

2020-2021 CATALOG

Life Sciences

Astral Diagnostics

Monomers & Polymers

eChem

Microspheres & Particles

Ethos Biosciences

NORTH AMERICA · EUROPE · ASIA

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 nearly 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 eChem 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
Executive Vice President, Chief Operating Officer

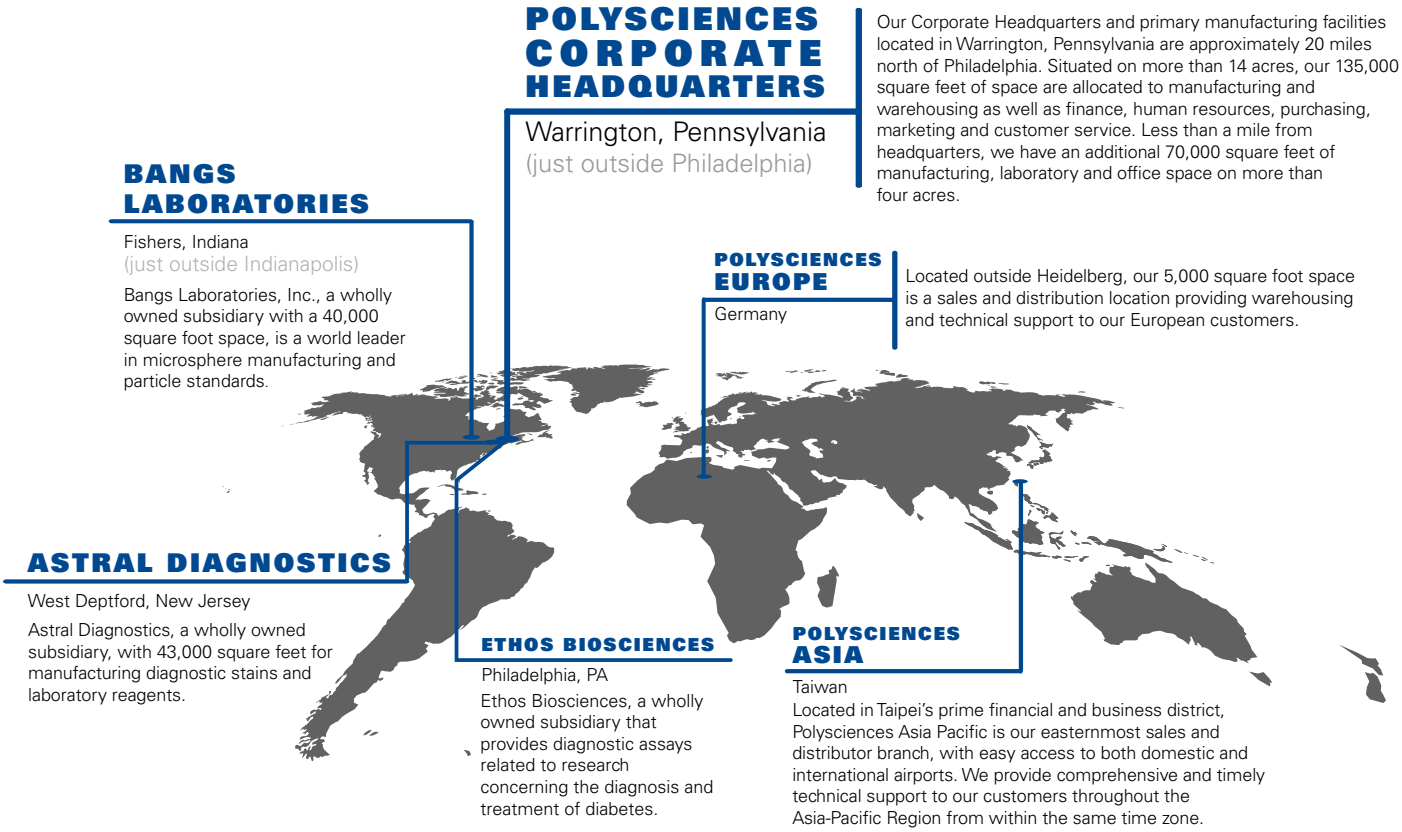


Michael Ott
Owner and President



Ryan Ott
Executive Vice President

OUR LOCATIONS



Ordering Information

U.S. & Canada
Corporate Headquarters
Polysciences, Inc.
400 Valley Rd. Warrington, PA 18976
Call: (800) 523-2575
Monday - Friday 8am-6pm ET
(outside U.S. / Canada (215) 343-6484)
Fax: (800) 343-3291 (outside U.S. / Canada (215) 343-0214)
info@polysciences.com

Online:
polysciences.com
24 hours a day, 7 days / week
(Safe, easy and secure ordering)

Europe
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(49) 6201-845200
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Fax: (317) 570-7034
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1224 Forest Parkway
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astraldiagnostics.com

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Philadelphia, PA 19103
(800) 234-EXOC (US Only)
(215) 557-8021
Fax: (215) 557-8053
service@ethosbiosciences.com

CUSTOM SYNTHESIS CAPABILITIES

Fostering corporate partnerships with best-in-class facilities & expertise.

ANALYTICAL CAPABILITIES

NMR (300 MHz: ^{1}H,^{13}C,^{19}F,^{31}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

In addition to our robust portfolio of standard laboratory and scientific products, Polysciences routinely partners with medical device, pharmaceutical, chemical and other industries to meet highly specialized fine chemical requirements. Our synthesis capabilities are extensive, spanning monomers, polymers, crosslinkers, ultrapure specialty chemicals, unique end group chemistries and diverse molecular weights. Whether you require targeted compounds, starting materials, specialized reagents or wish to explore chemical modifications that will enhance critical characteristics, we are prepared to take on your project.

Our state-of-the art operations house flexible manufacturing suites to provide unrivaled customization and dedication to your project. In-house analytical capabilities include instrumentation and methods for thorough analysis and characterization, and FDA facility registration, 100 and 100,000 class cleanrooms, and an ISO 13485 certified Quality Management System ensure that we're able to meet your regulatory requirements.

Our Custom Synthesis group offers the skill, experience and analytical services needed to help drive projects from proof-of-concept through commercialization. We invite you to contact us to find how we can meet your latest challenge.

SOCMA MEMBER COMPANY

ChemStewards® A PROGRAM OF SOCMA




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CONTRACT MANUFACTURING CAPABILITIES

Ensure your business can keep pace with an evolving manufacturing landscape by partnering with our Contract Services Team.

PROCESSING

- 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

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

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, looking to use us as 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, 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.









ORDERING INFORMATION

UNITED STATES ORDERING

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 6:00 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 25% 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 ORDERING

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)6201-845200** from 8:00 am to 5:00 pm CET to place phone orders. Fax orders are received 24 hours a day at: +49 (0) 6201-8452020 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)6201-845200.

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 ORDERING

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

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 page 376 for a full description of our terms and conditions of sale.

USING THIS CATALOG

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. A typical catalog entry can be read as follows:

1 2 3 4 10 11 12

Acrylic acid min. 99.5% [79-10-7] *BEH7g*

MW 72.1 mp 13° bp 139° Tg 106° n_D^{20} 1.420 200 ppm MEHQ TSCA $H_2C=CHCO_2H$ 00020-250 250 g 49.00

5 7 8 9 13 14 15

Copolymerizes with many other monomers to introduce acid groups which are important in crosslinking, adhesion promotion and stabilization of emulsion polymers. Homopolymers are water soluble.

Poly(methyl methacrylate) [9011-14-7] *A2g*

n_D^{20} 1.49 d 1.2 Tg 105° TSCA $[-CH_2C(CH_3)(CO_2CH_3)-]_n$

6

Hard, stable, non-yellowing polymer used in coatings and in molded clear plastic objects. Soluble in acetone, toluene, chloroform, MEK, THF.

18

i.v. 0.18	MW 25,000	atactic beads, 200µm	Polydispersity ~3.0	04554-500	500 g	124.00
i.v. 0.40	MW 75,000	atactic beads, 200µm	Polydispersity ~2.8	04553-500	500 g	124.00
16	MW 100,000	atactic pellets	17	17913-500	500 g	135.00
i.v. 1.25	MW 500,000	atactic beads, 200µm	Polydispersity 2.7	04552-500	500 g	135.00

1. Product Name
2. Purity: min; minimum, > greater than; ~ around
3. Chemical Abstracts Service (CAS) Registry Number
4. Hazard, Storage and Handling Codes
5. MW - Molecular weight or average molecular weight in the case of polymers.
   Mw - Weight Average Molecular Weight
   Mn - Number Average Molecular Weight
6. Density in gram/cc at 20° C
7. mp: melting point in ° centigrade.
   dec: with decomposition
8. bp: boiling point in ° centigrade at atmospheric pressure unless pressure is specified in millimeter (mm) of mercury
9. Glass transition of polymer in ° centigrade
10. Polysciences, Inc. catalog number
11. Quantity of pack
12. Price (in U.S. dollars)
13. Refractive index at 20° C on D-line. Abbreviated also as R.I.
14. Inhibitor level in parts per million unless specified otherwise.
    HQ - Hydroquinone
    MEHQ - methyl ether of hydroquinone
    BHT - butylated hydroxy toluene
    PTZ - Phenothiazine
15. Listed in TSCA inventory
16. i.v. - inherent viscosity as dl/g at 20° C
    Rel. vis. - dimensionless ratio at 20° C
17. Ratio of Mw/Mn where available
18. Soluble in: MEK - methyl ethyl ketone
    MDC - dichloromethane
    DMF - dimethyl formamide
    THF - tetrahydrofuran
    DMSO - dimethyl sulfoxide
    NMP - N-methylpyrrolidinone
19. Emiss max: Emission maximum in nm
    Exc max: Excitation maximum in nm
    I max: Absorption maximum in nm
20. WPE: weight per epoxide
21. FP: flash point in ° C
22. pH: negative logarithm of hydrogen ion concentration
    pK: negative logarithm of dissociation constant
23. Viscosity Units:
    CPS - centipoise at 25° C unless specified otherwise
    AQ - aqueous
    CST - centistokes
24. Conductivity Units: Siemens/centimeter
25. TLC: thin layer chromatography
26. HLB: Hydrophilic lipophilic balance
27. C.I.: Color index number

International Icon / Equivalent Polysciences Code



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

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

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

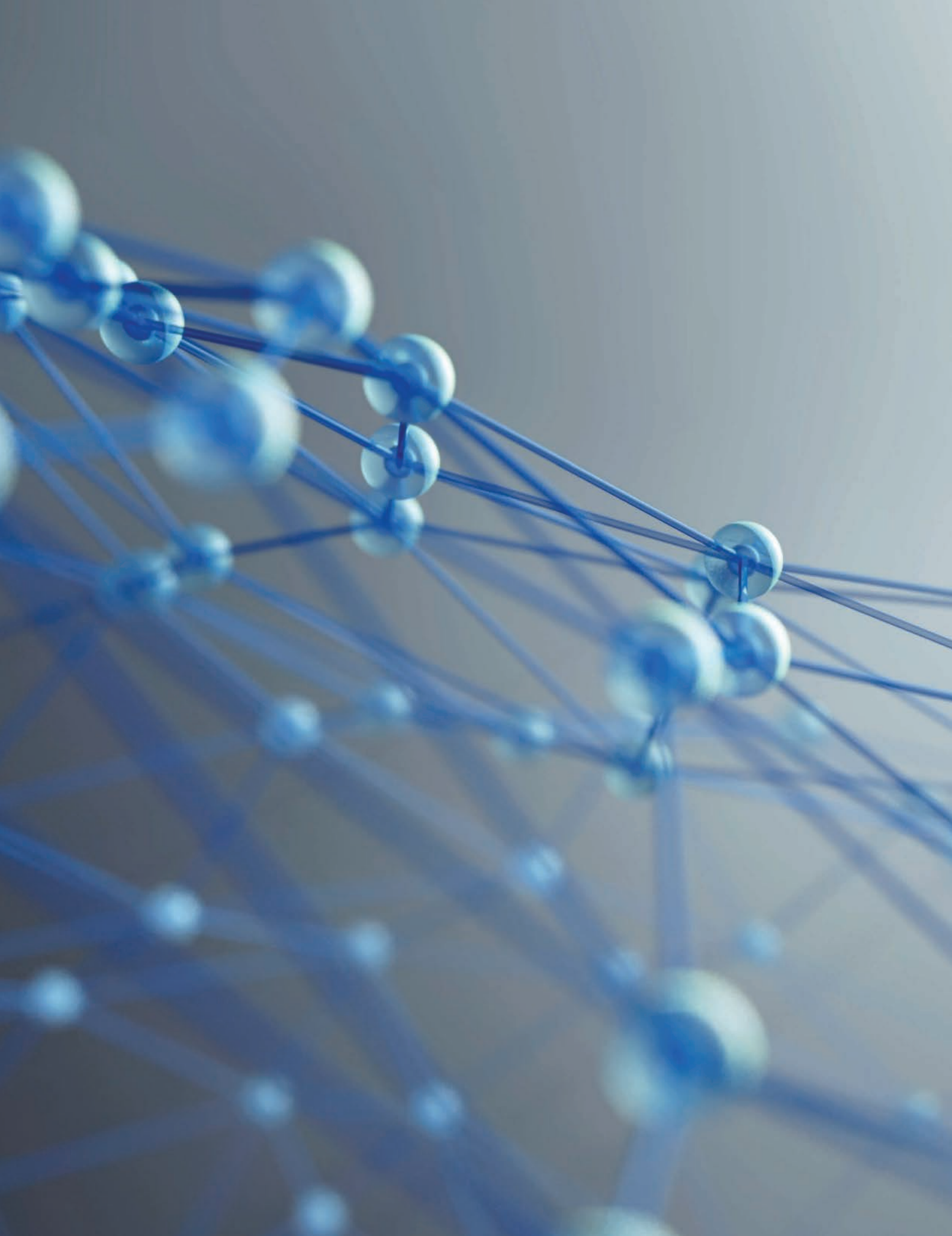


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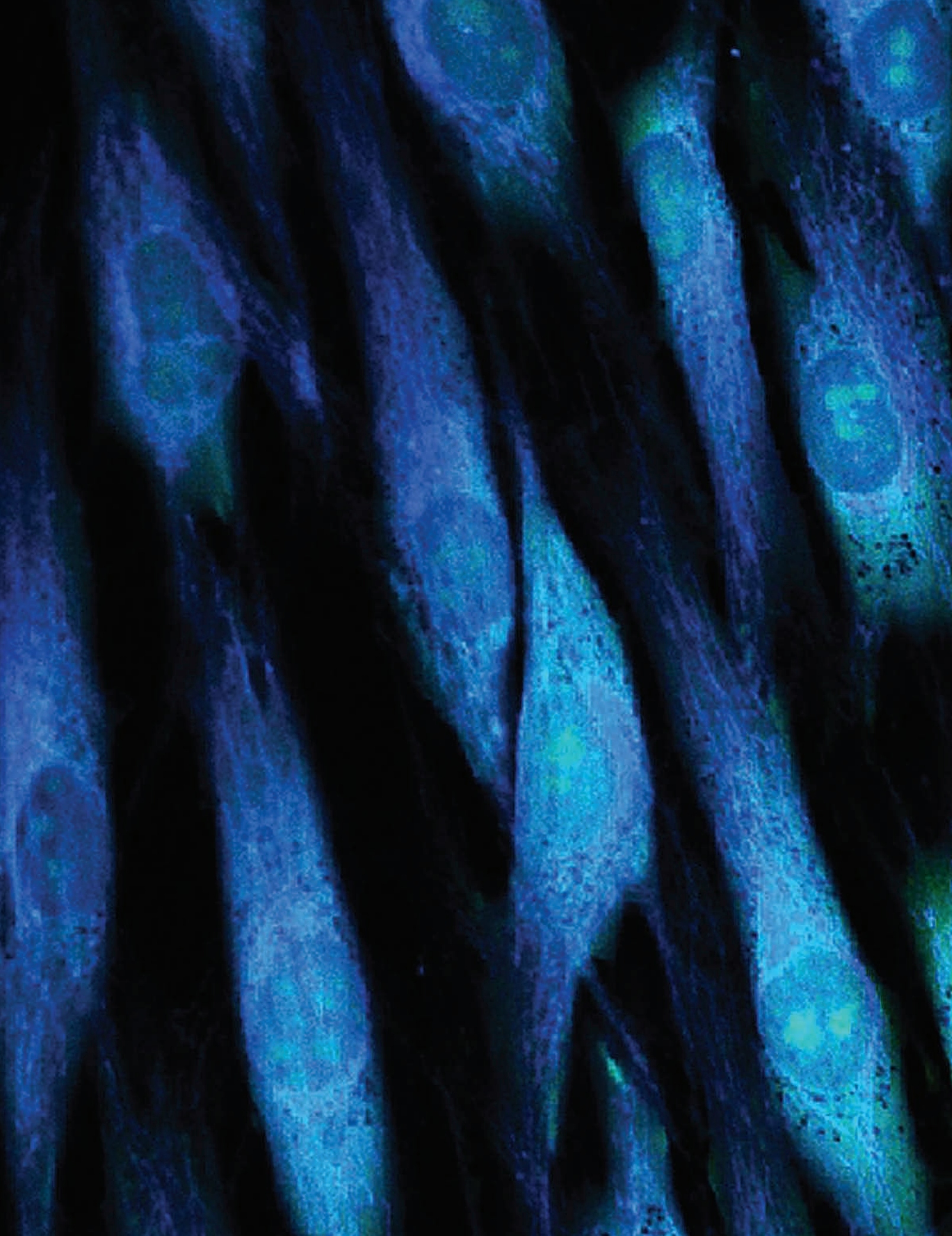
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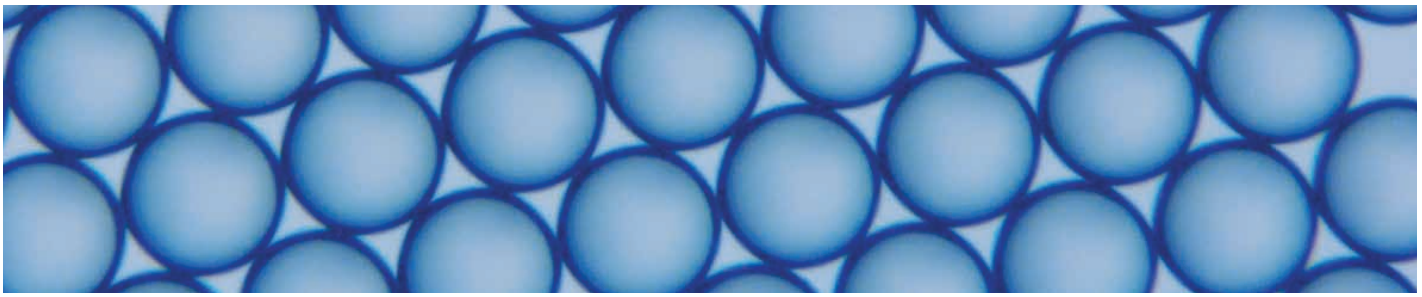




MICROSPHERES & PARTICLES

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Polymer Microspheres



POLYBEAD® MICROSPHERES

Polybead Microspheres are monodisperse polystyrene microspheres, available in 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 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

Polybead® Microspheres *A2dmw*
Technical Data Sheet 788 & 238E.

Nom. Dia.	CV%	Catalog #	Size
0.05µm	≤15	08691-10	10 ml
0.10µm	≤15	00876-15	15 ml
0.20µm	≤8	07304-15	15 ml
0.35µm	≤5	07306-15	15 ml
0.50µm	≤3	07307-15	15 ml
0.75µm	≤3	07309-15	15 ml
1.00µm	≤3	07310-15	15 ml
1.50µm	≤5	17133-15	15 ml
2.00µm	≤5	19814-15	15 ml
3.00µm	≤5	17134-15	15 ml
* 4.50µm	≤7	17135-5	5 ml
* 6.00µm	≤10	07312-5	5 ml
* 10.0µm	≤10	17136-5	5 ml
* 15.0µm	≤10	18328-5	5 ml
* 20.0µm	≤10	18329-5	5 ml
* 25.0µm	≤10	07313-5	5 ml
* 45.0µm	≤10	07314-5	5 ml
* 75.0µm	≤10	24049-5	5 ml
* 90.0µm	≤10	07315-5	5 ml

Polymer Microspheres

Polybead® Microspheres, Dry Form *A2g*

Our freeze-drying technique reduces the aggregation usually associated with dried beads. Dry material allows for the buffer of choice to be easily added.

Nom. Dia.	Catalog #	Size
1.00µm	19518-500	500 mg
1.50µm	19519-500	500 mg
3.00µm	19520-500	500 mg

Polybead® Sampler Kit I *A2dmw*

Kit Contains: 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. *Technical Data Sheets 788 & 238E.*

19822-1 — 1 kit

Polybead® Sampler Kit III *A2dmw*

Kit Contains: 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. *Technical Data Sheets 788 & 238E.*

16905-1 — 1 kit

For additional Non-functionalized Polystyrene Microspheres, see our Polyballs collection, page 270.

POLYBEAD® FUNCTIONALIZED MICROSPHERES

Our carboxylate-modified polystyrene latex microspheres are suitable for the covalent immobilization of proteins, peptides and nucleic acids.

Polybead® Carboxylate Microspheres *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.*

Nom. Dia.	CV%	Catalog #	Size
0.05µm	≤15	15913-10	10 ml
0.10µm	≤15	16688-15	15 ml
0.20µm	≤8	08216-15	15 ml
0.35µm	≤5	21753-15	15 ml
0.50µm	≤3	09836-15	15 ml
0.75µm	≤3	07759-15	15 ml
1.00µm	≤3	08226-15	15 ml
2.00µm	≤5	18327-10	10 ml
3.00µm	≤5	09850-5	5 ml
4.50µm	≤7	17140-5	5 ml
6.00µm	≤10	17141-5	5 ml
10.00µm	≤10	18133-2	2 ml
20.00µm	≤15	24811-2	2 ml

Polybead® Carboxylate Sampler Kit I *A2dmw*

Kit Contains: 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. *Technical Data Sheets 644, 1002, & 238C.*

19819-1 — 1 kit

See PolyLink Protein Coupling Kit for Carboxylate Microspheres (Cat. #24350), page 265.

Polymer Microspheres

Polybead® Amino Microspheres *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.*

Nom. Dia.	CV%	Catalog #	Size
0.10µm	≤25	16586-5	5 ml
0.20µm	≤20	15699-5	5 ml
0.50µm	≤11	07763-5	5 ml
0.75µm	≤8	17144-5	5 ml
1.00µm	≤6	17010-5	5 ml
3.00µm	≤8	17145-5	5 ml
6.00µm	≤10	19118-2	2 ml

Polybead® Amino Sampler Kit *A2dmw*

Kit Contains: 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.
Technical Data Sheets 1002 & 238D.

See Glutaraldehyde Kit for Amino and Blue Dyed Microspheres, (Cat. #19540), page 265.

Catalog #	Size
19820-1	1 kit

Polybead® Carboxy-Sulfate Microspheres *A2dmw*

Polybead Carboxy-Sulfate Microspheres are monodisperse, surfactant-free polystyrene microspheres. We manufacture these particles to have sulfate charge groups in addition to carboxyl groups. Packaged as 2.5% solids (w / v) aqueous suspensions. Nom. Dia.: 1.00µm
Technical Data Sheet 1002.

Catalog #	Size
19406-15	15 ml

Polybead® Sulfate Microspheres *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.*

Nom. Dia.	Catalog #	Size
0.20µm	19402-15	15 ml
0.50µm	19403-15	15 ml
1.00µm	19404-15	15 ml
2.00µm	19405-10	10 ml

Polybead® Hydroxylate Microspheres *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.*

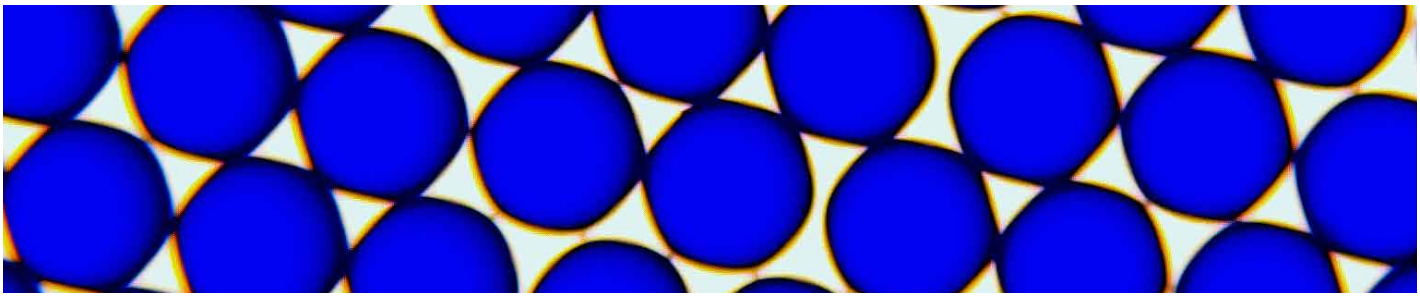
Nom. Dia.	Catalog #	Size
0.20µm	15717-15	15 ml
0.50µm	07762-15	15 ml
0.75µm	19128-15	15 ml
1.00µm	17142-15	15 ml
2.00µm	19129-10	10 ml
3.00µm	17143-5	5 ml

Polybead® Acrylate Microspheres *A2dmw*

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). Nom. Dia.: 1µm *Technical Data Sheet 1002.*

If coating is your interest, please see pages 265 - 267 for our Accessory Reagents.

Catalog #	Size
18602-15	15 ml



POLYBEAD® DYED MICROSPHERES

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 *A2dmw*

Nom. Dia.	Catalog #	Size
0.20µm	24290-15	15 ml
0.50µm	24291-15	15 ml
1.00µm	24287-15	15 ml
3.00µm	24292-15	15 ml
6.00µm	24293-5	5 ml
10.0µm	24294-2	2 ml

Polybead® Polystyrene Blue Dyed Microspheres *A2dmw*

Blue Dyed Microspheres have amine groups and can be used for covalent coupling procedures using glutaraldehyde. *Technical Data Sheets 808 & 238D.*

Nom. Dia.	Catalog #	Size
0.20µm	15706-15	15 ml
0.50µm	15709-15	15 ml
1.00µm	15712-15	15 ml
3.00µm	17138-15	15 ml
6.00µm	15715-5	5 ml
10.0µm	18138-2	2 ml

Polybead® Polystyrene Violet Dyed Microspheres *A2dmw*

Nom. Dia.	Catalog #	Size
0.50µm	24064-15	15 ml
0.80µm	24065-15	15 ml
1.00µm	18134-15	15 ml
3.00µm	18135-15	15 ml
6.00µm	18136-5	5 ml
10.0µm	18139-2	2 ml

Polymer Microspheres

Polybead® Polystyrene Red Dyed Microspheres *A2dmw*

Nom. Dia.	Catalog #	Size
0.20µm	15705-15	15 ml
0.50µm	15708-15	15 ml
1.00µm	15711-15	15 ml
3.00µm	17137-15	15 ml
6.00µm	15714-5	5 ml

Polybead® Polystyrene Yellow Dyed Microspheres *A2dmw*

Nom. Dia.		
0.20µm	15707-15	15 ml
0.50µm	15710-15	15 ml
1.00µm	15713-15	15 ml
3.00µm	17139-15	15 ml
6.00µm	15716-5	5 ml
10.0µm	18337-2	2 ml

Polybead® Blue Dyed Microsphere Sampler Kit *A2dmw*

19821-1 — 4 x 5 ml

Kit Contains: 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.

Polybead® Dyed Microsphere Kit I *A2dmw*

16906-1 — 1 kit

Kit Contains: 1ml of dyed ~1.0µm monodisperse polystyrene microspheres (2.5% solids in water) for each of these colors: red, blue, yellow, violet and unlabeled.

Polybead® Dyed Microsphere Kit II *A2dmw*

18336-1 — 1 kit

Kit Contains: 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.

Be sure to check out our Dyed Protein Coated Microspheres, page 253.

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 *A2dmw*

Nom. Dia.	Catalog #	Size
0.30µm	11975-15	15 ml
0.50µm	19816-15	15 ml
1.00µm	19120-15	15 ml
3.00µm	19123-5	5 ml
6.00µm	19126-5	5 ml

Polybead® Carboxylate Red Dyed Microspheres *A2dmw*

Nom. Dia	Catalog #	Size
0.30µm	24063-15	15 ml
0.50µm	19815-15	15 ml
1.00µm	19119-15	15 ml
3.00µm	19122-5	5 ml
6.00µm	19125-5	5 ml

Polybead® Carboxylate Orange Dyed Microspheres *A2dmw*

Nom. Dia	Catalog #	Size
0.20µm	13369-15	15 ml
1.00µm	13368-15	15 ml

Polybead® Carboxylate Yellow Dyed Microspheres *A2dmw*

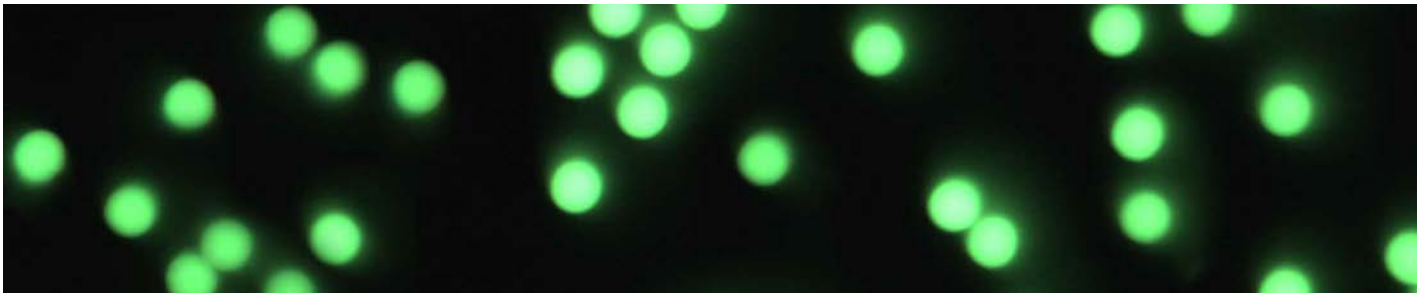
Nom. Dia	Catalog #	Size
0.50µm	19817-15	15 ml
1.00µm	19121-15	15 ml
3.00µm	19124-5	5 ml
6.00µm	19127-5	5 ml

Polybead® Carboxylate Green Dyed Microspheres *A2dmw*

Nom. Dia	Catalog #	Size
0.20µm	13371-15	15 ml
1.00µm	13370-15	15 ml

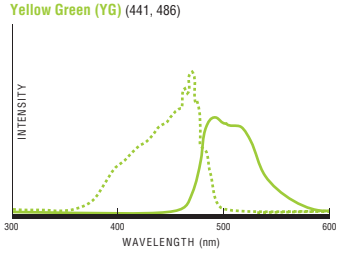
If coating is your interest, please see pages 265 - 267 for our Accessory Reagents.

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 *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.

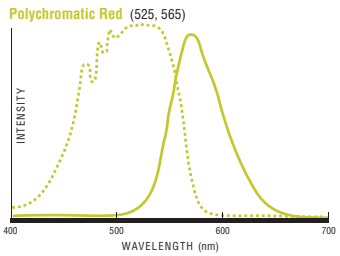
Nom. Dia.	Catalog #	Size
0.05µm	17149-10	10 ml
0.10µm	17150-10	10 ml
0.20µm	17151-10	10 ml
0.50µm	17152-10	10 ml
0.75µm	17153-10	10 ml
1.00µm	17154-10	10 ml
2.00µm	18338-5	5 ml
3.00µm	17155-2	2 ml
6.00µm	17156-2	2 ml
10.0µm	18140-2	2 ml
20.0µm	19096-2	2 ml
25.0µm	18241-2	2 ml
45.0µm	18242-2	2 ml
90.0µm	18243-2	2 ml

Fluoresbrite® Yellow Green (YG) Microspheres, Calibration Grade *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.

Nom. Dia.		
0.50µm	18859-1	1 ml
1.00µm	18860-1	1 ml
2.00µm	18604-1	1 ml
3.00µm	18861-1	1 ml
6.00µm	18862-1	1 ml

Polymer Microspheres



Fluoresbrite® Polychromatic Red Microspheres *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.

Nom. Dia.	Catalog #	Size
0.50µm	19507-5	5 ml
1.00µm	18660-5	5 ml
2.00µm	19508-2	2 ml
6.00µm	19111-2	2 ml

Fluoresbrite® Multifluorescent Microspheres *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.

Nom. Dia.	CV%	Catalog #	Size
0.20µm	5	24050-5	5 ml
0.50µm	3	24054-5	5 ml
1.00µm	3	24062-5	5 ml

Fluoresbrite® PolyFluor® Microspheres *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.

	Ex. Max (nm)	Em. Max. (nm)	Catalog #	Size
345 Microspheres, 1.0µm	285	345	24055-10	10 ml
394 Microspheres, 1.0µm	339	394	24056-10	10 ml
407 Microspheres, 1.0µm	362	407	24057-10	10 ml
497 Microspheres, 1.0µm	355	497	24058-10	10 ml
511 Microspheres, 1.0µm	470	511	24059-10	10 ml
570 Microspheres, 1.0µm	548	570	24061-10	10 ml

See page 246 for our Polybead® Dyed Microsphere Kit II, and don't forget our Fluorescence Reference Standards, page 291.

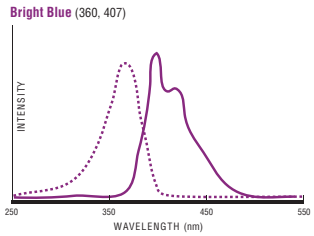
Polymer Microspheres

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.*

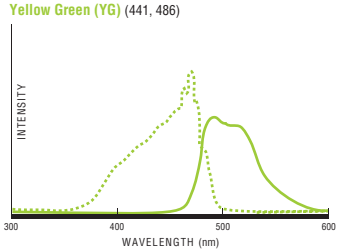
See page 265 for our PolyLink Protein Coupling Kit (Cat. #24350).

Fluoresbrite® Bright Blue (BB) Carboxylate Microspheres *A2dmw*



Nom. Dia.	Catalog #	Size
0.05µm	19773-10	10 ml
0.10µm	19774-10	10 ml
0.50µm	18339-10	10 ml
1.00µm	17458-10	10 ml
1.75µm	17686-5	5 ml
4.50µm	18340-5	5 ml
6.00µm	19102-2	2 ml
10.0µm	19103-2	2 ml

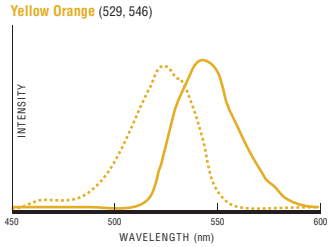
Fluoresbrite®Yellow Green (YG) Carboxylate Microspheres *A2dmw*



Nom. Dia.	Catalog #	Size
0.05µm	16661-10	10 ml
0.10µm	16662-10	10 ml
0.20µm	09834-10	10 ml
0.30µm	24051-10	10 ml
0.35µm	24052-10	10 ml
0.40µm	24053-10	10 ml
0.50µm	15700-10	10 ml
0.75µm	07766-10	10 ml
1.00µm	15702-10	10 ml
1.50µm	09719-10	10 ml
1.75µm	17687-5	5 ml
2.00µm	09847-5	5 ml
3.00µm	17147-5	5 ml
4.50µm	16592-5	5 ml
6.00µm	18141-2	2 ml
10.0µm	18142-2	2 ml

Fluoresbrite® Yellow Orange (YO) Carboxylate Microspheres *A2dmw*

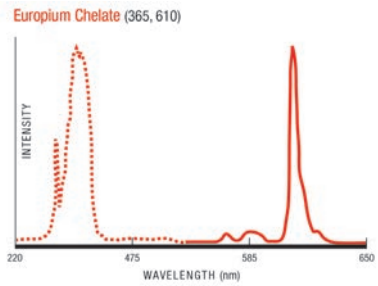
YO has limited water solubility and some leaching may occur with rigorous washing.



Nom. Dia.	Catalog #	Size
0.05µm	19775-10	10 ml
0.10µm	18719-10	10 ml
0.20µm	19391-10	10 ml
0.50µm	18720-10	10 ml
1.00µm	18449-10	10 ml
1.75µm	19392-5	5 ml
3.00µm	19393-5	5 ml
4.50µm	19394-5	5 ml
6.00µm	19395-2	2 ml

Polymer Microspheres

Fluoresbrite® Europium (Eu) Chelate Carboxylate Microspheres *A2dmw*



Polysciences offers Fluoresbrite Europium (Eu) Chelate Carboxylate Microspheres in diamaters 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.

Nom. Dia.	Catalog #	Size
0.10µm	25488-1	1 ml
	25488-5	5 ml
	25488-10	10 ml
0.20µm	25489-1	1 ml
	25489-5	5 ml
	25489-10	10 ml
0.30µm	25490-1	1 ml
	25490-5	5 ml
	25490-10	10 ml

Fluoresbrite® Europium (Eu) Chelate Carboxylate Microsphere Sampler Pack *A2dmw*

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 chemiluminence assays.

Nom. Dia.		
0.10µm, 0.20µm, 0.30µm	BLI21960	1 ml



Fluoresbrite® Carboxylate Color Range Kit II *A2dmw*

Kit Contains: 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.

19839-1 — 1 kit

Fluoresbrite® Carboxylate Size Range Kit I *A2dmw*

Polysciences' Size Range Kits allow you to evaluate which fluorescent particle size performs optimally for your specific application. These yellow green (YG) beads are economically-packaged in 1ml volumes.

Kit Contains: 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.

21636-1 — 1 kit

Fluoresbrite® Carboxylate Size Range Kit II *A2dmw*

Polysciences' Size Range Kits allow you to evaluate which fluorescent particle size performs optimally for your specific application. These yellow green (YG) beads are economically-packaged in 1ml volumes.

Kit Contains: 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.

21637-1 — 1 kit

See page 246 for our Polybead® Dyed Microsphere Kit II and page 252 for protein-conjugated versions of these products, and don't forget our Flow Cytometry Fluorescence Reference Standards, page 291.

Polymer Microspheres



PROTEIN CONJUGATED MICROSPHERES

We offer antibodies, Protein A and Protein G covalently coupled to fluorescent YG, non-fluorescent and blue dyed polystyrene microspheres. Antibody-conjugated microspheres can be used to detect and deplete trace amounts of specific antigens in solution. 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 *A2dmw*
Requires Cold Pack.
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.*

	Nom. Dia.	Catalog #	Size
Undyed Microspheres	1.0µm	24162-1	1 ml
		24162-5	5 ml
	2.0µm	24160-1	1 ml
		24160-5	5 ml
	6.0µm	24158-1	1 ml
		24158-5	5 ml
Fluoresbrite YG Microspheres	1.0µm	24161-1	1 ml
		24161-5	5 ml
	2.0µm	24159-1	1 ml
		24159-5	5 ml
	6.0µm	24157-1	1 ml
		24157-5	5 ml

Biotin Conjugated Microspheres *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.*

	Nom. Dia	Catalog #	Size
Undyed Microspheres	2.0µm	24172-1	1 ml
		24172-5	5 ml
Fluoresbrite YG Microspheres	2.0µm	24173-1	1 ml
		24173-5	5 ml

Polymer Microspheres

Protein A Microspheres *A2dmx*

Requires Cold Pack. *Technical Data Sheet 615.*

	Nom. Dia.	Catalog #	Size
Undyed Microspheres	1.0µm	17698-1	1 ml
Blue Dyed Microspheres	1.0µm	17699-1	1 ml
Fluoresbrite YG Microspheres	1.0µm	17845-1	1 ml

Protein G Microspheres *A2dmx*

Requires Cold Pack. *Technical Data Sheet 615.*

	Nom. Dia.	Catalog #	Size
Undyed Microspheres	1.0µm	21106-1	1 ml
Blue Dyed Microspheres	1.0µm	21105-1	1 ml
Fluoresbrite YG Microspheres	1.0µm	21107-1	1 ml

anti-Mouse IgG (H&L) Fluoresbrite® YG 1.0µm Microspheres *A2dmx*

Requires Cold Pack. *Technical Data Sheet 615.*

17843-1 — 1ml

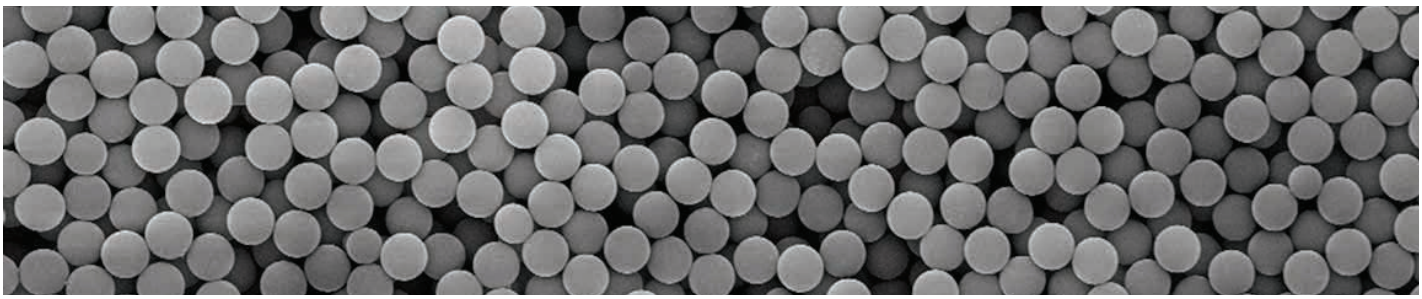
Goat anti-Rabbit IgG (H&L) Microspheres *A2dmx*

Requires Cold Pack. *Technical Data Sheet 615.*

	Nom. Dia.	Catalog #	Size
Undyed Microspheres	1.0µm	17693-1	1 ml
Blue Dyed Microspheres	1.0µm	17696-1	1 ml
Fluoresbrite YG Microspheres	1.0µm	17844-1	1 ml

Ligand coated silica microspheres are also available (page 255), as well as BioMag® (page 262) and ProMag™ (pages 258, 260) microspheres.

Silica Microspheres



Silica Microspheres, Colloidal *A2dmw*

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.*

	Nom. Dia.	% Solids	Catalog #	Size
Silica Microspheres (broad distribution, colloidal)	0.01µm	5	24298-10	10 ml
Silica Microspheres (colloidal)	0.05µm	5	24040-10	10 ml
	0.10µm	5	24041-10	10 ml

Silica Microspheres, Plain (Hydrophilic) *A2dmw*

Uniform, non-porous silica (SiO_2) microspheres are available in diameters of ~150nm - 5µm. 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.*

Nom. Dia.	% Solids	Catalog #	Size
0.15µm	10	24320-15	15 ml
0.3µm	10	24321-15	15 ml
0.4µm	10	24322-15	15 ml
0.5µm	10	24323-15	15 ml
0.7µm	10	24324-15	15 ml
0.9µm	10	24325-15	15 ml
1.0µm	10	24326-15	15 ml
1.5µm	10	24327-15	15 ml
2.0µm	10	24328-15	15 ml
2.5µm	10	24329-15	15 ml
3.0µm	10	24330-15	15 ml
4.0µm	10	24331-15	15 ml
5.0µm	10	24332-15	15 ml

Silica Microspheres, Dry *A2g*

Monodisperse silica microspheres in dry form. Available in nominal diameters ranging from: 0.3 - 6.0µm. *Technical Data Sheet 635.*

Nom. Dia.	Catalog #	Size
0.3µm	25341-1.5	1.5 g
0.5µm	25342-1.5	1.5 g
1.0µm	25343-1.5	1.5 g
1.5µm	25344-1.5	1.5 g
2.5µm	25345-1.5	1.5 g
3.0µm	25346-1.5	1.5 g
4.0µm	25347-1.5	1.5 g
5.0µm	25348-1.5	1.5 g

Silica Microspheres

Silica Microspheres, Amine *A2g*

Amine functionalized, 100% solids. Available with nominal diameters from 0.5 - 5.0µm to allow the researcher to tailor his / her product design for specific assays. *Technical Data Sheet 635.*

Nom. Dia.	Catalog #	Size
0.5µm	24756-1	1 g
1.0µm	24757-1	1 g
5.0µm	24758-1	1 g

Silica Microspheres, Carboxyl *A2g*

Carboxylic Acid functionalized, 100% solids. Available with nominal diameters from 0.5 - 5.0µm to allow the researcher to tailor his / her product design for specific assays. *Technical Data Sheet 635.*

Nom. Dia.	Catalog #	Size
0.5µm	24753-1	1 g
1.0µm	24754-1	1 g
5.0µm	24755-1	1 g

Silica Microspheres, Streptavidin *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 - 5.0µm. Requires Cold Pack. *Technical Data Sheet 635.*

Nom. Dia.	Catalog #	Size
0.5µm	24759-2	2 ml
1.0µm	24760-2	2 ml
5.0µm	24761-2	2 ml

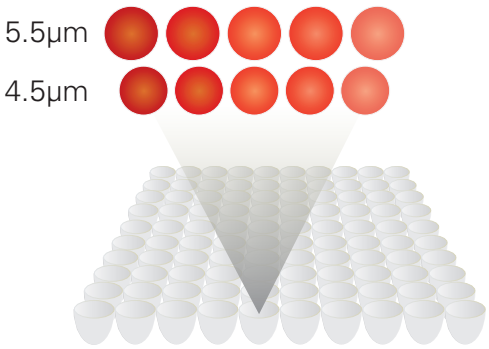
Please see page 273 for our selection of Glass Beads.

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 two different surfaces to accommodate the coating strategy of choice: carboxyl or streptavidin. *Technical Data Sheets PDS 215 and PDS 235.*

QuantumPlex™ *A2dmw*



	Nom. Dia	Data Points	Catalog #	Size
Carboxyl (5 dye intensities)	4.4µm	100	BLI235A-1	5 x 1 ml
	4.4µm	500	BLI235B-5	5 x 5 ml
	4.4µm	1000	BLI235C-10	5 x 10 ml
	5.5µm	100	BLI238A-1	5 x 1 ml
	5.5µm	500	BLI238B-5	5 x 5 ml
	5.5µm	1000	BLI238C-10	5 x 10 ml
Carboxyl (2 x 5 dye intensities)	4.4 & 5.5µm	200	BLI239A-2	10 x 1 ml
	4.4 & 5.5µm	1000	BLI239B-10	10 x 5 ml
	4.4 & 5.5µm	2000	BLI239C-20	10 x 10 ml
Streptavidin (5 dye intensities)	4.4µm	100	BLI215A-1	5 x 1 ml
	4.4µm	500	BLI215B-5	5 x 5 ml
	4.4µm	1000	BLI215C-10	5 x 10 ml
	5.5µm	100	BLI218A-1	5 x 1 ml
	5.5µm	500	BLI218B-5	5 x 5 ml
	5.5µm	1000	BLI218C-10	5 x 10 ml
Streptavidin (2 x 5 dye intensities)	4.4 & 5.5µm	200	BLI219A-2	10 x 1 ml
	4.4 & 5.5µm	1000	BLI219B-10	10 x 5 ml
	4.4 & 5.5µm	2000	BLI219C-20	10 x 10 ml

QuantumPlex™ SP *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. *Technical Data Sheets PDS 214 and PDS 234.*

	Nom. Dia.	Catalog #	Size
Carboxyl	4.4µm	BLI234A-1	1 ml
	4.4µm	BLI234B-3	3 ml
	5.5µm	BLI237A-1	1 ml
	5.5µm	BLI237B-3	3 ml
Streptavidin	4.4µm	BLI214A-1	1 ml
	4.4µm	BLI214B-3	3 ml
	5.5µm	BLI217A-1	1 ml
	5.5µm	BLI217B-3	3 ml

QuantumPlex™ Multiplexing Platforms

QuantumPlex™M *A2dmw*

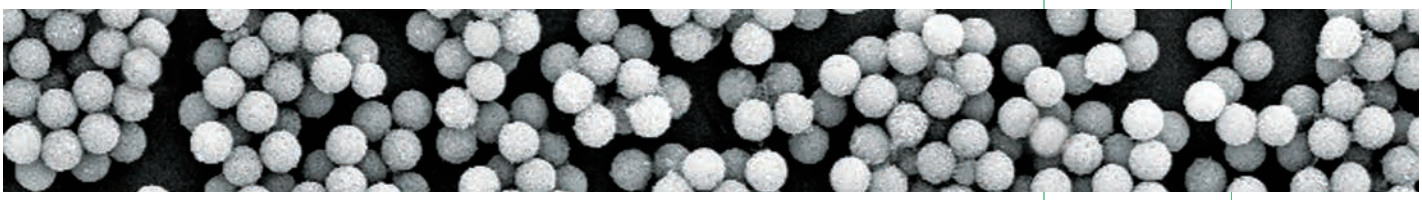
QuantumPlexM is an innovative magnetic bead kit for multiple analyte detection research applications in flow cytometry. QuantumPlexM results in flexible, efficient and cost-effective research. The carboxyl populations are at a concentration of ~1 x 10^8 beads/ml, while the streptavidin populations are at a concentration of ~1 x 10^6 beads/ml. *Technical Data Sheets PDS 250 and PDS 252.*

	Nom. Dia.	Catalog #	Size
Carboxyl (5 dye intensities)	~6µm Magnetic	BLI250A-1	5 x 1 ml
	~6µm Magnetic	BLI250B-5	5 x 5 ml
	~6µm Magnetic	BLI250C-10	5 x 10 ml
Streptavidin (5 dye intensities)	~6µm Magnetic	BLI252A-1	5 x 1 ml
	~6µm Magnetic	BLI252B-5	5 x 5 ml
	~6µm Magnetic	BLI252C-10	5 x 10 ml

QuantumPlex™M SP *A2dmw*

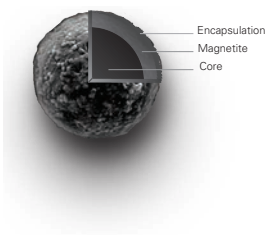
QuantumPlexM is also available as a Single Population. *Technical Data Sheets PDS 251 and PDS 253.*

	Nom. Dia.		
Carboxyl	~6µm Magnetic	BLI251A-1	1 ml
	~6µm Magnetic	BLI251B-3	3 ml
Streptavidin	~6µm Magnetic	BLI253A-1	1 ml
	~6µm Magnetic	BLI253B-3	3 ml



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.

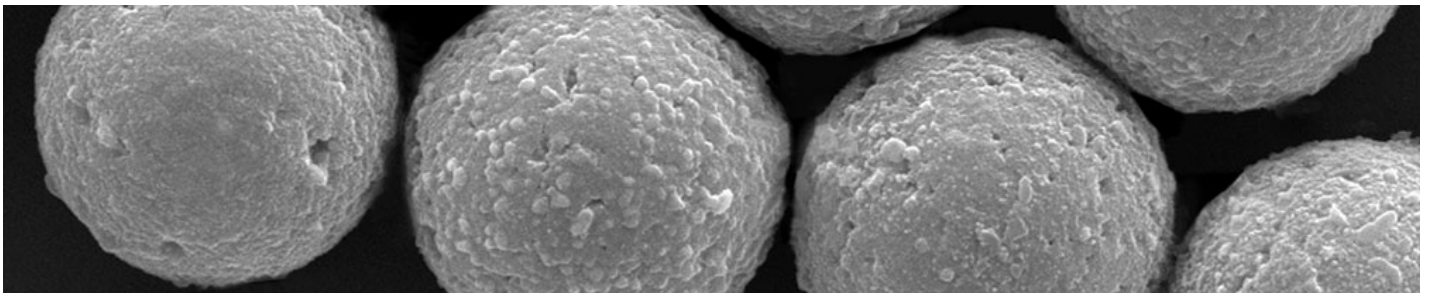


Magnefy™ *A2dmw*

Magnefy are ~1µm carboxylated superparamagnetic microspheres. With high surface area / high surface titer microparticles and a rapid separation profile, Magnefy offer an additional performance-driven solid phase for magnetic particle-based assays and isolations. Contact us today to explore using Magnefy as your OEM SPRI bead.

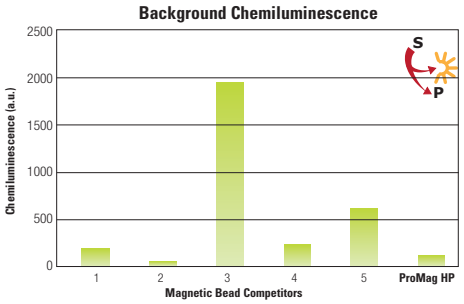
Nom. Dia.	% Solids		
1µm	5	26410-5	5 ml
1µm	5	26410-10	10 ml
1µm	5	26410-25	25 ml
1µm	5	26410-100	100 ml

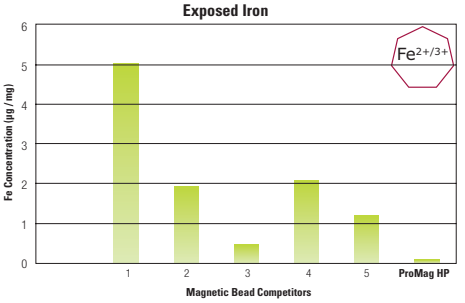
Magnetic Microspheres and Particles



ProMag® HP

ProMag High Performance (HP are a new generation of 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*.





ProMag® HP Carboxyl *A2dmw*

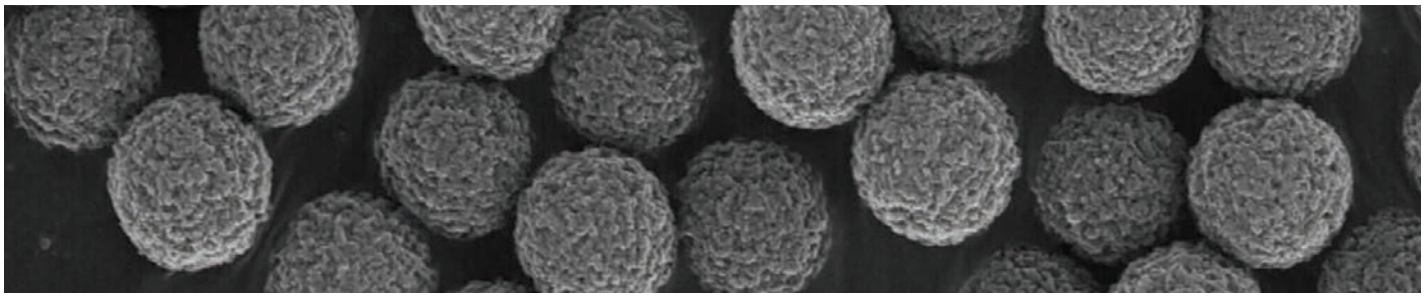
Nom. Dia.	% Solids	Catalog #	Size
3µm	2.5	25509-5	5 ml
3µm	2.5	25509-25	25 ml

ProMag® HP Streptavidin *A2dmw*

Requires Cold Pack.

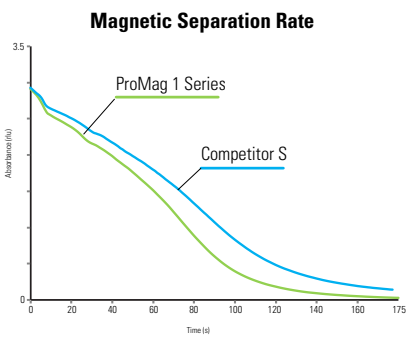
Nom. Dia.	% Solids	Catalog #	Size
3µm	1	25508-1	1 ml
3µm	1	25508-2	2 ml
3µm	1	25508-5	5 ml
3µm	1	25508-10	10ml

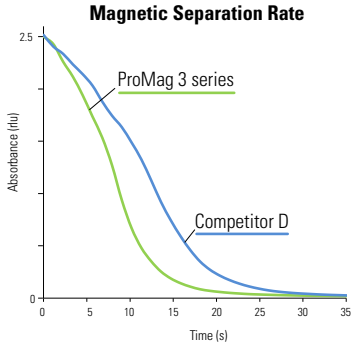
Magnetic Microspheres and Particles



ProMag®

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.*





ProMag® Carboxyl Surfactant-Free *A2dmw*

	Nom. Dia	% Solids	Catalog #	Size
1 Series	1µm	2.5	25029-5	5 ml
	1µm	2.5	25029-25	25 ml
3 Series	3µm	2.5	86055-5	5 ml
	3µm	2.5	86055-25	25 ml

ProMag® Amine *A2dmw*

	Nom. Dia	% Solids	Catalog #	Size
1 Series	1µm	2.5	25511-5	5 ml
	1µm	2.5	25511-25	25 ml
3 Series	3µm	2.5	25510-5	5 ml
	3µm	2.5	25510-25	25 ml

Magnetic Microspheres and Particles

ProMag® Streptavidin Microspheres *A2dmw*

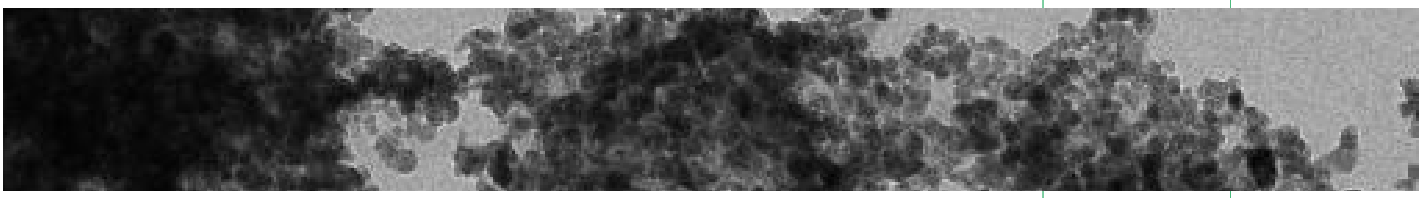
Requires Cold Pack.

	Nom. Dia	% Solids	Catalog #	Size
1 Series	1µm	1	25031-1	1 ml
	1µm	1	25031-2	2 ml
	1µm	1	25031-5	5 ml
	1µm	1	25031-10	10 ml
3 Series	3µm	1	86056-1	1 ml
	3µm	1	86056-2	2 ml
	3µm	1	86056-5	5 ml
	3µm	1	86056-10	10 ml

ProMag® Protein G *A2dmwx*

Requires Cold Pack.

	Nom. Dia	% Solids	Catalog #	Size
3 Series	3µm	1	25512-1	1 ml
	3µm	1	25512-2	2 ml
	3µm	1	25512-5	5 ml
	3µm	1	25512-10	10 ml



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 *A2mw*

84001K-1 | 1 kit

The BioMag Magnetic Immobilization Kit works with our BioMag Amine particles to conjugate your proteins to magnetic amine particles.

Kit Contains: Unconjugated BioMag Amine particles(Cat. #84100), BioMag Flask Separator (Cat. #84101S) and ultrapure glutaraldehyde for conjugating your protein.

Magnetic Microspheres and Particles

BioMag® Amine *A2dmw*

Concentration	Stoichiometry	Catalog #	Size
50 mg/ml	240 µmol/g	84100-10	10 ml
50 mg/ml	240 µmol/g	84100-100	100 ml

BioMag® Plus Amine *A2dmw*
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. Provided as a suspension at 50 mg/ml. *Technical Data Sheet 617.*

86001-10 — 10 ml

BioMag® Plus Amine Protein Coupling Kit *HOV6d*
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.

Kit Contains: 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. *Technical Data Sheet 617.*

86000-1 — 1 kit

BioMag® Carboxyl *A2dmw*

Concentration	Stoichiometry	Catalog #	Size
20 mg/ml	240 µmol/g	84125-10	10 ml
20 mg/ml	240 µmol/g	84125-100	100 ml

BioMag® Plus Carboxyl *A2dmw*
BioMag Plus Carboxyl superparamagnetic particles are provided for the covalent attachment of proteins using carbodiimide (EDAC method). Provided as a suspension at 20 mg/ml. *Technical Data Sheet 618.*

86011-10 — 10 ml

BioMag® Plus Carboxyl Protein Coupling Kit *HO6bd*
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.

Kit Contains: 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.
Technical Data Sheet 618.

86010-1 — 1 kit

Magnetic Microspheres and Particles

BioMag® Maxi, ~6µm *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, especially in viscous solutions. *Technical Data Sheet #722.*

	Concentration	Catalog #	Size
Amine	50 mg/ml	84140-10	10 ml
Carboxyl	20 mg/ml	84130-10	10 ml

BIOMAG® BINDING PROTEINS

BioMag® Streptavidin *A2dmw*

Requires Cold Pack.

Concentration	Catalog #	Size
5 mg/ml	84660-5	5 ml
5 mg/ml	84660-50	50 ml

BioMag® Plus Streptavidin *A2dmw*

Requires Cold Pack.

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.*

86031-10 — 10 ml

BioMag® Plus Streptavidin / Biotin Binding Starter Kit *A2dmw*

Requires Cold Pack.

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.

Kit Contains: 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.

Technical Data Sheet #621

86030-1 — 1 kit

BioMag® Streptavidin, Nuclease-Free *A2dmw*

Requires Cold Pack.

BioMag Streptavidin, Nuclease-Free is a suspension of BioMag Streptavidin particles for immobilizing biotinylated nucleic acids.

Catalog #	Size
8MB4804-10	10 ml
8MB4804-25	25 ml
8MB4804-1	100 ml

BioMag® Biotin *A2dmw*

Requires Cold Pack.

Concentration	Catalog #	Size
5 mg/ml	84640-5	5 ml

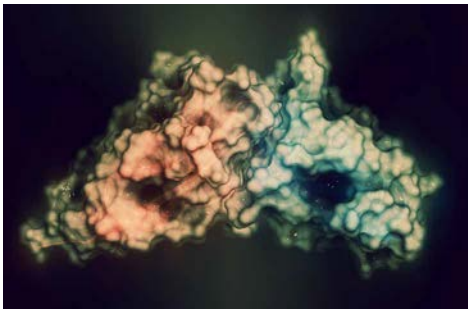
Magnetic Microspheres and Particles

BioMag® Proteins A & G *A2dm*

Requires Cold Pack.

	Concentration	Catalog #	Size
Protein A	5 mg/ml	84600-2	2 ml
	5 mg/ml	84600-10	10 ml
Protein G	5 mg/ml	84605-2	2 ml
	5 mg/ml	84605-10	10 ml

BIOMAG® LECTINS



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 *A2dmw*

Requires Cold Pack.

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. *Technical Data Sheet 766.*

Catalog #	Size
86057-3	3 ml
86057-10	10 ml

BioMag®Plus Wheat Germ Agglutinin *A2dmw*

Requires Cold Pack.

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.*

Catalog #	Size
86054-3	3 ml
86054-10	10 ml

Magnetic Microspheres and Particles

BIOMAG® SECONDARY ANTIBODY PARTICLES

BioMag® Secondary Antibody Particles *A2dmw*
Requires Cold Pack.

	Concentration	Binding Capacity	Catalog #	Size
Goat anti-Human IgG	1 mg/ml	>0.10 mg/ml	84320-50	50 ml
Goat anti-Human IgG (Fc Specific)	5 mg/ml	>0.20 mg/ml	84324-50	50 ml
Goat anti-Human IgM	1 mg/ml	>0.15 mg/ml	84325-50	50 ml
Goat anti-Mouse IgG	1 mg/ml	>0.20 mg/ml	84340-50	50 ml
	1 mg/ml	>0.20 mg/ml	84340-500	500 ml
Goat anti-Mouse IgG (Fc Specific)	5 mg/ml	>0.15 mg/ml	84344-50	50 ml
	5 mg/ml	>0.15 mg/ml	84344-500	500 ml
Goat anti-Mouse IgM	1 mg/ml	>0.20 mg/ml	84350-50	50 ml
	1 mg/ml	>0.20 mg/ml	84350-500	500 ml
Goat anti-Rabbit IgG	1 mg/ml	>0.20 mg/ml	84300-50	50 ml
	1 mg/ml	>0.20 mg/ml	84300-500	500 ml
Goat anti-Rat IgG	1 mg/ml	>0.15 mg/ml	84330-50	50 ml
	1 mg/ml	>0.15 mg/ml	84330-500	500 ml
Goat anti-Rat IgG (Fc Specific)	5 mg/ml	>0.20 mg/ml	84334-50	50 ml
	5 mg/ml	>0.20 mg/ml	84334-500	500 ml
Goat anti-Rat IgM	5 mg/ml	>0.10 mg/ml	84335-50	50 ml
	5 mg/ml	>0.10 mg/ml	84335-500	500 ml

BIOMAG®PLUS SECONDARY ANTIBODY PARTICLES & KITS

BioMag® Plus Goat anti-Mouse IgG Secondary Antibody Particles *A2dmw* — 86021-50 — 50 ml
Requires Cold Pack.
Concentration: 1 mg/ml Binding Capacity: >0.20 mg/ml *Technical Data Sheet 619*.

BioMag® Plus Goat anti-Mouse IgG Particle Antibody Coupling Starter Kit *A2dmw* — 86020-1 — 1 kit
Requires Cold Pack.
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.
Kit Contains: 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). *Technical Data Sheet #619*.

BIOMAG® DEXTRAN-COATED CHARCOAL

BioMag® Dextran-coated Charcoal *A2dmw*

	Concentration	Catalog #	Size
Charcoal	5 mg/ml	84510-100	100 ml
Charcoal Concentrate	50 mg/ml	84555-1	1000 ml

BIOMAG® SUPERPARAMAGNETIC IRON OXIDE

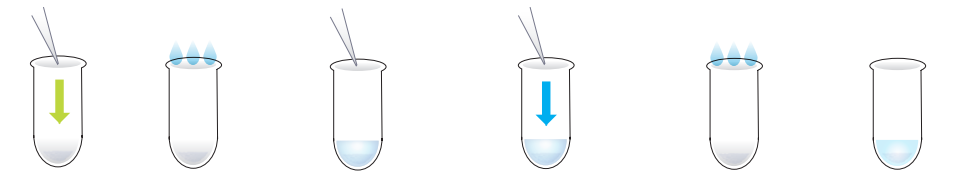
BioMag® Superparamagnetic Iron Oxide, ~10µm *A2dmw* — 84200-10 — 10 ml

This is a suspension of iron oxide magnetic particles approximately 10µm in size. Suspension is supplied in deionized water. Magnetization: 25 - 35 EMU / gram (EMU=electromagnetic units) measured at a field of 1000 gauss. Concentration: 50mg/ml.

Please see page 273 for our other magnetic iron powder & iron oxide particles.

Accessory Reagents & Companion Products

PROTEIN COUPLING KITS



PolyLink Protein Coupling Kit *HO6bf* — 24350-1 — 1 kit

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 1µm or larger.

Kit Contains: 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. *No beads are included in this kit. Technical Data Sheet 644.*

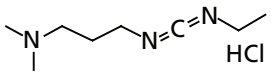
Glutaraldehyde Kit for Amino Beads & Blue Dyed Beads *BIX7dw* — 19540-1 — 1 kit

This kit contains 3 x 225ml Phosphate Buffered Saline, 2 x 10ml ampoules 25% EM Grade Glutaraldehyde, 60ml 0.2M Ethanolamine in Phosphate Buffered Saline, 60ml Bovine Serum Albumin solution, 60ml Storage Buffer and a labeled mixing and storage bottle. *No beads are included in this kit. Technical Data Sheets 238G and 410.*

Accessory Reagents & Companion Products

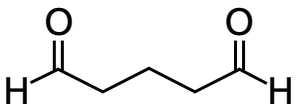


MICROSPHERE COATING REAGENTS



DEPC-Carbodiimide (EDAC) *HO6bfn*
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.*

Catalog #	Size
BLI5288-1	1 g
BLI5288-5	5 g



Glutaraldehyde, EM Grade, 25% [111-30-8] *HOV6d*
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.*

Catalog #	Size
BLI1909-10	10 x 10 ml

BUFFERS & SOLUTIONS

Bead Solution *Ad*
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.*

Catalog #	Size
24973-500	500 ml
24973-1000	1000 ml
24973-2000	2000 ml

Accessory Reagents & Companion Products

Bead Coupling & Storage Buffers *Ad*

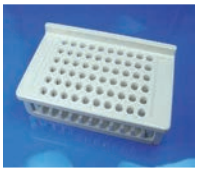
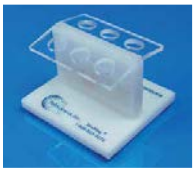
Polysciences' Bead Coupling and Storage Buffers are ready-to-use buffers that are available in a variety of pH levels (4.5 to 9.0). They can be used as coupling or wash buffers for plain, dyed or functionalized polymer microspheres. *Technical Data Sheet 794.*

	pH Level	Catalog #	Size
Coupling Buffer	4.5	24976-250	250 ml
	4.5	24976-500	500 ml
	4.5	24976-1000	1000 ml
	4.5	24976-2000	2000 ml
	6.0	24977-250	250 ml
	6.0	24977-500	500 ml
	6.0	24977-1000	1000 ml
	6.0	24977-2000	2000 ml
	7.4	24974-250	250 ml
	7.4	24974-500	500 ml
	7.4	24974-1000	1000 ml
	7.4	24974-2000	2000 ml
	9.0	24978-250	250 ml
	9.0	24978-500	500 ml
	9.0	24978-1000	1000 ml
	9.0	24978-2000	2000 ml
Storage Buffer	7.4	24979-250	250 ml
	7.4	24979-500	500 ml
	7.4	24979-1000	1000 ml
	7.4	24979-2000	2000 ml
	8.5	24975-250	250 ml
	8.5	24975-500	500 ml
	8.5	24975-1000	1000 ml
	8.5	24975-2000	2000 ml

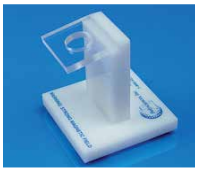
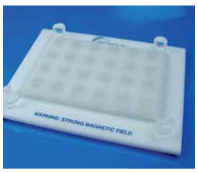
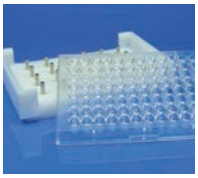
SURFACTANTS

	Catalog #	Size
Triton® X-100 Nonionic Surfactant *HV5g* A nonionic surfactant, Triton® X-100 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.*	BLI4605-10	10 g
Tween® 20 Nonionic Surfactant *A2g* 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.*	BLI6110-10	10 g
Sodium Dodecyl Sulfate (SDS) Anionic Surfactant 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.*	BLI3945-10	10 g

Magnetic Separators

	Catalog #	Size
 **BioMag® 12 x 75mm Test Tube Separator** 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.*	84104S-1	1 unit
 **BioMag®15ml / 50ml Tube Separator** The 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.*	84102S-1	1 unit
 **BioMag® Flask Separator** 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.*	84101S-1	1 unit
 **BioMag® MultiSep Magnetic Separator** 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.*	85200-1	1 unit
 **BioMag® Multi-6 Microcentrifuge Tube Separator** This separator holds six 1.5ml microcentrifuge tubes for separations of 20 - 500µl. *Technical Data Sheets 576 and 796.*	8MB4111S-1	1 unit
 **BioMag® Multi-32 Microcentrifuge Tube Separator** 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.*	84106S-1	1 unit

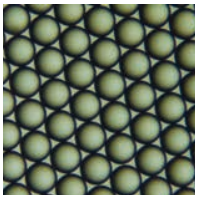
Magnetic Separators

	Catalog #	Size
 **BioMag® Solo-Sep Microcentrifuge Tube Separator** The BioMag Solo-Sep Microcentrifuge Tube Separator holds one 1.5ml microcentrifuge tube for molecular biology separations of 20 - 500µl. *Technical Data Sheets 577 and 796.*	8MB4112S-1	1 unit
 **BioMag® 96-Well Plate Separator** 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.*	8MB4109S-1	1 unit
 **BioMag® 96-Well Plate Side Pull Magnetic Separator** 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.*	85072S-1	1 unit
Neodymium Iron Magnet This rare earth magnet is a Neodymium-Iron-Boron (NdFeB) block magnet. It measures 1" square and 0.5" thick.	19772-1	1 unit

OTHER EQUIPMENT

 **Vivaspin® Ultrafiltration Device** Vivaspin Concentrators are disposable ultrafiltration devices that may be utilized for the washing and concentration of submicron (20 nm - 0.5 µm) microspheres. *PDS AA022.*	BLIAA022-5	5 Units

Additional Microspheres



Poly(Lactic Acid-co-Glycolic Acid) Uniform Dry Microspheres *HK5cd*

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.

Catalog #	Size
Contact us.	

Polystyrene Beads, Large *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.*

Size Range		
106 - 125µm	19824-1	1 g
200 - 300µm	19825-1	1 g
355 - 425µm	19826-1	1 g
500 - 600µm	21392-1	1 g

Polyballs *A2g*

Uniform spheres with a smooth surface unless noted otherwise. *Technical Data Sheet 404.*

	Density		
Polyamide 6/6 (Nylon), 1/16" Diameter	~1.19 g/cc	08295-100	100 balls
Polyethylene, 3/8" Diameter, Hollow	~0.53 g/cc	19529-100	100 balls
Polypropylene, 1/4" Diameter	~0.92 g/cc	16026-100	100 balls
Polystyrene, 1/8" Diameter, Etched Surface	~1.05 g/cc	17175-100	100 balls
Polystyrene, 1/8" Diameter, for Biological Applications	~1.05 g/cc	18547-100	100 balls
Polystyrene, 1/4" Diameter	~1.05 g/cc	19827-100	100 balls
Polystyrene, 1/4" Diameter, Etched Surface	~1.05 g/cc	16730-100	100 balls
	~1.05 g/cc	16730-500	500 balls
Polystyrene, 1/4" Diameter, for Biological Applications	~1.05 g/cc	18548-100	100 balls
Teflon, 1/8" Diameter	~2.14 g/cc, chemically resistant	17649-100	100 balls
Teflon, 1/4" Diameter	~2.14 g/cc, chemically resistant	17650-100	100 balls

Polyballs, Modified *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.*

	Density		
Polystyrene 1/8" Diameter, Carboxylate	~1.05 g/cc	19841-50	50 balls
Polystyrene 1/4" Diameter, Carboxylate	~1.05 g/cc	19840-50	50 balls
Polystyrene 1/4" Diameter, Blue Dyed	~1.05 g/cc	19842-50	50 balls

Additional Microspheres

Polybead® Hollow Microspheres *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% solids aqueous suspension, and the water-filled particle will have an effective density near 1.0 g/cm^3. 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.*

Nom. Dia.	Catalog #	Size
0.40µm	23567-10	10 ml
0.55µm	23568-10	10 ml
1.00µm	23569-10	10 ml

Polybead® Poly(methyl methacrylate) Microspheres *A2dm*

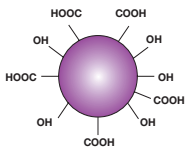
Poly(methyl methacrylate) or PMMA is less hydrophobic than polystyrene and should show reduced nonspecific protein and peptide binding. The density of these beads, 1.19 g/cc, is considerably higher than that of polystyrene beads, making them easier to concentrate by centrifugation. The beads are not free of surfactant and contain surface carboxylic acid groups at higher concentration than the standard Polybead Polystyrene Carboxylate Microspheres. *Technical Data Sheet 1001.*

	Size Range	% Solids	Catalog #	Size
Monodisperse	0.30 µm	2.5	12083-10	10 ml
Broad Distribution	1 - 10 µm	5	19130-10	10 ml
PMMA Anionic Surfactant	0.08 - 0.09 µm	5	23570-10	10 ml

Polybead® Crosslinked Melamine Particles *A2dm*

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. Supplied as a suspension of 2.5% solids in water. Nom. Dia.: 1µm *Technical Data Sheet 920.*

23579-5 — 5 ml



DispersEZ-300 [9002-84-0] *H4g*

A novel patented class of polytetrafluoroethylene particles, our unique DispersEZ particles have chemically treated surfaces to orient stabilizing polar moieties (both hydroxyl and carboxylic acid groups) to the exterior of the particle. These molecules, which are chemically grafted to the PTFE surface, allow the particles to disperse easily in both aqueous and solvent media without the need for added surfactants or stabilizers. The carboxyl and hydroxyl moieties on the surface of the DispersEZ particles act as synthetic handles to which a variety of chemical species can be attached. *Technical Data Sheet 1000.*

Mean Particle Size	Surface Area	Surfactant Demand	Surface Reactivity	Catalog #	Size
200 - 300nm	8m^2/g (BET surface area measurement)	None (self-stabilized added surfactant)	High (concentration of accessible reactive sites versus traditional PTFE beads)	24339-50	50 g

Additional Microspheres

Microdispers [9002-84-0] *H4g*

Microdispers are polytetrafluoroethylene (PTFE) particles provided in dry powder form. These particles require far less added dispersant than traditional PTFE particles to form stable dispersions, and are useful for many applications including coatings, gloss reducers and coating additives that impact water pickup or surface energy. With good powder flow properties, these particles are easily compounded in a number of thermoplastic matrices with appropriate heat / shear mixing. *Technical Data Sheet 1000.*

Mean Particle Size	Catalog #	Size
200 - 300nm	24333-100	100 g
3000nm (<10% of particle size distribution is above 10µm)	24334-100	100 g
8000nm	24336-100	100 g

Phenolic Beads, Hollow

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.*

17806-100 | 100 g

Poly(ethyl methacrylate) Beads [9003-42-3] *A2g*

MW 50,000 Tg 65ºC TSCA

These Poly(ethyl methacrylate) Beads are made of a tough methacrylate resin and are available in a size range of 140 - 220µm. *Technical Data Sheet 920.*

03197-250 | 250 g

Polypropylene, Chromatographic Grade [9003-07-0] *A2g*

TSCA $[-CH_2CH(CH_3)-]_n$

Widely used polyolefin and soluble in chlorinated hydrocarbons, aromatic hydrocarbons and isoamyl acetate. *Technical Data Sheet 920.*

	Size Range	Catalog #	Size
Chromatographic Grade 25 - 85µm, mp 165°, Tg -13°	25 - 85µm	04342-100	100 g
Chromatographic Grade 150µm	150µm	06068-100	100 g

Poly(styrene / divinyl benzene) [9003-70-7] *A2g*

These beads are used for preparation of crosslinked poly(chloromethylstyrene) Merrifield resins and other functionalized beads. 200-400 mesh TSCA *Technical Data Sheet 920.*

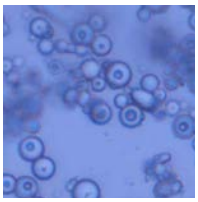
Ratio	Catalog #	Size
98:2	16724-100	100 g

Poly(tetrafluoroethylene) [9002-84-0] *A2g*

This inert polymer has a nominal 35µm diameter (Teflon® 7A). *Technical Data Sheet 920.*

08816-100 | 100 g

GLASS BEADS



Glass Beads *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^3. Glass beads are supplied dry. *Technical Data Sheets 758 and 857.*

Size Range	Catalog #	Size
3 - 10µm	07666-1	1 g
10 - 30µm	07668-1	1 g
30 - 50µm	18901-100	100 g
50 - 100µm	15926-100	100 g
105 - 150µm	15927-100	100 g
150 - 210µm	05483-250	250 g
210 - 250µm	18902-100	100 g
250 - 300µm	18903-100	100 g
355 - 420µm	18905-100	100 g
420 - 500µm	18906-100	100 g
500 - 850µm	17596-250	250 g

Glass Beads, Hollow *A2g*

Our hollow glass beads offer the strength and stability of glass at 1.1 g/cc nominal density. Size Range: 2 - 20µm. *Technical Data Sheet 744.*

19823-5 — 5 g

Glass Beads, Functionalized *H3g*

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.*

	Size Range	Catalog #	Size
Amine	30 - 50µm	23584-10	10 g
Glycidyl	30 - 50µm	23585-10	10 g

IRON OXIDE PARTICLES

Red Iron Oxide Particles *A2g*

Nom. Diameters, 0.3 - 0.8µm. *Technical Data Sheet #607.*

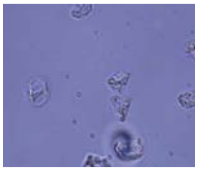
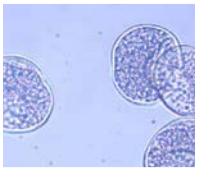
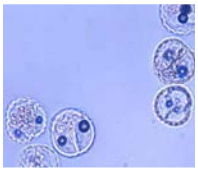
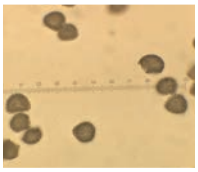
07674-1 — 1 g

Spherical Ferromagnetic Iron Powder *H2bg*

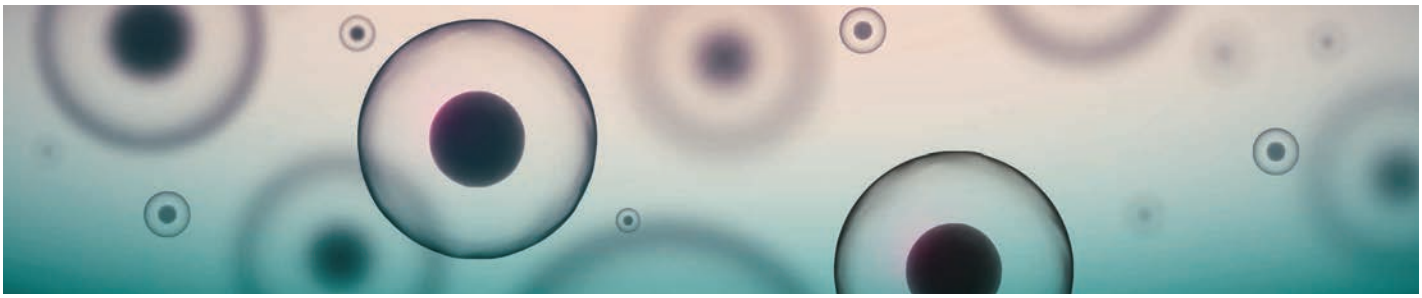
~2 - 3µm. *Technical Data Sheet 604.*

19844-1 — 1 g

Additional Microspheres

BIOLOGIC PARTICLES	Catalog #	Size
 **Corn Pollen** *A2g* Size Range: 85 - 90µm. *Technical Data Sheet 919.*	07664-1	1 g
 **Paper Mulberry Pollen** *A2g* Size Range: 12 - 13µm. *Technical Data Sheet 919.*	07670-1	1 g
 **Pecan Pollen** *A2g* Size Range: 45 - 52µm. *Technical Data Sheet 919.*	07671-1	1 g
 **Ragweed Pollen** *A4g* Size Range: 19 - 20µm. *Technical Data Sheet 919.*	07673-1	1 g
 **Lycopodium** *A4g* Nom. Dia.: 28µm. *Technical Data Sheet 281.*	16867-1	1 g

Cell Separations



BioMag® SelectaPure anti-Human Leukocyte Particles *A2dm*

Requires Cold Pack.

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.

	Concentration	Cellular Distribution	Catalog #	Size
SelectaPure anti-Human CD2	~4 mg/ml	Thymocytes, T cells	85002-5	5 ml
SelectaPure anti-Human CD4	~1.5 mg/ml	T Helper	85004-5	5 ml
SelectaPure anti-Human CD8	~1.5 mg/ml	Suppressor Cytotoxic T cells	85008-5	5 ml
SelectaPure anti-Human CD11b	~1 mg/ml	Activated Lymphocytes, Monocytes	85011-5	5 ml
SelectaPure anti-Human CD14	~1.5 mg/ml	Monocytes	85014-5	5 ml
SelectaPure anti-Human CD19	~4 mg/ml	B Progenitors	85019-5	5 ml
SelectaPure anti-Human CD34	~4 mg/ml	Myeloid cells	85034-5	5 ml
SelectaPure anti-Human CD45	~4 mg/ml	Common Leukocyte cells	85045-5	5 ml
SelectaPure anti-Human CD56	~4 mg/ml	NK cells, Neuroectodermal cells	85056-5	5 ml
SelectaPure anti-Human CD71	~4 mg/ml	Proliferating Neoplastic cells	85071-5	5 ml

BioMag® SelectaPure anti-Mouse Leukocyte Particles *A2dm*

Requires Cold Pack.

BioMag SelectaPure anti-Mouse particles are available for the isolation of CD4+, CD8a+ and CD45R murine lymphocytes.

	Concentration	Cellular Distribution	Catalog #	Size
anti-Mouse CD4	~1 mg/ml	T Helper	85104-5	5 ml
anti-Mouse CD8a	~1 mg/ml	Suppressor Cytotoxic T cells	85108-5	5 ml
anti-Mouse CD45R	~1 mg/ml	Restricted Leukocyte cells	85145-5	5 ml

BioMag® Negative Selection Cell Sorting Enrichment Systems *A2dm*

Requires Cold Pack.

BioMag Human T cell Enrichment Systems are available for the enrichment of CD3+, CD4+ or CD8+ T cell fractions from human peripheral blood mononuclear cells. Our enrichment systems involve the magnetic removal of subpopulations positive for other CD markers, leaving the untouched CD3+, CD4+ or CD8+ fraction available for analysis.

	Concentration	Catalog #	Size
CD3+ T cell Enrichment System	~1 mg/ml	85073-1	1 ml
	~1 mg/ml	85073-5	5 ml
CD4+ T cell Enrichment System	~1 mg/ml	85074-1	1 ml
	~1 mg/ml	85074-5	5 ml
CD8+ T cell Enrichment System	~1 mg/ml	85078-1	1 ml
	~1 mg/ml	85078-5	5 ml

Cell Separations

BioMag® Secondary Antibody Particles *A2dmw*
Requires Cold Pack.

	Concentration	Binding Capacity	Catalog #	Size
Goat anti-Human IgG	1 mg/ml	>0.10 mg/ml	84320-50	50 ml
Goat anti-Human IgG (Fc Specific)	5 mg/ml	>0.20 mg/ml	84324-50	50 ml
Goat anti-Human IgM	1 mg/ml	>0.15 mg/ml	84325-50	50 ml
Goat anti-Mouse IgG	1 mg/ml	>0.20 mg/ml	84340-50	50 ml
	1 mg/ml	>0.20 mg/ml	84340-500	500 ml
Goat anti-Mouse IgG (Fc Specific)	5 mg/ml	>0.15 mg/ml	84344-50	50 ml
	5 mg/ml	>0.15 mg/ml	84344-500	500 ml
Goat anti-Mouse IgM	1 mg/ml	>0.20 mg/ml	84350-50	50 ml
	1 mg/ml	>0.20 mg/ml	84350-500	500 ml
Goat anti-Rabbit IgG	1 mg/ml	>0.20 mg/ml	84300-50	50 ml
	1 mg/ml	>0.20 mg/ml	84300-500	500 ml
Goat anti-Rat IgG	1 mg/ml	>0.15 mg/ml	84330-50	50 ml
	1 mg/ml	>0.15 mg/ml	84330-500	500 ml
Goat anti-Rat IgG (Fc Specific)	5 mg/ml	>0.20 mg/ml	84334-50	50 ml
	5 mg/ml	>0.20 mg/ml	84334-500	500 ml
Goat anti-Rat IgM	5 mg/ml	>0.10 mg/ml	84335-50	50 ml
	5 mg/ml	>0.10 mg/ml	84335-500	500 ml

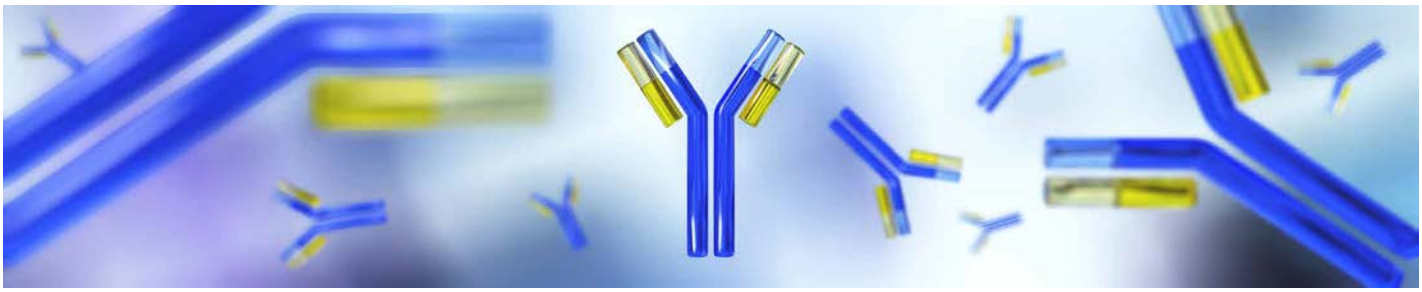
BIOMAG® SECONDARY ANTIBODY PARTICLES & KITS

BioMag® Plus Goat anti-Mouse IgG Secondary Antibody Particles *A2dmw*
Requires Cold Pack.
Concentration: 1 mg/ml Binding Capacity: >0.20 mg/ml. *Technical Data Sheet 619.*
86021-50 — 50 ml

BioMag® Plus Goat anti-Mouse IgG Particle Antibody Coupling Starter Kit *A2dmw*
Requires Cold Pack.
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.
Kit Contains: 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). *Technical Data Sheet 619.*
86020-1 — 1 kit

BioMag® Plus Mouse anti-Fluorescein IgG *A2dm*
Requires Cold Pack.
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.*
86053-50 — 50 ml

BioMag® Antibody Binding Proteins



BioMag® Proteins A & G *A2dmw*

Requires Cold Pack.

	Concentration	Catalog #	Size
Protein A	5 mg/ml	84600-2	2 ml
	5 mg/ml	84600-10	10 ml
Protein G	5 mg/ml	84605-2	2 ml
	5 mg/ml	84605-10	10 ml

BioMag® Plus Protein A *A2dm*

Requires Cold Pack.

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.*

Catalog #	Size
86041-2	2 ml
86041-10	10 ml

BioMag® Plus Protein G *A2dm*

Requires Cold Pack.

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.*

Catalog #	Size
86051-2	2 ml
86051-10	10 ml

BioMag® Plus Protein A Antibody Isolation Starter Kit *A2dm*

Requires Cold Pack.

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.

Kit Contains: 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. *Technical Data Sheet 620.*

Catalog #	Size
86040-1	1 kit

BioMag® Antibody Binding Proteins

	Catalog #	Size
BioMag® Plus Protein G Antibody Isolation Starter Kit *A2dm* Requires Cold Pack. 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. Kit Contains: 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. *Technical Data Sheet 620*.	86050-1	1 kit

PROTEIN REMOVAL

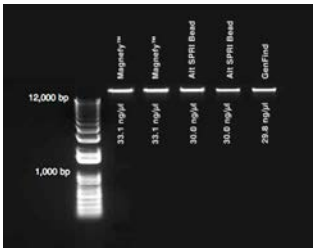
BioMag® ProMax Albumin Removal Kit *A2dm* Based on patented BioMag® superparamagnetic particle technology, the ProMax Albumin Removal Kit depletes albumin from human serum samples in 30 minutes or less. ProMax Albumin Removal particles, along with optimized buffers, allow the binding and release of the 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*.	24351-1	1 kit
BioMag® ProMax Serum IgG Removal Kit *A2dm* Requires Cold Pack. 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*.	24352-1	1 kit

GLYCAN / GLYCOPROTEIN CAPTURE

BioMag® Plus Concanavalin A *A2dmw* Requires Cold Pack. 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. *Technical Data Sheet 766*.	86057-3	3 ml
	86057-10	10 ml
BioMag® Plus Wheat Germ Agglutinin *A2dmw* Requires Cold Pack. 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.	86054-3	3 ml
	86054-10	10 ml

Nucleic Acid Isolation





Magnefy™ *A2dmw*

Magnefy are ~1µm carboxylated superparamagnetic microspheres. With high surface area / high surface titer microparticles and a rapid separation profile, Magnefy offer an additional performance-driven solid phase for magnetic particle-based assays and isolations. 5% Solids. Contact us to explore using Magnefy as your OEM SPRI bead.

Catalog #	Size
26410-5	5 ml
26410-10	10 ml
26410-25	25 ml
26410-100	100 ml

BioMag® Streptavidin *A2dmw*

Requires Cold Pack.

Concentration	Catalog #	Size
5 mg/ml	84660-5	5 ml
5 mg/ml	84660-50	50 ml

BioMag® Plus Streptavidin *A2dmw*

Requires Cold Pack.

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.*

86031-10 — 10 ml

BioMag® Plus Streptavidin / Biotin Binding Starter Kit *A2dmw*

Requires Cold Pack.

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.

Kit Contains: 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. *Technical Data Sheet 621.*

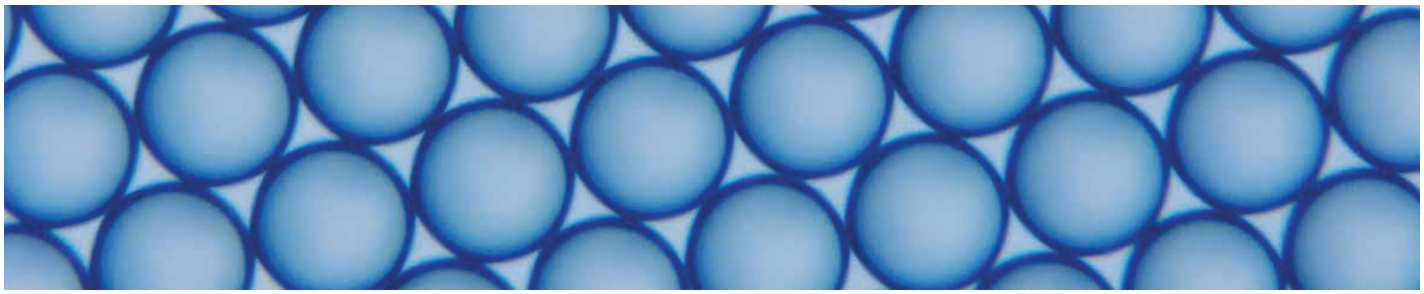
86030-1 — 1 kit

Nucleic Acid Isolation

	Catalog #	Size
BioMag® Streptavidin, Nuclease-Free *A2dmw* Requires Cold Pack. BioMag Streptavidin, Nuclease-Free is a suspension of BioMag Streptavidin particles for immobilizing biotinylated nucliec acids.	8MB4804-10	10 ml
	8MB4804-25	25 ml
	8MB4804-1	100 ml
BioMag® SelectaPure mRNA Purification System *A2dm* Requires Cold Pack. The BioMag SelectaPure mRNA Purification Kit is ideal for isolating mRNA from total RNA or tissue in 15 - 45 minutes depending upon sample.	8MB4003K-1	1 kit
BioMag® Oligo (dT)20 Particles *A2dm* Requires Cold Pack. Nuclease-free BioMag Oligo (dT)20 particles purify mRNA from total RNA, tissue and cells in 15 - 45 minutes depending upon sample.	8MB4803-2	2 ml

Please see pages 268-269 for our complete selection of Magnetic Separators.

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 *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.

Nom. Dia.	Size Range	Catalog #	Size
40nm	36 - 44nm	64004-15	15 ml
50nm	45 - 55nm	64005-15	15 ml
60nm	54 - 66nm	64006-15	15 ml
70nm	65 - 74nm	64007-15	15 ml
80nm	75 - 84nm	64008-15	15 ml
90nm	85 - 94nm	64009-15	15 ml
100nm	95 - 110nm	64010-15	15 ml
125nm	120 - 130nm	64011-15	15 ml
150nm	140 - 160nm	64012-15	15 ml
200nm	190 - 210nm	64013-15	15 ml
250nm	240 - 260nm	64014-15	15 ml
300nm	285 - 315nm	64015-15	15 ml
350nm	335 - 365nm	64016-15	15 ml
400nm	380 - 420nm	64017-15	15 ml
450nm	430 - 470nm	64018-15	15 ml
500nm	480 - 520nm	64019-15	15 ml
550nm	530 - 570nm	64020-15	15 ml
600nm	580 - 620nm	64021-15	15 ml
650nm	630 - 670nm	64022-15	15 ml
700nm	680 - 720nm	64023-15	15 ml
750nm	730 - 770nm	64024-15	15 ml
800nm	780 - 820nm	64025-15	15 ml
850nm	830 - 870nm	64026-15	15 ml
900nm	880 - 920nm	64027-15	15 ml
950nm	930 - 970nm	64028-15	15 ml

Size Standards

Microbead NIST Traceable Particle Size Standards *A2dm*

Microbead NIST Traceable Particle Size Standards are monodisperse polystyrene microspheres ranging from 1.0µm to 9.0µm. They are packaged in convenient, easy-to-use 15ml dropper bottles at 1% solids (w / v) in an aqueous suspension. *Technical Data Sheet 623.*

Nom. Dia.	Size Range	Catalog #	Size
1.00µm	0.95 - 1.05µm	64030-15	15 ml
1.25µm	1.20 - 1.30µm	64035-15	15 ml
1.50µm	1.45 - 1.55µm	64040-15	15 ml
1.75µm	1.70 - 1.80µm	64045-15	15 ml
2.00µm	1.90 - 2.10µm	64050-15	15 ml
2.50µm	2.40 - 2.60µm	64055-15	15 ml
3.00µm	2.85 - 3.15µm	64060-15	15 ml
3.50µm	3.30 - 3.70µm	64065-15	15 ml
4.00µm	3.80 - 4.20µm	64070-15	15 ml
5.00µm	4.70 - 5.30µm	64080-15	15 ml
6.00µm	5.70 - 6.30µm	64090-15	15 ml
7.00µm	6.60 - 7.40µm	64100-15	15 ml
8.00µm	7.60 - 8.40µm	64110-15	15 ml
9.00µm	8.10 - 9.90µm	64120-15	15 ml

Megabead NIST Traceable Particle Size Standards *A2dm*

Megabead NIST Traceable Particle Size Standards are monodisperse polystyrene microspheres ranging from 10.0µm to 175.0µm. They are packaged in convenient, easy-to-use 15ml dropper bottles at 1% solids (w / v) in an aqueous suspension. *Technical Data Sheet 623.*

Nom. Dia.	Size Range		
10.0µm	9.50 - 10.50µm	64130-15	15 ml
12.0µm	11.50 - 12.50µm	64140-15	15 ml
15.0µm	14.00 - 16.00µm	64155-15	15 ml
20.0µm	19.00 - 21.00µm	64160-15	15 ml
25.0µm	24.00 - 26.00µm	64165-15	15 ml
30.0µm	28.00 - 32.00µm	64170-15	15 ml
40.0µm	36.00 - 44.00µm	64180-15	15 ml
50.0µm	48.00 - 52.00µm	64190-15	15 ml
60.0µm	57.00 - 63.00µm	64200-15	15 ml
80.0µm	75.00 - 85.00µm	64210-15	15 ml
100.0µm	90.00 - 110.00µm	64220-15	15 ml
125.0µm	115.00 - 135.00µm	64225-15	15 ml
150.0µm	140.00 - 160.00µm	64230-15	15 ml
175.0µm	165.00 - 185.00µm	64235-15	15 ml

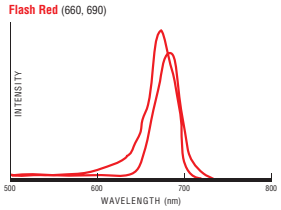
COUNT STANDARDS

SureCount™ Particle Count Standards *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 ~1x10^6 microspheres/ml aqueous suspensions in 10ml volumes and each bottle is provided with a Certificate of Traceability. *Technical Data Sheet 852.*

Nom. Dia.		
3µm	25379-10	10 ml
5µm	25380-10	10 ml
10µm	25381-10	10 ml
15µm	25382-10	10 ml

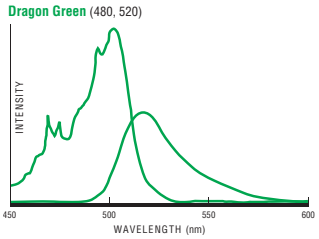
Fluorescence Standards



Flash Red Intensity Standard *A2dm*

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.*

Catalog #	Size
BLIFR06M-1	1 kit



Dragon Green Intensity Standard *A2dm*

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.*

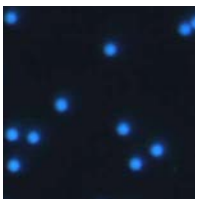
BLIDG06M-1	1 kit

StarLight™ Collection, Slide 4-Pack *abg*

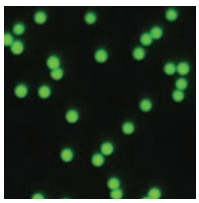
Our StarLight Collection includes one of each of our StarLight Calibration slides, which feature vibrant ~6µm fluorescent microspheres dyed with a single fluorophore for basic imaging checks and calibration. *Technical Data Sheet 913.*

The four slides are appropriate for use with common microscope filter sets:

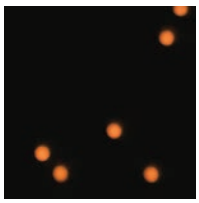
Glacial Blue (360, 450)



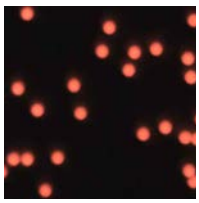
Dragon Green (480, 520)



Envy Green (525, 565)



Flash Red (660, 690)



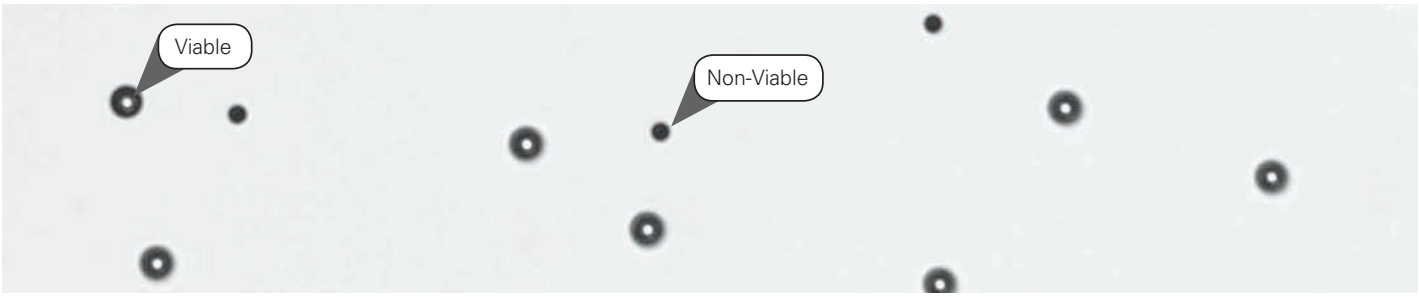
25445-1	4 slides

StarLight™ Calibration Individual Slides *abg*

Our new StarLight Calibration Slides feature vibrant ~6µm fluorescent microspheres dyed with your choice of fluorophore below for basic imaging checks and calibration.

Glacial Blue	25442-1	1 slide
Dragon Green	25441-1	1 slide
Envy Green	25443-1	1 slide
Flash Red	25444-1	1 slide

Cell Viability Standards



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 & 736.*

	Viable %	Concentration (beads/ml)	Catalog #	Size
Cell Viability Controls	0	1 x 10^6	24622-20	20 ml
	25	1 x 10^6	25997-20	20 ml
	50	1 x 10^6	24623-20	20 ml
	75	1 x 10^6	24624-20	20 ml
	90	1 x 10^6	24625-20	20 ml
	100	1 x 10^6	24626-20	20 ml
Concentration Controls		0.5 x 10^6	26409.20	20 ml
		1 x 10^6	24627-20	20 ml
		4 x 10^6	24628-20	20 ml
		8 x 10^6	24629-20	20 ml

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.



	Viable %	Concentration (beads/ml)		
Cell Viability Controls	0	1 x 10^6	BLI10BS-25	25 Units
			BLI10BS-75	75 Units
	25	1 x 10^6	BLI25BS-25	25 Units
			BLI25BS-75	75 Units
	50	1 x 10^6	BLI20BS-25	25 Units
			BLI20BS-75	75 Units
	75	1 x 10^6	BLI30BS-25	25 Units
			BLI30BS-75	75 Units
	90	1 x 10^6	BLI40BS-25	25 Units
			BLI40BS-75	75 Units
	100	1 x 10^6	BLI50BS-25	25 Units
			BLI50BS-75	75 Units
Concentration Controls		0.5 x 10^6	BLIVC50NSS-25	25 Units
			BLIVC50NSS-25	75 Units
		1 x 10^6	BLI60NS-25	25 Units
			BLI60NS-75	75 Units
		4 x 10^6	BLI70NS-25	25 Units
			BLI70NS-75	75 Units
		8 x 10^6	BLI80NS-25	25 Units
			BLI80NS-75	75 Units

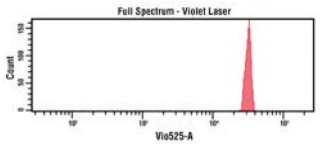
Cell Viability Standards

Trypan Blue 0.4% Solution *HM4g*

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.

Catalog #	Size
25561-125	125 ml
25561-250	250 ml

ROUTINE FLOW CYTOMETRY QUALITY CONTROL



Full Spectrum™ *adm*

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		
20	BLI885A-1	1 ml
100	BLI885B-5	5 ml
280	BLI885C-14	14 ml

Quantum™ QC

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.*

BLI725-5	5 ml

Ultra Rainbow Fluorescent Particles *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.*

Nom. Dia.	Tests		
~3.8µm	20	BLI610A-1	1 ml
~3.8µm	100	BLI610B-5	5 ml
~3.8µm	280	BLI610C-14	14 ml
~10.2µm	20	BLI611A-1	1 ml
~10.2µm	100	BLI611B-5	5 ml
~10.2µm	280	BLI611C-14	14 ml

Flow Cytometry Standards

Fluorescence Reference Standards *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 and PDS 892.*

	Tests	Catalog #	Size
Acridine Orange	20	BLI897A-1	1 ml
	100	BLI897B-5	5 ml
	280	BLI897C-14	14 ml
Alexa Fluor® 488	20	BLI886A-1	1 ml
	100	BLI886B-5	5 ml
	280	BLI886C-14	14 ml
Alexa Fluor® 647	20	BLI887A-1	1 ml
	100	BLI887B-5	5 ml
	280	BLI887C-14	14 ml
Allophycocyanine (APC)	20	BLI901A-1	1 ml
	100	BLI901B-5	5 ml
	280	BLI901C-14	14 ml
APC-Cy™7	20	BLI914A-1	1 ml
	100	BLI914B-5	5 ml
	280	BLI914C-14	14 ml
Certified Blank™ (no label)	20	BLI890A-1	1 ml
	100	BLI890B-5	5 ml
	280	BLI890C-14	14 ml
Chlorophyll	20	BLI898A-1	1 ml
	100	BLI898B-5	5 ml
	280	BLI898C-14	14 ml
Cy™5	20	BLI895A-1	1 ml
	100	BLI895B-5	5 ml
	280	BLI895C-14	14 ml
DAPI	20	BLI906A-1	1 ml
	100	BLI906B-5	5 ml
	280	BLI906C-14	14 ml
Fluorescein	20	BLI891A-1	1 ml
	100	BLI891B-5	5 ml
	280	BLI891C-14	14 ml
Hoechst 33342	20	BLI894A-1	1 ml
	100	BLI894B-5	5 ml
	280	BLI894C-14	14 ml
Pacific Blue™	20	BLI916A-1	1 ml
	100	BLI916B-5	5 ml
	280	BLI916C-14	14 ml
PE-Cy™5	20	BLI908A-1	1 ml
	100	BLI908B-5	5 ml
	280	BLI908C-14	14 ml
PE-Cy™7	20	BLI889A-1	1 ml
	100	BLI889B-5	5 ml
	280	BLI889C-14	14 ml
PE-TR	20	BLI909A-1	1 ml
	100	BLI909B-5	5 ml
	280	BLI909C-14	14 ml

Flow Cytometry Standards

Fluorescence Reference Standards continued

	Tests	Catalog #	Size
Propidium Iodide	20	BLI892A-1	1 ml
	100	BLI892B-5	5 ml
	280	BLI892C-14	14 ml
R-Phycoerythrin	20	BLI899A-1	1 ml
	100	BLI899B-5	5 ml
	280	BLI899C-14	14 ml
T.M. Rhodamine	20	BLI905A-1	1 ml
	100	BLI905B-5	5 ml
	280	BLI905C-14	14 ml
Texas Red®	20	BLI893A-1	1 ml
	100	BLI893B-5	5 ml
	280	BLI893C-14	14 ml
Violet Laser	20	BLI915A-1	1 ml
	100	BLI915B-5	5 ml
	280	BLI915C-14	14 ml

Fluoresbrite® Yellow Green (YG) Microspheres, Calibration Grade *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.

Nom. Dia.		
0.50µm	18859-1	1 ml
1.00µm	18860-1	1 ml
2.00µm	18604-1	1 ml
3.00µm	18861-1	1 ml
6.00µm	18862-1	1 ml

Fluoresbrite® Calibration Grade Size Range Kit *A2dmw*

Our unique synthesis methods routinely result in particles with fluorescence CV's 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.

Kit Contains: 1ml at 2.5% solids for each nominal size: 0.5µm, 1.0µm, 2.0µm, 3.0µm and 6.0µm.

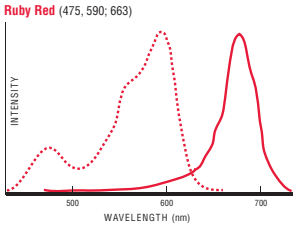
18132-1 — 1 kit

Time Delay Calibration Standard *ad*

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		
20	BLI830A-1	1 ml
100	BLI830B-5	5 ml
280	BLI830C-14	14 ml

Flow Cytometry Standards



Flow Check™ Ruby Red Fluorescent Microspheres *A2dm*

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 10^6 beads/ml) in a convenient dropper bottle. Ex. max: 475nm, Em. max: 663nm. *Technical Data Sheet 624.*

Catalog #	Size
24288-5	5 ml

ALIGNMENT

Right Reference Standard™ *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.*

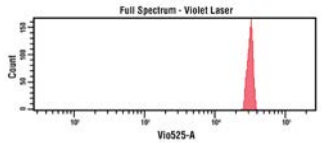
	Tests		
APC High	100	BLI521-5	5 ml
Fluorescein High	100	BLI512-5	5 ml
PE-Cy™5 High	100	BLI518-5	5 ml
Phycoerythrin High	100	BLI515-5	5 ml

Flow Check™ High Intensity Alignment Grade Particles *A2dm*

Technical Data Sheet 508.

	Nom. Dia.		
Bright Blue (BB)	0.50µm	23520-10	10 ml
Yellow Green (YG)	1.00µm	23517-10	10 ml
Yellow Green (YG)	2.00µm	23518-10	10 ml
Yellow Green (YG)	6.00µm	23519-10	10 ml

GENERAL INSTRUMENT SET-UP

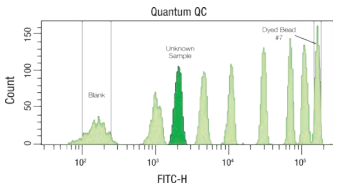


Full Spectrum™ *adm*

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		
20	BLI885A-1	1 ml
100	BLI885B-5	5 ml
280	BLI885C-14	14 ml

Flow Cytometry Standards



Quantum™ QC

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 and 725A.*

Catalog #	Size
BLI725-5	5 ml

Ultra Rainbow Fluorescent Particles *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.*

Nom. Dia.	Tests		
~3.8µm	20	BLI610A-1	1 ml
	100	BLI610B-5	5 ml
	280	BLI610C-14	14 ml
~10.2µm	20	BLI611A-1	1 ml
	100	BLI611B-5	5 ml
	280	BLI611C-14	14 ml

COMPENSATION

FITC / PE Compensation Standard *adm*

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		
20	BLI820A-1	1 ml
100	BLI820B-5	5 ml
280	BLI820C-14	14 ml

Simply Cellular® Compensation Standards *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.*

	Tests		
anti-Mouse IgG	100	BLI550-5	5 ml
anti-Rat IgG	100	BLI551-5	5 ml
anti-Human IgG	100	BLI552-5	5 ml

Flow Cytometry Standards

Simply Cellular® anti-Mouse for Violet Laser

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	Catalog #	Size
20	BLI835A-1	1 ml
100	BLI835B-5	5 ml

Flow Cytometry Protein A Antibody Binding Beads *adm*

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 conjuction with an unlabeled population for compensation purposes. *Technical Data Sheet PDS 853.*

Catalog #	Size
BLI553-1	1 ml
BLI553-5	5 ml
BLI553-14	14 ml

Flow Cytometry Protein G Antibody Binding Beads *adm*

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 conjuction with an unlabeled population for compensation purposes. *Technical Data Sheet PDS 854.*

Catalog #	Size
BLI554-1	1 ml
BLI554-5	5 ml
BLI554-14	14 ml

Viability Dye Compensation Standard *adm*

Viability Dye Compensation Standards are suitable for labeling with LIVE / DEAD® stains or similarily 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.*

Nom. Dia.	Catalog #	Size
4µm	BLI450-3	3 ml
8µm	BLI451-3	3 ml

FLUORESCENCE REFERENCE

Flow Check™ Yellow Green (YG) 2.0 High Intensity Alignment Grade *A2dm*

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.

Catalog #	Size
23518-10	10 ml

Flow Cytometry Standards

Flow Check™ YG Kit 6.0 *A2dm*

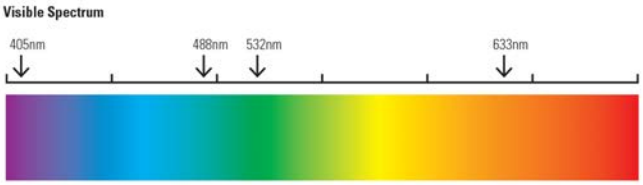
The particles in this kit allow comparison of various levels of green fluorescence. Available individually or in a kit.

Kit Contains: Four components, each packaged with ~2 x 10^6 particles/ml: a full intensity bead, two intermediate intensity beads and a blank bead. *Technical Data Sheet 508.*

	Catalog #	Size
Flow Check™ YG Kit 6.0	23512-1	1 kit
Flow Check™ Yellow Green (YG) 6.0 High Intensity Alignment Grade	23519-10	10 ml
Flow Check™ Yellow Green (YG) Low Intensity Level 1	23522-10	10 ml
Flow Check™ Yellow Green (YG) Low Intensity Level 2	23523-10	10 ml
Flow Check™ Yellow Green (YG) Unlabeled	23521-10	10 ml

Fluorescence Reference Standards *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 and PDS 892.*



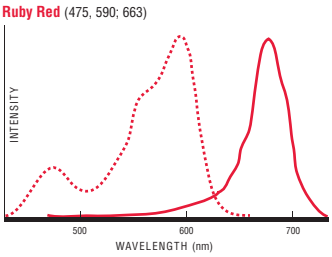
Catalog Code	Description	MW	Excitation (nm)	Emission (nm)	Purpose
BLI890	Certified Blank™				reference
BLI897	Acridine Orange	265	500	526	DNA/RNA
BLI886	Alexa Fluor® 488	643	499	519	conjugate
BLI887	Alexa Fluor® 647	1300	652	668	conjugate
BLI901	Allophycocyanine (APC)	104k	650	660	conjugate
BLI914	APC-Cy™7	104k	650	767	conjugate
BLI898	Chlorophyll (*a* + *b*)	8014 (a) 907 (b)	430,453	642,662	plant pigment
BLI895	Cy™5	792	649	666	conjugate
BLI906	DAPI	277	350	470	DNA (A-T)
BLI913	Far-Out Red	-	475,590	663	reference
BLI891	Fluorescein	389	495	519	conjugate
BLI894	Hoechst 33342	616	346	375,390	dsDNA
BLI916	Pacific Blue™	339	410	455	conjugate
BLI899	PE (R-Phyoerythrin)	240k	480, 565	578	conjugate
BLI908	PE-Cy™5	240k	480,565,650	670	conjugate
BLI889	PE-Cy™7	240k	480	767	conjugate
BLI909	PE-TR	240k	480,565,650	670	conjugate
BLI892	Propidium Iodide	668	536	617	DNA intercalator
BLI905	T.M. Rhodamine (TRITC, TAMRA)	430	557	576	conjugate
BLI893	Texas Red® (Sulforhodamine)	625	589	615	conjugate
BLI915	Violet Laser (Glacial Blue)	-	360	450	reference

	Tests	Catalog #	Size
Acridine Orange	20	BLI897A-1	1 ml
	100	BLI897B-5	5 ml
	280	BLI897C-14	14 ml
Alexa Fluor® 488	20	BLI886A-1	1 ml
	100	BLI886B-5	5 ml
	280	BLI886C-14	14 ml
Alexa Fluor® 647	20	BLI887A-1	1 ml
	100	BLI887B-5	5 ml
	280	BLI887C-14	14 ml
Allophycocyanine (APC)	20	BLI901A-1	1 ml
	100	BLI901B-5	5 ml
	280	BLI901C-14	14 ml
APC-Cy™7	20	BLI914A-1	1 ml
	100	BLI914B-5	5 ml
	280	BLI914C-14	14 ml
Certified Blank™ (no label)	20	BLI890A-1	1 ml
	100	BLI890B-5	5 ml
	280	BLI890C-14	14 ml
Chlorophyll	20	BLI898A-1	1 ml
	100	BLI898B-5	5 ml
	280	BLI898C-14	14 ml
Cy™5	20	BLI895A-1	1 ml
	100	BLI895B-5	5 ml
	280	BLI895C-14	14 ml
DAPI	20	BLI906A-1	1 ml
	100	BLI906B-5	5 ml
	280	BLI906C-14	14 ml
Fluorescein	20	BLI891A-1	1 ml
	100	BLI891B-5	5 ml
	280	BLI891C-14	14 ml
Hoechst 33342	20	BLI894A-1	1 ml
	100	BLI894B-5	5 ml
	280	BLI894C-14	14 ml
Pacific Blue™	20	BLI916A-1	1 ml
	100	BLI916B-5	5 ml
	280	BLI916C-14	14 ml

Flow Cytometry Standards

Fluorescence Reference Standards continued

	Tests	Catalog #	Size
PE-Cy™5	20	BLI908A-1	1 ml
	100	BLI908B-5	5 ml
	280	BLI908C-14	14 ml
PE-Cy™7	20	BLI889A-1	1 ml
	100	BLI889B-5	5 ml
	280	BLI889C-14	14 ml
PE-TR	20	BLI909A-1	1 ml
	100	BLI909B-5	5 ml
	280	BLI909C-14	14 ml
Propidium Iodide	20	BLI892A-1	1 ml
	100	BLI892B-5	5 ml
	280	BLI892C-14	14 ml
R-Phycoerythrin	20	BLI899A-1	1 ml
	100	BLI899B-5	5 ml
	280	BLI899C-14	14 ml
T.M. Rhodamine	20	BLI905A-1	1 ml
	100	BLI905B-5	5 ml
	280	BLI905C-14	14 ml
Texas Red®	20	BLI893A-1	1 ml
	100	BLI893B-5	5 ml
	280	BLI893C-14	14 ml
Violet Laser	20	BLI915A-1	1 ml
	100	BLI915B-5	5 ml
	280	BLI915C-14	14 ml



Flow Check™ Ruby Red Fluorescent Microspheres *A2dm*

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 10^6 beads/ml) in a convenient dropper bottle. Ex. max: 475nm, Em. max: 663nm. *Technical Data Sheet 624.*

Catalog #	Size
24288-5	5 ml

Flow Cytometry Standards

FLUORESCENCE QUANTITATION

Simply Cellular® *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.*

	Tests	Catalog #	Size
anti-Mouse IgG	20	BLI810A-1	1 ml
	100	BLI810B-5	5 ml
	280	BLI810C-14	14 ml
anti-Human IgG	20	BLI812A-1	1 ml
	100	BLI812B-5	5 ml
	280	BLI812C-14	14 ml
anti-Rat IgG	20	BLI813A-1	1 ml
	100	BLI813B-5	5 ml
	280	BLI813C-14	14 ml

Simply Cellular® Compensation Standards *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.*

	Tests	Catalog #	Size
anti-Mouse IgG	100	BLI550-5	5 ml
anti-Human IgG	100	BLI552-5	5 ml
anti-Rat IgG	100	BLI551-5	5 ml

Quantum™ Simply Cellular® *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/products/quickcal and entering the Access Number provided with your standards). Technical Data Sheet PDS 814.*

	Tests	Catalog #	Size
anti-Mouse IgG	20	BLI815A-1	1 ml
	100	BLI815B-5	5 ml
	280	BLI815C-14	14 ml
anti-Human IgG	20	BLI816A-1	1 ml
	100	BLI816B-5	5 ml
	280	BLI816C-14	14 ml
anti-Rat IgG	20	BLI817A-1	1 ml
	100	BLI817B-5	5 ml
	280	BLI817C-14	14 ml

Flow Cytometry Standards

Quantum™ MESF *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 FREE Flow Cytometry Data Analysis template, works with all Quantum MESF Kits *(access QuickCal by visiting www.bangslabs.com/products/quickcal 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.*

	Tests	Catalog #	Size
Alexa Fluor® 488 MESF	20	BLI488A-1	1 ml
	100	BLI488B-5	5 ml
	280	BLI488C-14	14 ml
FITC-5 MESF	20	BLI555A-1	1 ml
	100	BLI555B-5	5 ml
	280	BLI555C-14	14 ml
FITC-5 MESF (Premix)	20	BLI555PA-1	1 ml
	100	BLI555PB-5	5 ml
	280	BLI555PC-14	14 ml
R-PE MESF	20	BLI827A-1	1 ml
	100	BLI827B-5	5 ml
	280	BLI827C-14	14 ml
PE-Cy™5 MESF	20	BLI828A-1	1 ml
Cy™5 MESF	20	BLI822A-1	1 ml
	100	BLI822B-5	5 ml
Alexa Fluor® 647 MESF	20	BLI647A-1	1 ml
	100	BLI647B-5	5 ml
	280	BLI647C-14	14 ml
APC MESF	20	BLI823A-1	1 ml
	100	BLI823B-5	5 ml
	280	BLI823C-14	14 ml

QuickCal® v. 2.3 Data Analysis Program

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.*

Flow Cytometry Standards

CELL CYCLE ANALYSIS

Fluorescence Reference Standards *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 and PDS 892.*

	Tests	Catalog #	Size
Acridine Orange	20	BLI897A-1	1 ml
	100	BLI897B-5	5 ml
	280	BLI897C-14	14 ml
DAPI	20	BLI906A-1	1 ml
	100	BLI906B-5	5 ml
	280	BLI906C-14	14 ml
Fluorescein	20	BLI891A-1	1 ml
	100	BLI891B-5	5 ml
	280	BLI891C-14	14 ml
Hoechst 33342	20	BLI894A-1	1 ml
	100	BLI894B-5	5 ml
	280	BLI894C-14	14 ml
Propidium Iodide	20	BLI892A-1	1 ml
	100	BLI892B-5	5 ml
	280	BLI892C-14	14 ml

Viability Dye Compensation Standard *adm*

Viability Dye Compensation Standards are suitable for labeling with LIVE / DEAD® stains or similarily 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.*

Nom. Dia.	Catalog #	Size
4µm	BLI450-3	3 ml
8µm	BLI451-3	3 ml

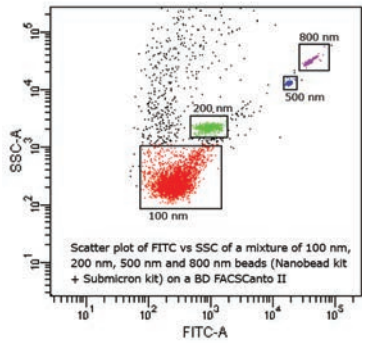
CELL SIZE ESTIMATION

Size Calibration Standards Kit *dm*

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	Catalog #	Size
100	BLI829B-5	5 ml
280	BLI829C-14	14 ml

Flow Cytometry Standards



Small Bead Calibration Kits *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 or microbial species. 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.*

	Particle Concentration	Catalog #	Size
Nanobead Calibration Kit (50nm, 100nm)	~1 x 10^8 particles/ml	BLI834-1	1 kit
Submicron Bead Calibration Kit (0.2µm, 0.5µm, 0.8µm)	~1 x 10^8 particles/ml	BLI832-1	1 kit
Micron Bead Calibration Kit (1.0µm, 3.0µm, 6.0µm)	~2 x 10^6 particles/ml	BLI833-1	1 kit

Fluoresbrite® Calibration Grade Size Range Kit *A2dmw*

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.

Kit Contains: 1ml at 2.5% solids for each nominal size: 0.5µm, 1.0µm, 2.0µm, 3.0µm and 6.0µm.

18132-1 — 1 kit

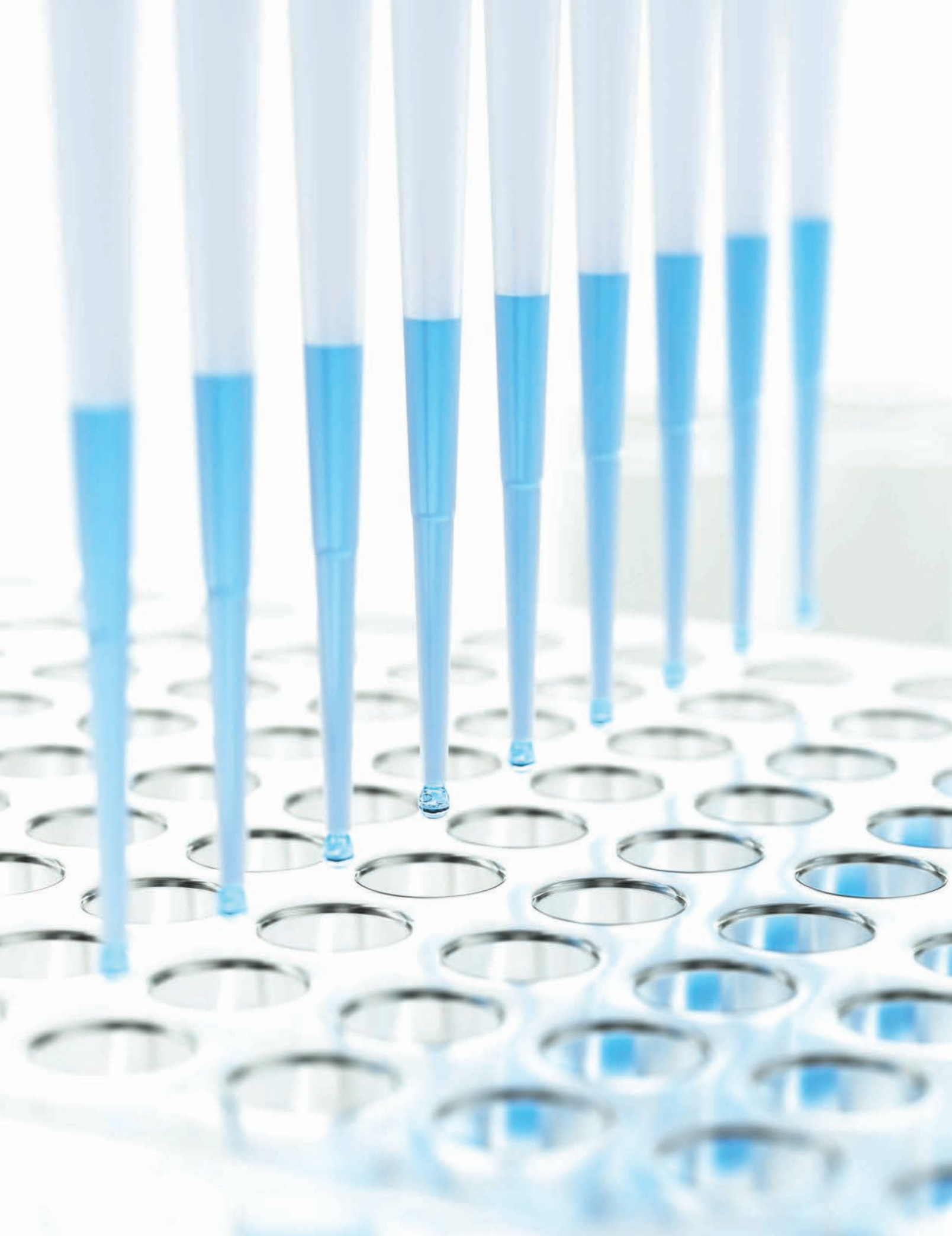
CELL COUNTING

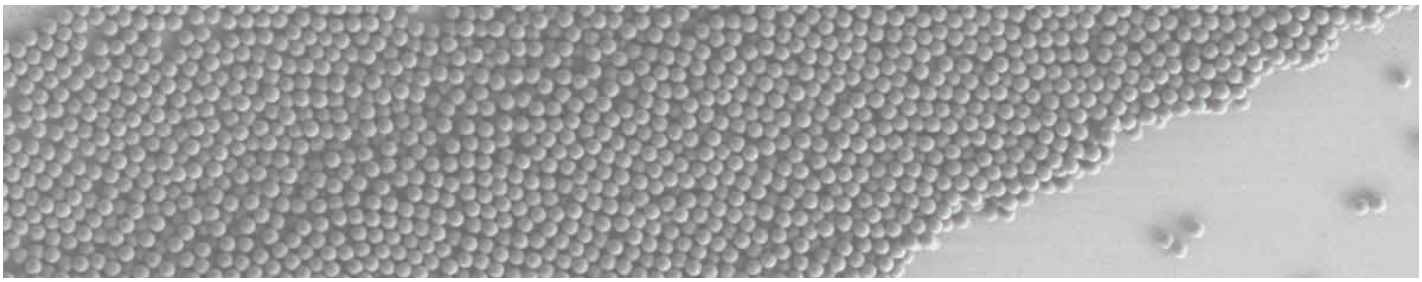
Flow Cytometry Absolute Count Standard™ *A2adm*

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 (~1 x 10^6). These beads fluoresce over a broad range of the spectrum, allowing them to be used as count standards in multiple detectors.

BLI580-10 — 10 ml

For additional count standards, please see our SureCount™ offerings on page 282





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.

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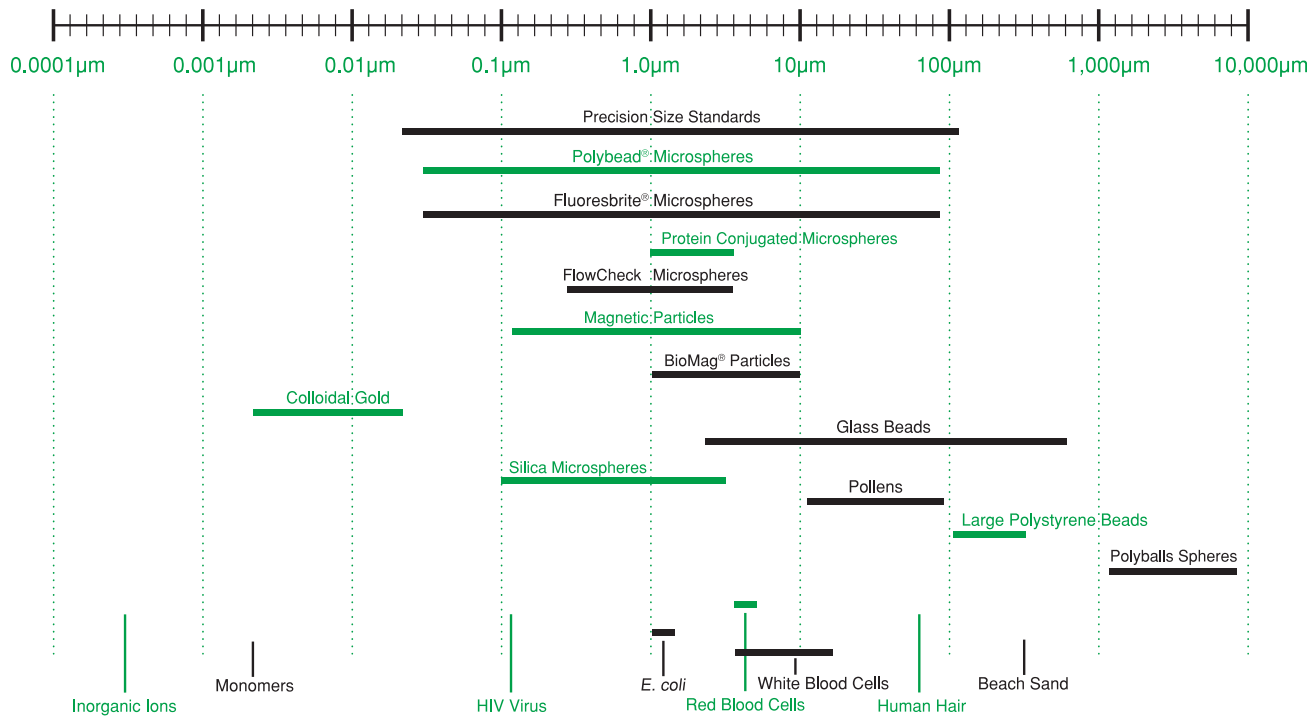
TECHNICAL DATA SHEETS 311

HOW PARTICLES MEASURE UP

Precision Size Standards	0.04 - 175µm
Polybead® Microspheres	0.05 - 90µm
Fluoresbrite® Microspheres	0.05 - 90µm
Protein Conjugated Microspheres	1 - 6µm
Flow Check™ Microspheres	0.5 - 6.0µm
Magnetic Particles	0.2 - 10µm
BioMag® Particles	1.0 - 10µm
Colloidal Gold	0.005 - 0.06µm
Glass Beads	3 - 850µm
Silica Microspheres	0.1 - 5.0µm
Pollens	12 - 90µm
Large Polystyrene Beads	106 - 600µm
Polyballs	1,587.5 - 9,525µm
Inorganic Ions	0.0006µm
Monomers	0.0045µm
HIV virus	0.12µm
E. coli	1 - 2µm
Red Blood Cells	6 - 8µm
White Blood Cells	7 - 25µm
Human Hair	80µm
Beach Sand	650µm

How Polysciences' Microspheres and Other Particles Measure Up

1 Micron (µm) = 1,000 Nanometers = 10,000 Angstroms



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 - 0.4µm) to ensure satisfactory wicking in lateral flow tests, or the use of larger, cell-sized spheres (~4 - 10µm) 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^3)	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™M (encoded populations for multiplexing) or Non-fluorescent (simplex or multiplex with different bead sizes)	Covalent or streptavidin / biotin	Flow cytometer
Bead "ELISA"	1- 3 µm	ProMag®, ProMag® HP	Covalent	Spectrophotometer
Lateral Flow	0.1µm – 0.4µm	Dyed Europium Chelate	Covalent or adsorption	Visual or Automated Reader (absorbance, fluorescence)
Lateral Flow – Boulders in the Stream	0.1µm – 0.4µm mobile phase	Dyed (visible) mobile phase	Covalent or adsorption	Visual
	~2µm – 3µm capture phase	Undyed capture beads		
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™M

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®

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:

$$\frac{6x\ 10^{12}\rho_L}{\rho_S\ \pi\ z^3}$$

x = solids content (g/ml)
ρ_S = density of solid sphere (g/cm^3)
z = diameter (µm)
ρ_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 (ρ = 1.05 g/ml) suspended at 2.5% solids (w / v), 25mg/mL, and silica beads (ρ = 2.0 g/ml) suspended at 10% solids (w/v, 100mg/mL), at common diameters:

Surface to Volume Ratios

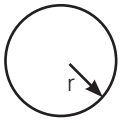
Diameter (µm)	Polystyrene 2.5% Solids (particles/ml)	Silica 10% Solids (particles/ml)
0.05	3.64×10^{14}	N/A
0.10	4.55×10^{13}	1.00×10^{13}
0.20	5.68×10^{13}	1.26×10^{13}
0.35	1.06×10^{12}	2.34×10^{12}
0.50	3.64×10^{11}	8.04×10^{11}
0.75	1.08×10^{11}	2.38×10^{11}
1.00	4.55×10^{10}	1.00×10^{10}
1.50	1.35×10^{10}	2.98×10^{10}
2.00	5.68×10^{9}	1.26×10^{10}
3.00	1.68×10^{9}	3.72×10^{9}

Diameter (µm)	Polystyrene 2.5% Solids (particles/ml)	Silica 10% Solids (particles/ml)
4.50	4.99×10^{8}	1.10 x 109
6.00	2.10×10^{8}	4.65 x 108
10.0	4.55×10^{7}	N/A
15.0	1.35×10^{7}	N/A
20.0	5.68×10^{6}	N/A
25.0	2.91×10^{6}	N/A
45.0	4.99×10^{5}	N/A
75.0	1.08×10^{5}	N/A
90.0	6.24×10^{4}	N/A

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.

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.



Surface Area = $4\ \pi\ r^2$

Volume = $4 / 3\ \pi\ r^3$

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 ≥0.5µm, dialysis filtration for small spheres <0.5µm, 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:

$$V = \frac{2Ga^2 (\rho_1 - \rho_2)}{9n}$$

V = Velocity (cm/sec)
G = G force (1G = 980.7 cm/sec^2)
ρ_1 = density of particle (g/cm^3)
ρ_2 = density of suspending media (g/cm^3)
n = 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 (µm) (ρ_1 = 1.05 g/cm^3, ρ_2 = 1.00 g/cm^3 and water = 1.002 cp); V= 2.77 x 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 1.0µm polystyrene particle placed in a microcentrifuge generating 10,000 G will settle at a velocity of 2.72 x 10^{-2} cm/sec.

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.

Bead Type	Diameter Range	Relative Centrifugal Force (×g)	Speed (rpm)
Polymer	> 0.5µm	6500 - 14000	8925 - 13100
	> 1.0µm	3000 - 5500	6060 - 8210
	> 5µm	1300 - 3000	3990 - 6060
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

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
• Initial Buffer: 0.1M Borate Buffer, pH 8.5 • Suspend in buffer, spin down and resuspend 2 or 3 times. • Suspend in borate buffer. • Add protein and mix end-to-end overnight. • Spin and save supernatant for protein determination. • Re-suspend in BSA in appropriate buffer and spin down twice. • Re-suspend in PBS, pH 7.4, containing BSA (storage buffer). • Protein bound directly on surface.	• Initial Buffer: 0.1M Carbonate Buffer • Suspend in buffer, spin down and resuspend 2 or 3 times. • Suspend in MES buffer. • Add fresh carbodiimide solution dropwise and incubate for 15 - 30 minutes. • Wash to remove excess carbodiimide, then resuspend in borate buffer. • Add protein and mix end-to-end for 2 - 4 hours. • Add ethanolamine, mix for 30 minutes. • Spin and save supernatant for protein determination. • Re-suspend in BSA-containing buffer and spin down twice. • Re-suspend in PBS, pH 7.4, containing BSA (storage buffer). • Protein bound 2 - 3 carbon atoms from surface.	• Initial Buffer: 0.02M PBS, pH 7.4 • Suspend in buffer, spin down and resuspend 2 or 3 times. • Suspend in PBS. • Suspend in 8% glutaraldehyde in PBS, pH 7.4 and mix end-to-end for 4 - 6 hours. • Wash to remove excess glutaraldehyde and resuspend in PBS buffer. • Add protein and mix end-to-end overnight. • Add ethanolamine, mix for 30 minutes. • Spin and save supernatant for protein determination. • Re-suspend in BSA-containing buffer and spin down twice • Re-suspend in PBS, pH 7.4, containing BSA (storage buffer). • Protein bound 5 carbon atoms from surface of blue dyed beads and 11-12 carbon atoms from surface of amino beads.

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**.

Problem	Solution
Clumping prior to use	Careful sonication
Clumping after procedure • Carbodiimide addition causes clumping • Glutaraldehyde addition causes clumping • Protein addition causes clumping • Washing causes clumping	Isolate the step that causes clumping • Add slowly, agitate beads, decrease bead concentration • 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 • Increase protein concentration • Add surfactant or reduce number of washing steps
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_2 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^3, 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.

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 thimerosol 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 Spurrs have been successful.

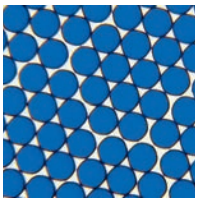
POLYBEAD® AND FLUORESBRITE® DYED PARTICLES

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:

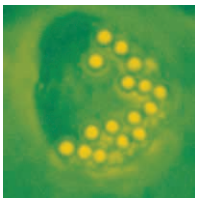
Fluorescent Particles	Filter Setting	Dyed Particle	Excitation Max. (nm)	Emission Max. (nm)
BB (Bright Blue)	Coumarin	BB	360	407
YG (Yellow Green)	Fluorescein	YG	441	486
YO (Yellow Orange)*	Rhodamine	YO	529	546
PC (Polychromatic Red)	Phycoerythrin	Red	491; 512	554
		Ruby Red	475; 590	663

** 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.



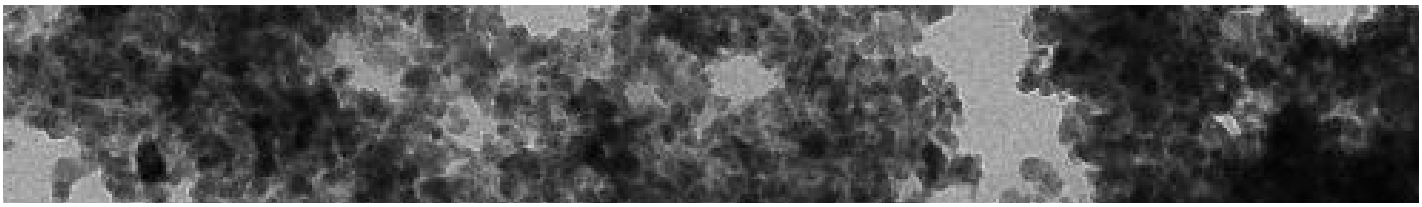
Fluoresbrite® for Phagocytosis or Retrograde Transport

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^2/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 biologogic 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 Oersteds. *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
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

TECHNICAL DATA SHEETS

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

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
TDS PDS 214	QuantumPlex™ SP Streptavidin
TDS PDS 215	QuantumPlex™ Streptavidin
TDS PDS 234	QuantumPlex™ SP Carboxyl
TDS PDS 235	QuantumPlex™ Carboxyl
TDS PDS 250	QuantumPlex™M Carboxyl
TDS PDS 251	QuantumPlex™M SP Carboxyl
TDS PDS 252	QuantumPlex™M Streptavidin
TDS PDS 253	QuantumPlex™M SP Streptavidin
TDS PDS 510	Right Reference Standard™
TDS PDS 612	Ultra Rainbow Fluorescent Particles
TDS PDS 704	Fluorescence Intensity Standards
TDS PDS 725	Quantum™ QC
TDS PDS 810	Simply Cellular® anti-Mouse IgG
TDS PDS 812	Simply Cellular® anti-Human IgG
TDS PDS 813	Simply Cellular® anti-Rat IgG
TDS PDS 814	Quantum™ Simply Cellular®
TDS PDS 820	FITC / PE Compensation Standard
TDS PDS 821	Quantum™ MESF Kits
TDS PDS 829	Size Calibration Standards Kit
TDS PDS 831	Time Delay Calibration Standard
TDS PDS 835	Simply Cellular® anti-Mouse for Violet Laser
TDS PDS 850	Simply Cellular® anti-Mouse Compensation Standard
TDS PDS 851	Simply Cellular® anti-Rat Compensation Standard
TDS PDS 852	Simply Cellular® anti-Human Compensation Standard
TDS PDS 853	Viability Dye Compensation Standard
TDS PDS 854	Flow Cytometry Protein A and Protein G Antibody Binding Beads
TDS PDS 880	Flow Cytometry Absolute Count Standard™
TDS PDS 885	Full Spectrum™
TDS PDS 890	Fluorescence Reference Standards
TDS 917	Quantitative Cytometry
TDS PDS 818	Quantum™ Simply Cellular® and Quantum™ MESF Tips and Techniques
TDS 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 552	BioMag® Biotin
TDS 553	BioMag® Protein A
TDS 554	BioMag® Protein G
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 569	BioMag® SelectaPure mRNA Purification System
TDS 570	BioMag® Carboxyl
TDS 581	BioMag® SelectaPure anti-Human CD4
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
TDS 597	BioMag® SelectaPure Human T cell Enrichment System
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

TECHNICAL DATA SHEETS

Magnetic Microparticles continued

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 PDS 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

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 238G	Glutaraldehyde Kit for Amino & Blue Dyed Beads
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

Uniform Silica Microspheres

TDS 635	Uniform Silica Microspheres
TDS 792	Silica Microspheres, Colloidal

ViaCheck™ Viability Instrument Standards

TDS 729	ViaCheck™ 0% Viability Control
TDS 729	ViaCheck™ 25% Viability Control
TDS 729	ViaCheck™ 50% Viability Control
TDS 729	ViaCheck™ 75% Viability Control
TDS 729	ViaCheck™ 90% Viability Control
TDS 729	ViaCheck™ 100% Viability Control
TDS 734	ViaCheck™ Concentration Control (0.5 x 10^6)
TDS 734	ViaCheck™ Concentration Control (1 x 10^6)
TDS 734	ViaCheck™ Concentration Control (4 x 10^6)
TDS 734	ViaCheck™ Concentration Control (8 x 10^6)





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