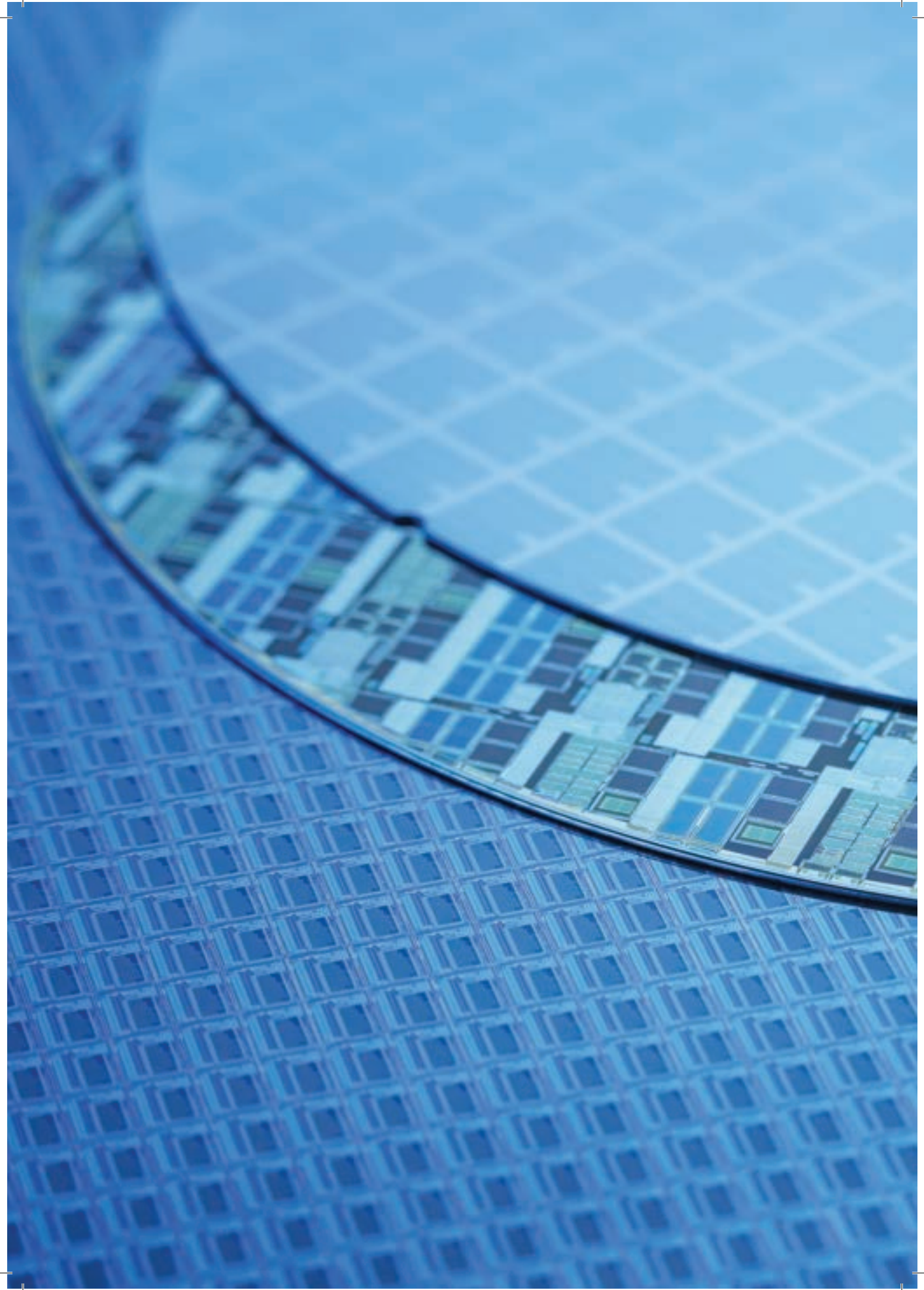
(3-cholestene-3β-ol oleyl carbonate) Applications: Thermally Activated Displays, Sensors and Detection Devices, Cosmetics.

##### Transition Temperature:

- Crystal - isotropic state at 20°C
- On cholesteric - isotropic at 40°C
- Normally in smectic phase but will slowly crystallize to a solid.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Hazy semi-solid to viscous liquid	50 g	24815-50





## ELECTRONIC CHEMICALS

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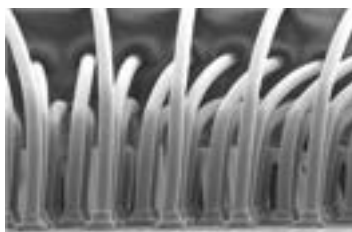
Polymers for Chemical Mechanical Polishing ...411



## NOSWEEP™ WIRE BOND ENCAPSULANT

NoSWEEP™ wire bond encapsulants eliminate wire sweep during transfer molding by locking the wires together. This patented technology is ideal for ultra-fine pitch wire bonds, multi-tier bonding and 3-D packaging. NoSWEEP can be dispensed on conventional off-line dispense systems or in-line on an on-wire bonder dispenser made by Kulike and Soffa. There are UV, UV/thermal and thermal cure versions. The thermal cure glob top versions of NoSWEEP are designed for full device encapsulation. These products offer JEDEC Level 2A reliability and are designed to work with lead free (260°C) re-flow. There is also a compatible dam for package designs which are not glob top friendly.

The patented technology Ring-lock dispense method (developed jointly with Kulike & Soffa) was created especially for lead-frame and 3-D packages. NoSWEEP's unique high performance epoxy chemistry allows a very small bead of material to be extruded across the wires. The material encapsulates a small section of the wires and is then UV gelled to lock the polymer and the wires in place before molding. Because only a very small amount of polymer is used, this process is an extremely cost effective solution for wire sweep and allows much broader design leeway.



Side view SEM of NoSWEEP™ Ring-lock™ dispense method completely encapsulating a wire section on a quad tier copper wire bonded device.



SEM of NoSWEEP™ Ring-lock dispense method on the same quad tier copper wire bonded device.

## NoSWEEP™ Wire Bond Encapsulant

EW8002

100% solid, silica filled liquid encapsulant designed for quick self-leveling in large dam and fill or glob top applications and encapsulation of narrow diameter, long, & ultra fine pitch wire bonds on semiconductor devices. Low modulus and CTE, excellent adhesion to inorganic and organic substrates, thermally curable and non-sweeping. Available in dam and fill or glob top versions. *There will be an added charge per order for thermally insulated box and dry ice.*

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M-K)	UNIT SIZE	CATALOG #
30	1/100 + 1/165	150	15	3500	85D	N/A	10 cc	EW8002-10
							30 cc	EW8002-30
50	0.5/150	160	15	3500	85D	N/A	10 cc	EW8004-10

**Encapsulants**

**OptiCLEAR™ Liquid Encapsulant Fill**

Two component epoxy designed for encapsulating and coating applications requiring good clarity and high heat resistance. Excellent adhesion to many substrates including metals, glass, and ceramics.

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M·K)	UNIT SIZE	CATALOG #
0.5	Thermal, 1.5/150	150	60	500	80D	N/A	500 g	SF850A-500
							500 g	SF850B-500
7	UV or 1/130	0	100	5	30D	N/A	10 cc	SF5021-10

**Epoxy Encapsulant Kit**

**PC440AB**

One component, high thermal conductivity, flexible epoxy encapsulant. Durable & thermally curable.

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M·K)	UNIT SIZE	CATALOG #
1000 cps	2/80	-10	30	3	70A	>5	1 kit	PC440AB-1

**Low Viscosity Glob Top Encapsulant**

**PC8007**

PC8007 is a high performance epoxy for encapsulation applications. The product is suited for bonding and sealing uses requiring high modulus and temperature resistance. *There will be an added charge per order for thermally insulated box and dry ice.*

**Features:**

- High Thermal Resistance
- Rigid and High Strength
- Durable
- Low Viscosity

UNIT SIZE	CATALOG #
10 cc	PC8007-10

**LoSTRESS™ Liquid Encapsulant**

**SF54HV**

LoSTRESS™ Liquid Encapsulant is an epoxy based 100% solids, one component, liquid encapsulant designed for encapsulation of semiconductor devices requiring good aging resistance, high toughness, flame retardancy and strong adhesion to various substrates.

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M·K)	UNIT SIZE	CATALOG #
2	UV or 1/130	100	70	50	60D	N/A	10 cc	SF503A-10
-	UV	-	-	-	-	-	30 cc	SF54HV-30



**UV Curable Encapsulant & Adhesive****PC7010**

Flowable, 100% solids, UV curable encapsulant and adhesive useful for potting and bonding applications that are subject to a wide temperature range of exposure. Good adhesion to many engineering plastics used for electrical housings and switches, fast cure, tough, elastomeric

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M-K)	UNIT SIZE	CATALOG #
1.5	-	45°C	150	2	75A	-	30 cc	PC7010-30

**Epoxy Adhesive Kit****PC550**

Epoxy adhesive designed for bonding and sealing when high strength and toughness are required. Non-rigid, tough, and good adhesive properties to many substrates including metals, composites, ceramics, many plastics; especially good for bonding fiberglass. Room temperature or thermal curing.

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M-K)	UNIT SIZE	CATALOG #
40	4/RT	70°C	120	100	70D	-	1 kit	PC550-1

**OptiCLEAR™ Adhesive****SF1012**

Polysciences SF1012 is a UV curable, epoxy based adhesive. It is well suited for use in applications requiring optical clarity, good heat resistance, and durability. The product cures in seconds when exposed to high intensity UV light. The product is based on components which are stable and have good optical properties.

UNIT SIZE	CATALOG #
3 cc	SF1012-3

**Epoxy Adhesive****PC232**

Very low viscosity 2-component epoxy for encapsulating and potting applications. The cured product is a tough, high strength epoxy. The very low viscosity of the product makes it well-suited for sealing narrow gap sections.

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M-K)	UNIT SIZE	CATALOG #
0.2	1.5 hr @ 100°C	70	-	1000	75D	-	750 g	PC232A-750
							250 g	PC232B-250

## ELECTRONIC CHEMICALS / ADHESIVES, COATINGS & ENCAPSULANTS

### Adhesives

#### EdgeCONTROL™

Low modulus retention dam specifically formulated to offer low cure stress and low warpage for liquid encapsulation of BGA and MCM packages. Good adhesion to various rigid and flexible organic and ceramic substrates, high viscosity, high thixotropy and thermally curable. Designed to be used with LoSTRESS™ liquid encapsulant. *There will be an added charge per order for thermally insulated box and cold gel packs.*

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M-K)	UNIT SIZE	CATALOG #
100	UV or 1/150	-20	130	1.5	85A	N/A	30 cc	SD54G0-30
30	Thermal, 1/100 + 1/165	180	15	4000	85D	N/A	3 cc	SD1011-3
							10 cc	SD1011-10
							30 cc	SD1011-30

#### EasyFILL™

#### UC5001

Rapid curing capillary flow underfill with low stress cure, high durability, high Tg, and low CTE. Thermally curable. *There will be an added charge per order for thermally insulated box and dry ice.*

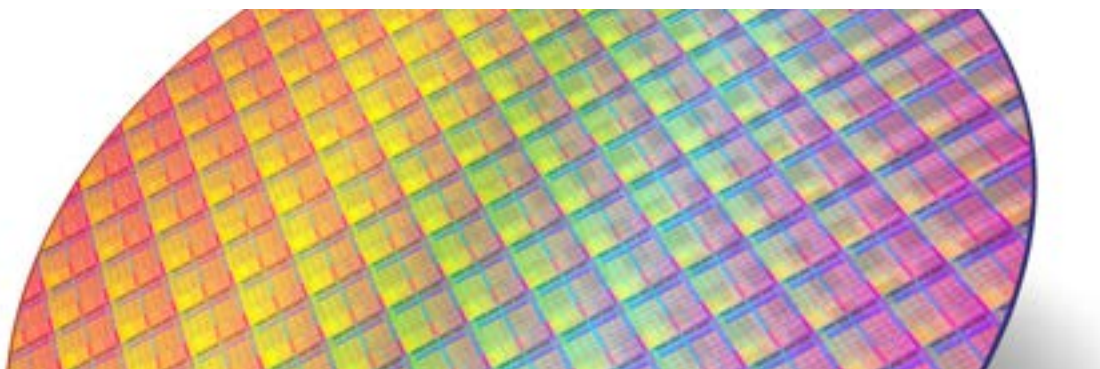
VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M-K)	UNIT SIZE	CATALOG #
12	0.2/150	135	<30/110	1000	90D	N/A	10 cc	UC5001-10

#### Potting Compound Kit

#### PC200K

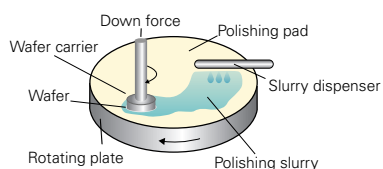
A versatile, 2-part, fire resistant, room temperature curable epoxy. Useful as an adhesive, encapsulant, or potting compound.

VISCOSITY (KCPS)	OPTIMAL CURE (HRS/°C)	TG (°C)	CTE (PPM)	MODULUS (MPA)	DUROMETER	THERMAL CONDUCTIVITY (W/M-K)	UNIT SIZE	CATALOG #
4	8/RT	65	140	12	75D	N/A	10 cc	PC200K-1



During the processing of silicon wafers as semiconductors, a critical step is the flattening and levelling of the wafer. Chemical Mechanical Polishing, or CMP, is the process to produce an extremely flat, level, and smooth wafer surface. Because of its good pigment dispersion properties, Poly(Acrylic Acid), PAA, is a potential liquid media for making such slurries. To provide specialized grades of PAA suitable for use in electronics industry CMP slurry materials, Polysciences has developed manufacturing processes that yield highly purified PAA. Our proprietary methods produce low ionic content, low particulate content, stringently purified PAA that is highly useful as a CMP slurry dispersant.

#### Ultrapure Poly(Acrylic Acid) CAS#: 9003-01-4 | $[-CH_2CH(CO_2H)-]_n$



Polysciences offers ultrapure poly(acrylic acid) for use as an electronics industry CMP slurry dispersant.

CHARACTERISTICS	UNIT SIZE	CATALOG #
Poly(Acrylic Acid) Ultrapure - MW 2000	Contact us.	14433-B
Poly(Acrylic Acid) Highly pure - MW 2000	Contact us.	14176-B
Poly(Acrylic Acid) Highly pure - MW 10,000	Contact us.	13511-B

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1. ACCEPTANCE

Polysciences, Inc.'s ("Seller") acceptance of the applicable buyer's ("Customer") order, whether such order is submitted via telephone, purchase order, website, or catalog order (as applicable, the "Order Submission"), is limited to and governed by these terms and conditions (the "Terms and Conditions") and the Order Submission; provided that if there is any conflict or inconsistency between or among the applicable Order Submission and these Terms and Conditions, these Terms and Conditions shall prevail and govern. Seller hereby notifies Customer, and Customer hereby acknowledges, that Seller objects to all terms and conditions in any Order Submission or any other communication(s) from the Customer which are additional to, different from, or conflicting with these Terms and Conditions. Neither the failure of Seller to object to an Order Submission or any other communication(s) from the Customer, nor shipment of the products described in the Order Submission (the "Product(s)"), shall be deemed an acceptance of any terms or conditions which are additional to, different from, or conflicting with these Terms and Conditions. The Customer shall be deemed to have accepted all of these Terms and Conditions, and no other, upon the submission of the Order Submission to Seller. The Order Submission and these Terms and Conditions (collectively, this "Agreement") comprise the entire agreement between the parties, and supersede all prior or contemporaneous understandings, agreements, negotiations, representations and warranties, and communications, both written and oral. This Agreement shall not be modified or superseded by any subsequent writing unless executed by Customer and Seller.

2. PRICES & MINIMUM ORDER POLICY

Prices: Subject to this Section 2, Customer shall purchase all Product(s) from Seller at the price set forth in Seller's published price list in force as of the date of Seller's acceptance of the Customer's submission of the applicable Order Submission; provided that if the price should be increased by Seller before delivery of the Product(s) to Customer, then these Terms and Conditions shall be construed as if the

increased price was originally inserted herein, and Customer shall be billed by Seller on the basis of such increased prices. All prices are exclusive of all federal, state, excise and similar taxes, including, without limitation, taxes on manufacture, sales, receipts, and all costs of transportation, packaging, insurance and other costs, including export and import duties, if applicable. All such taxes and costs will be added to the invoice as a separate charge and paid by Customer. Customer acknowledges and agrees that all prices are based on current costs and therefore subject to change without notice to account for changes in the cost of raw materials and other direct costs beyond Seller's control.

Minimum Order Policy: Orders placed in U.S. Dollars and shipped through Polysciences, Inc. shall have a minimum threshold of \$35.00. For orders placed in Euros and shipped to European countries through Polysciences Europe GmbH: On orders less than 250.00 Euro, an order fee of 20.00 Euro will be applied to shipments outside of Germany.

3. SHIPMENT & RISK

All sales of Product(s) are freight and insurance prepaid by Customer from Seller's address in Warrington, PA. If shipping and handling charges are quoted or invoiced, such charges shall include charges in addition to actual freight and insurance costs. Delivery of all Product(s) shall be made FOB Seller's address in Warrington, PA. The Product(s) shall be delivered within a reasonable time after Seller's receipt of Customer's Order Submission, subject to availability of finished Product(s); provided that all deliveries made within thirty (30) days after specified date of delivery in the Order Submission, if a date of delivery is so specified therein, shall constitute good delivery for the purposes of this Agreement. Seller shall deliver the Product(s) using any commercially reasonable method for packaging and shipping determined by Seller, in its sole discretion. Any liability of Seller for non-delivery of the Product(s) shall be limited to replacing the Product(s) within a reasonable time or adjusting the invoice respecting such Product(s) to reflect the actual quantity delivered. Customer acknowledges and agrees that the remedies set forth in

the foregoing sentence are Customer's exclusive remedies for any non-delivery of Product(s).

Title and risk of loss passes to Customer upon delivery of the Product(s) FOB at Seller's address in Warrington, PA, and Seller shall not be liable for any delays, loss, or damage of any Product(s) in transit to any other location.

As collateral security for the payment of the purchase price of the Product(s), Customer hereby grants to Seller a lien on and security interest in and to all of the right, title, and interest of Customer in, to and under the Product(s), wherever located, and whether now existing or hereafter arising or acquired from time to time, and in all accessions thereto and replacements or modifications thereof, as well as all proceeds (including insurance proceeds) of the foregoing. The security interest granted under this provision constitutes a purchase money security interest under Pennsylvania's Uniform Commercial Code.

Seller may, in its sole discretion, without liability or penalty, make partial shipments of Product(s) to Customer. Each shipment will constitute a separate sale and shall be separately invoiced, and Customer shall pay for the Product(s) shipped whether such shipment is in whole or partial fulfillment of Customer's Order Submission. Any delay in delivery of any shipment shall not relieve Customer of its obligations to accept remaining deliveries and shipments.

4. DELAYS

Seller shall not be liable or responsible to Customer, including without limitation for any losses or damages suffered by Customer, and shall not be deemed to have defaulted or breached this Agreement, for any failure or delay in the performance of this Agreement, or in the delivery or shipment of any Product(s), when such failure or delay is directly or indirectly caused by, or in any manner arises from acts or circumstances beyond the reasonable control of Seller, including without limitation, fires, floods, earthquake, explosion, accidents, acts of terrorists, riots, acts of God, war or insurrection, governmental interference or embargoes (whether by priorities, rationing or otherwise), strikes, labor difficulties, shortages of labor,

## Terms & Conditions

fuel, power, materials or supplies, or transportation delays. If any of the above mentioned contingencies occur, Seller reserves the right to cancel, in whole or in part, this Agreement without any resulting liability.

### 5. TERMS OF PAYMENT & INTEREST

Customer shall pay all invoiced amounts net thirty (30) days of Seller's invoice. All payments shall be made in U.S. dollars. Seller reserves the right to impose a money service charge on invoices unpaid after thirty (30) days at the rate equal to the lesser of one and one-half percent (1.5%) per month or the highest rate permissible under applicable law. A service fee of three percent (3.00%) will be added to all credit card orders over Five Thousand USD (\$5,000.00). Customer shall reimburse Seller for all costs incurred in collecting any late payments or otherwise enforcing the Agreement, including, without limitation, reasonable attorneys' fees. In addition to all other remedies available under these Terms and Conditions or at law (which Seller does not waive by the exercise of any rights hereunder), Seller shall be entitled to suspend the delivery of any Product(s) if Customer fails to pay any amounts when due hereunder. Customer shall not withhold payment of any amounts due and payable by reason of any set-off of any claim or dispute with Seller, whether relating to Seller's breach, bankruptcy or otherwise.

### 6. RAW CHEMICALS; USE

Seller reserves the right to select sources of supply for raw chemicals that may be incorporated into or included in any Product(s). Seller does not guarantee the compatibility or performance of raw chemicals with Customer's product(s). This Agreement is subject to Seller's ability to obtain the necessary raw chemicals. All raw chemicals incorporated into or included in any Product(s), and the Product(s) themselves, contain hazards and dangers that require caution. Accordingly, Seller shall ensure that all such raw chemicals and Product(s) are handled on only by qualified individuals trained in procedures and familiar with the potential hazards of the chemicals and Product(s). The absence of warning shall not be interpreted as an indication of safety. All chemicals are offered for

research and investigational purposes only and are not intended for food, drug, cosmetic or household use. Customer assumes all risk and liability for the use and/or results obtained by the use of the Product(s) whether used singly or in combination with other Product(s). Customer represents and warrants to Seller that (i) Customer holds in good standing any and all required licenses, approvals and permits necessary for its receipt, ownership, possession or use of the Product(s) to be supplied by Seller, (ii) the Products will not be resold, used or transferred by Customer other than in full compliance with all applicable laws, regulations and orders, and (iii) the Products, as to be used or introduced into commerce by Customer, are not regulated products requiring compliance with GMP or other regulatory or legal requirements, or special or unique manufacturing, safety, inspection or other manufacturing or processing requirements on the part of Seller.

### 7. LIMITED WARRANTY

Seller warrants to Customer that any Product(s) purchased by Customer hereunder, including all Products, will, at the time of transfer of title FOB Warrington, PA, be free from material defects in material and workmanship as established by Seller's standards of acceptable quality.

EXCEPT FOR THE WARRANTY SET FORTH IN THE FOREGOING SENTENCE, SELLER MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO ANY PRODUCT(S), INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE, OR OTHERWISE.

Products manufactured by a third party ("Third Party Product") may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the Product(s). Third Party Products are not covered by the warranty in the first sentence of this Section 7. For the avoidance of doubt, SELLER MAKES NO REPRESENTATIONS OR

WARRANTIES WITH RESPECT TO ANY THIRD-PARTY PRODUCT, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE, OR OTHERWISE.

The Seller shall not be liable for a breach of the warranty in the first sentence of this Section 7 unless: (i) Customer gives written notice of the defective Product(s), reasonably described, to Seller within fifteen (15) days of the initial delivery of the Product(s) (a "Defective Notice"); (ii) if applicable, Seller is given a reasonable opportunity after receiving the notice of breach of the warranty to examine such Product(s), and Customer (if requested to do so by Seller) returns such Product(s) to Seller's place of business at Seller's cost and pursuant to Seller's delivery instructions; and (iii) Seller reasonably verifies Customer's claim that the Product(s) are defective. Upon Seller's determination that the Product(s) is/are defective, Seller shall issue to Customer a written Returned Material Authorization number.

The Seller shall not be liable for a breach of the warranty set forth in the first sentence of this Section 7 if: (i) Customer makes any further use of such Product(s) after giving the Defective Notice; (ii) the defect arises because Customer failed to follow Seller's oral or written instructions, or industry standards or legal requirements, as to the storage, installation, commissioning, handling, use, or maintenance of the Product(s); (iii) Customer modifies, alters or repairs such Product(s), or causes such Product(s) to be further processed or integrated into any further product or process, without the prior written consent of Seller, or (iv) Customer sells, transfers or otherwise introduces the Product(s) into commerce.

Subject to the two (2) foregoing paragraphs, with respect to any defective Product(s), Seller shall, in its sole discretion, as Customer's sole and exclusive remedy relating to the



existence of defective Product(s), either: (i) repair or replace such Product(s) (or the defective part); or (ii) credit or refund the price of such Product(s) at the pro rata price rate provided that, if Seller so requests, Customer shall, at Seller's expense, return such Product(s) to Seller. THE REMEDIES SET FORTH IN THE FOREGOING PARAGRAPH SHALL BE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN THE FIRST SENTENCE OF THIS SECTION 7. Products returned without defect which are approved for return by the Seller are subject to a restocking charge equal to twenty-five percent (25%) of the purchase price of the subject item.

8. LIMITATION OF LIABILITY AND INDEMNIFICATION  
IN NO EVENT SHALL SELLER BE LIABLE TO CUSTOMER OR ANY THIRD PARTY FOR ANY LOSS OF USE, REVENUE OR PROFIT, DIMINUTION IN VALUE, INJURY OR DAMAGE TO PERSON OR PROPERTY, OR FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES WHETHER ARISING OUT OF BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), USE OF (OR THE INABILITY TO USE) ANY PRODUCT(S) OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND NOTWITHSTANDING THE FAILURE OF ANY AGREED OR OTHER REMEDY OF ITS ESSENTIAL PURPOSE.

IN NO EVENT SHALL SELLER'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID BY CUSTOMER TO SELLER FOR THE PRODUCT(S) SOLD HEREUNDER DURING THE THIRTY (30) DAY PERIOD PRECEDING THE INCIDENT GIVING RISE TO SUCH LIABILITY. Customer agrees to defend, indemnify, and hold harmless Seller and its affiliates, parents, subsidiaries, employees, agents, successors, officers, directors, and assigns, from and against any suits, actions, proceedings,

losses, claims, damages demands, liabilities, costs and expenses (including reasonable attorneys' and accountants' fees) that Seller may sustain or incur as a result of or relating to:

1. the breach or non-fulfillment of any representation, warranty, covenant, or obligation set forth in this Agreement by Customer or any or Customer's officers, directors, members, managers, partners, employees, agents, representatives, or subcontractors;
2. Seller's compliance with any instructions or guidance with respect to the production, manufacture, or assembly of any of the Product(s);
3. any claim alleging any negligent or more culpable act or omission (whether in duty of care, as a result of presumption, per se negligence, or failing to meet industry standards) of Customer or any or Customer's officers, directors, members, managers, partners, employees, agents, representatives, or subcontractors in connection with the performance of its obligations under this Agreement;
4. any claim by or loss to any party relating to the condition, sale, safety, legal compliance or use of any of the Product(s) supplied by Seller, solely except to the extent such claim or loss results from the intentional misconduct of Seller; and
5. any bodily injury, death of any person, or damage to real or tangible personal property, including without limitation those caused by the acts or omissions of Customer or any or Customer's officers, directors, members, managers, partners, employees, agents, representatives, or subcontractors; including without limitation:
  - a. any claims relating to or arising out of the condition, purchase and/or use of any of Customer's products or services, including any breaches of warranties with respect thereto; and/or
  - b. any claims relating to or arising out of the handling, carrying, transportation, or distribution of any of the Product(s) from Seller's address in Warrington, PA, including any claims based in strict liability.

Customer shall notify Seller in writing within fifteen (15) days of Customer's receipt of knowledge of any accident, or incident involving the Product(s) which results in personal injury or

damage to property, and Customer shall fully cooperate with Seller in the investigation and determination of the cause of such accident and shall make available to Seller all statements, reports and tests made by Customer or made available to Customer by others. The furnishing of such information to Seller and any investigation by Seller of such information or incident report shall not in any way constitute any assumption of any liability for such accident or incident by Seller.

9. INTELLECTUAL PROPERTY RIGHTS  
Seller and its licensors are, and shall remain, the sole and exclusive owners of all right, title, and interest in and to all Intellectual Property Rights (as defined herein) with respect to the Product(s). The term "Intellectual Property Rights" includes, without limitation, all (a) patents, patent disclosures, and inventions (whether patentable or not), (b) trademarks, service marks, trade dress, trade names, logos, corporate names, and domain names, together with all of the goodwill associated therewith, (c) copyrights and copyrightable works (including computer programs), mask works, and rights in data and databases, (d) trade secrets, know-how, and other confidential information, and (e) all other intellectual property rights, in each case whether registered or unregistered and including all applications for, and renewals or extensions of, such rights, and all similar or equivalent rights or forms of protection in any part of the world. Without limiting the generality of Customer's indemnification obligations set forth in Section 8 above, Customer shall defend, indemnify, and hold harmless Seller and its affiliates, parents, subsidiaries, employees, agents, successors, officers, directors, and assigns, from and against any suits, actions, proceedings, losses, claims, damages demands, liabilities, costs and expenses (including reasonable attorneys' and accountants' fees) that Seller may sustain or incur as a result of or relating to Customer's breach, violation, or infringement of any of Seller's Intellectual Property Rights. Customer represents and warrants that its use, sale, resale, and/or distribution of the Product(s), including without limitation, its incorporation or inclusion

## Terms & Conditions

of the Product(s) into any item or material produced, manufactured, or assembled by Customer or any of its affiliates, parents, or subsidiaries, shall not breach, violate, or infringe any other person's or entity's Intellectual Property Rights.

In the event of any claim, demand, suit, or action involving either or both of Seller and/or Seller's Intellectual Property Rights that pertains to the breach, violation, or infringement of any of any of Seller's Intellectual Property Rights or that alleges that the Product(s) or Customer's use, sale, resale, and/or distribution of the Product(s) breaches, violates, or infringes any other person's or entity's Intellectual Property Rights, Customer shall immediately notify Seller in writing or such claim, and Seller shall, at its option, have the right to take control of and defend such claim, demand or suit at Customer's expense, to approve counsel and to hire its own counsel at Customer's expense to participate in each and every negotiation or litigation pertaining to such claim, demand, suit, or action.

### 10. CONFIDENTIALITY

All non-public, confidential or proprietary information of Seller, including but not limited to, specifications, samples, patterns, designs, sketches, formulae, proofs, plans, drawings, documents, data, business operations, pricing, discounts, or rebates, disclosed by Seller to Customer, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated, or otherwise identified as "confidential," is confidential, solely for the use of performing this Agreement, and may not be disclosed or copied unless authorized in advance by Seller in writing. Unless otherwise agreed in writing, such items and all copyrights or patents protecting them are owned by Seller.

### 11. MODIFICATION

Modifications, additions, cancellations or suspensions of any order resulting from this Agreement shall not be effective or binding upon Seller or Customer unless evidenced in writing on the Order Submission or in a separate writing that is signed by an authorized manager of both the Customer and the Seller,

expressly stating the terms modified and the nature of the modification.

### 12. JURISDICTION

Customer and Seller each, to the extent that it may lawfully do so, acknowledge, consent, and agree that all matters arising out of or relating to this Agreement are governed by and construed in accordance with the internal laws (both substantive and procedural) of the Commonwealth of Pennsylvania (including without limitation the provisions of the Uniform Commercial Code as adopted by the Commonwealth of Pennsylvania) without giving effect to any choice or conflict of law provision or rule (whether of the Commonwealth of Pennsylvania or any other jurisdiction) that would cause the application of the laws of any jurisdiction other than those of the Commonwealth of Pennsylvania. Any suit, action, or proceeding (whether in law or in equity) arising out of or relating to this Agreement shall be brought and instituted solely in the courts of the Commonwealth of Pennsylvania in each case located in the City of Philadelphia and County of Philadelphia, or, if it can acquire jurisdiction, in the United States District Court for the Eastern District of Pennsylvania, and each party irrevocably submits to the exclusive jurisdiction of such courts in any such suit, action, or proceeding. Each party, to the extent that it may lawfully do so, further agrees that a summons and complaint commencing an action or proceeding in any of such courts shall be properly served and shall confer personal jurisdiction if served personally or by certified mail to it as its address provided on the Order Submission or as otherwise provided under the laws of the Commonwealth of Pennsylvania.

### 13. LIMITATION OF ACTIONS

No action regardless of form arising out this Agreement with the Customer may be commenced by Customer more than one (1) year after the cause of action has accrued except an action for nonpayment. Customer shall reimburse Seller for any reasonable attorneys' fees and other legal expenses incurred in enforcing or defending its rights under this Agreement.

### 14. CANCELLATION OF ORDERS FOR "UPON REQUEST" ITEMS

An order for an 'Upon Request' item, identified by the text in the 'availability' column on the product page or otherwise noted by Seller, can only be cancelled up to the end of the following business day that the order was placed.

#### METHOD OF SHIPMENT

Unless specifically advised otherwise by Seller, shipment of all Product(s) shall be by United Parcel Service, parcel post, common carrier or air freight. All Product(s) requiring dry ice packaging must be shipped air express; all cold pack materials must be shipped United Parcel Service's next day air service. For those hazardous chemicals covered by Department of Transportation and/or International Air Transport Association (IATA) regulations for flammable (red label) or hazardous items, Seller reserves the right to elect the most appropriate shipping method in order to comply with those regulations and shall be under no obligation to provide notice of shipping method to Customer.

Orders placed through Seller's website for shipment to European countries will be processed through Polysciences Europe GmbH. Seller cannot and does not guarantee these shipments for overnight delivery. If Customer requires expedited service, Customer is advised to please contact Polysciences Europe GmbH directly at +49 6201 845 20 0.

#### HAZARDOUS CHEMICALS

Any and all chemicals or other hazardous substances provided or otherwise supplied by Seller to Customer shall be handled only by qualified individuals trained in laboratory procedures and familiar with the potential hazards of the chemicals. The absence of a warning must not be interpreted as an indication of safety.



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