

PolyFacts

News | Views | Insights from...

Microspheres / Particles

Issue No. 1, May 2006



PolyPointer

A new look with all the same resourceful information

IN THIS ISSUE . . .

ViaCheck™ Viability Instrument StandardsPage No. 1

NIST Traceable Precision Particle Size Standards.....Page No. 2

SNARe™ DNA Purification SystemsPage No. 4

Welcome to PolyFacts: Microspheres / Particles

Polysciences' has reinvented the PolyFacts newsletter with a great new layout and design. Not only that, but each of our four divisions will now publish their own edition of PolyFacts. You will find FOUR PolyFacts newsletters: Microspheres / Particles, Bioscience, Monomers / Polymers, and High Performance / Electronic Materials.

The symbol to the left denotes that you are reviewing material or information from the **Microspheres / Particles** Division of Polysciences. This symbol will become a convenient reference as it translates to our catalog, website, and all forms of marketing communications.

We hope you welcome this new format. Please feel free to contact the Customer Service Department with your feedback.



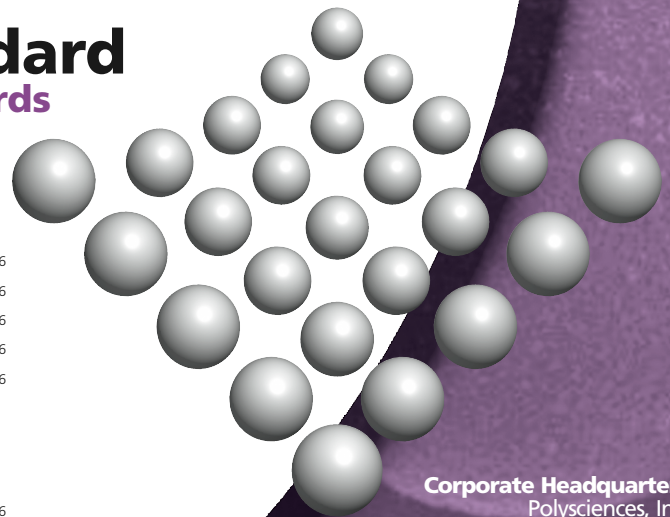
Confidence Comes Standard ViaCheck™ Viability Instrument Standards

ViaCheck Viability Instrument Standards are the latest offering in our extensive line of instrument standards. ViaCheck Viability Instrument Standards mimic the light scattering characteristics of live and dead cells on image based viability instruments. To match the characteristics of your cell population, the standards are available in many different live/dead ratios. The concentration of the standards also varies to emulate the concentration of your cell suspension.

As always, our quality control insures that the standards are the most accurate and reliable for your image based viability instrument. With our ViaCheck Viability Instrument Standards – confidence comes standard.

Viability Control		
Cat #	%Viable	Count
24622	0	1 x 10 ⁶
24623	50	1 x 10 ⁶
24624	75	1 x 10 ⁶
24625	90	1 x 10 ⁶
24626	100	1 x 10 ⁶

Concentration Control	
Cat #	Count
24627	1 x 10 ⁶
24628	4 x 10 ⁶
24629	8 x 10 ⁶



www.polysciences.com

Corporate Headquarters
 Polysciences, Inc.
 400 Valley Road
 Warrington, PA 18976
 Phone: 1-800-523-2575 or 215-343-6484
 Fax: 1-800-343-3291
 Email: info@polysciences.com
 Web: www.polysciences.com

Europe (Germany)
 Polysciences Europe GmbH, Handelsstrasse 3
 D-69214 Eppelheim, Germany
 Phone: (49) 6221-765767; Fax: (49) 6221-764620
 Email: info@polysciences.de; Web: www.polysciences.de

On the House

For a limited time, we are offering a **FREE** bottle of our NIST Traceable Precision Particle Size Standards. All you have to do is send us an empty bottle of our competitors' particles and we will replace it with a **full** bottle of ours. We want to show you that we have the best standards at the best prices. The price is easy to demonstrate and this free bottle will show you our standards have the best quality.

Please send your empty bottle to: Attn: Code NIST; Polysciences, Inc.; 400 Valley Road; Warrington, PA 18976

To qualify for the promotion, please include: name, company, address, e-mail, and phone number.

Limit 2 bottles per customer.

Particle size analysis is critical to particle-based technologies in the life sciences. As the proper function of common products such as pharmaceutical active ingredients, adhesives, and printing inks depends upon the sizes of their constituent particles, the sizing instruments used to support research, manufacturing, and QC—efforts in these sectors must be rigorously calibrated and validated.

Particle size standards may be used to validate sizing instruments across their dynamic ranges. They are suitable for the performance of routine calibration checks and corrections for particle sizing instruments, and in the support of practice standards, such as those published by ISO, ASTM International, CEN and other organizations. Additionally, the use of a reference material permits the standardization of results between runs, instruments, laboratories, and across time.

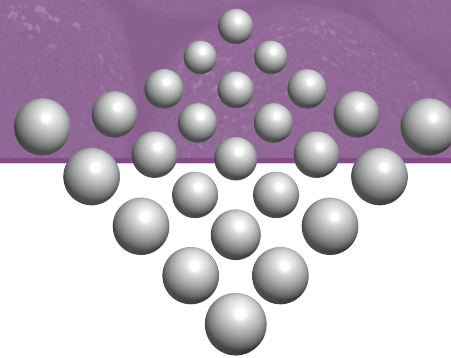
Features and benefits include:

- Certificate of Calibration and Traceability
- Convenient and economical packaging (15mL, 1% solids)
- Ease of use (dropper bottles)
- Highly competitive pricing

Catalog #	Nom. Diameter	Diameter Range	Solids	Size
Nanobead NIST Traceable Precision Particle Size Standards				
64004-15	40nm	36-44nm	1.0%	15ml
64005-15	50nm	45-55nm	1.0%	15ml
64006-15	60nm	54-66nm	1.0%	15ml
64007-15	70nm	63-77nm	1.0%	15ml
64008-15	80nm	72-88nm	1.0%	15ml
64009-15	90nm	81-99nm	1.0%	15ml
64010-15	100nm	90-110nm	1.0%	15ml
64011-15	125nm	119-131nm	1.0%	15ml
64012-15	150nm	143-158nm	1.0%	15ml
64013-15	200nm	190-210nm	1.0%	15ml
64014-15	250nm	238-263nm	1.0%	15ml
64015-15	300nm	285-315nm	1.0%	15ml
64016-15	350nm	333-368nm	1.0%	15ml
64017-15	400nm	380-420nm	1.0%	15ml
64018-15	450nm	428-473nm	1.0%	15ml
64019-15	500nm	475-525nm	1.0%	15ml
64020-15	550nm	523-578nm	1.0%	15ml
64021-15	600nm	570-630nm	1.0%	15ml
64022-15	650nm	618-683nm	1.0%	15ml
64023-15	700nm	665-735nm	1.0%	15ml
64024-15	750nm	713-788nm	1.0%	15ml
64025-15	800nm	760-840nm	1.0%	15ml
64026-15	850nm	808-893nm	1.0%	15ml
64027-15	900nm	855-945nm	1.0%	15ml
64028-15	950nm	903-998nm	1.0%	15ml

Catalog #	Nom. Diameter	Diameter Range	Solids	Size
Microbead NIST Traceable Precision Particle Size Standards				
64030-15	1.00µm	0.95-1.05µm	1.0%	15ml
64035-15	1.25µm	1.19-1.31µm	1.0%	15ml
64040-15	1.50µm	1.43-1.58µm	1.0%	15ml
64045-15	1.75µm	1.66-1.84µm	1.0%	15ml
64050-15	2.00µm	1.90-2.10µm	1.0%	15ml
64055-15	2.50µm	2.38-2.63µm	1.0%	15ml
64060-15	3.00µm	2.85-3.15µm	1.0%	15ml
64065-15	3.50µm	3.33-3.68µm	1.0%	15ml
64070-15	4.00µm	3.80-4.20µm	1.0%	15ml
64080-15	5.00µm	4.50-5.50µm	1.0%	15ml
64090-15	6.00µm	5.40-6.60µm	1.0%	15ml
64100-15	7.00µm	6.30-7.70µm	1.0%	15ml
64110-15	8.00µm	7.20-8.80µm	1.0%	15ml
64120-15	9.00µm	8.10-9.90µm	1.0%	15ml

Catalog #	Nom. Diameter	Diameter Range	Solids	Size
Megabead NIST Traceable Precision Particle Size Standards				
64130-15	10.0µm	9.00-11.00µm	1.0%	15ml
64140-15	12.0µm	10.80-13.20µm	1.0%	15ml
64155-15	15.0µm	13.50-16.50µm	1.0%	15ml
64160-15	20.0µm	18.00-22.00µm	1.0%	15ml
64165-15	25.0µm	22.50-27.50µm	1.0%	15ml
64170-15	30.0µm	27.00-33.00µm	1.0%	15ml
64180-15	40.0µm	36.00-44.00µm	1.0%	15ml
64190-15	50.0µm	45.00-55.00µm	1.0%	15ml
64200-15	60.0µm	54.00-66.00µm	1.0%	15ml
64210-15	80.0µm	72.00-88.00µm	1.0%	15ml
64220-15	100.0µm	90.00-110.00µm	1.0%	15ml
64225-15	125.0µm	112.50-137.50µm	1.0%	15ml
64230-15	150.0µm	135.00-165.00µm	1.0%	15ml
64235-15	175.0µm	157.50-192.50µm	1.0%	15ml



Particle Perplexities

Questions & Answers pertaining to Polysciences' Microspheres / Particles

Q : I conduct many different types of cell separations. Do you offer any products that support this application?

A : Funny you should ask...! We were just talking about the variety of BioMag® kits and particles for human and mouse cell separations that we offer. A list of our anti-leukocyte BioMag particles is provided below. We also offer BioMag T cell Enrichment Systems and a range of secondary antibody and other affinity coatings to capture cells that have been antibody-labeled.

Human		Mouse
anti-CD2	anti-CD16	anti-CD4
anti-CD3	anti-CD19	anti-CD8
anti-CD4	anti-CD34	anti-CD45R
anti-CD8	anti-CD45	
anti-CD11b	anti-CD56	
anti-CD14	anti-CD71	

Please visit our website for more details.

Q : Do you have any products that are suitable for selecting recombinant antibodies from a large antibody phage library?

A : Magnetic microparticles have been utilized with success for efficient selection of surface-displayed molecules from phage and yeast libraries. Sequential magnetic bead and flow cytometric sorting has also been reported. A few pertinent references follow:

Feldhaus MJ, et al. (2003) Flow-cytometric isolation of human antibodies from a nonimmune *Saccharomyces cerevisiae* surface display library. *Nature Biotechnology*; 21:163-70.

McConnell SJ, et al. (1999) Biopanning

phage display libraries using magnetic beads vs. polystyrene plates. *Biotechniques*; 26(2):208-10, 214.

Yeung YA, Wittrup KD. (2002) Quantitative screening of yeast surface-displayed polypeptide libraries by magnetic bead capture. *Biotechnol Prog*; 18(2):212-20.

We offer BioMag® microparticles with a number of coatings for affinity binding (e.g. secondary antibody, streptavidin, protein A, etc.), in addition to BioMag® functionalized microparticles for covalent attachment of capture molecules.

Q : I would like to couple antibody to microspheres, but I haven't worked with beads before. What do you suggest?

A : We offer products that are intended to introduce users to the wonderful world of microsphere coating in a relatively painless manner.

Our PolyLink Protein Coupling Kit includes EDAC (for activation of -COOH surface groups on microspheres), coupling buffer, and wash/storage buffer. The accompanying protocol (Technical Data Sheet [TDS] 644) has been optimized for use with polymer microspheres 1µm and larger.

We also offer coupling kits featuring BioMag®Plus Carboxyl (see TDS 618) or Amine (see TDS 617) particles, and a BioMag Magnetic Immobilization Kit that includes a magnetic separator, reaction flask, particles, and buffers (see TDS 546).

Simply select the microspheres and/or kit that best meet your needs, review the coupling protocol and pertinent Technical Data Sheets, and you'll be off and running.

Q : I would like to bind a peptide to microspheres. What type of microsphere do you recommend?

A : For peptides and other small molecules, you may wish to employ the use of a spacing molecule to ameliorate steric effects, or a crosslinker to target a specific residue and optimally orient the molecule. Crosslinking agents are available with a variety of reactive groups for use with functionalized microspheres (covalent coupling), or with a biotin molecule for affinity binding to streptavidin-coated microspheres. Depending on reactive groups that are present on the peptide, you may wish to first modify the microspheres (to avoid peptide crosslinking). If a homobifunctional linker is used (like glutaraldehyde), you will want to use it in excess to prevent crosslinking or "hairpin" binding.

Q : I'm planning the development of an immunoassay using BioMag®, but I've never worked with particles before. Where do I begin?

A : You might consider working with one of our BioMag immobilization kits. These include most of the things that you'll need to get started, such as BioMag particles, chemical crosslinker, buffers, and, in some instances, a reaction vessel and magnetic separator. You will also be supplied with a detailed protocol providing step-by-step instructions for coupling the biomolecule of choice to the particles, and for determining coupling efficiency. Once you have exhausted the supply of reagents provided with the kit, you may buy components on an individual basis.

Pure and Simple.

Introducing **SNARE™** DNA Purification Systems

SNARE™ DNA Purification Systems offer rapid, cost-effective methods for isolating DNA. The Systems utilize SNARE DNA Separation Particles which offer high surface area, superparamagnetic properties and a mean diameter of ~1.0µm. Once bound, the DNA-particle complex is stable and can be washed to remove any impurities or unwanted proteins from the sample to provide a clean DNA preparation. The DNA is eluted from the DNA-particle complex with an Elution Buffer and is ready for use in downstream reactions such as SNP genotyping, PCR, labeling, sequencing, transfection, cloning, and restriction digest.

SNARE™ products are based on a new, patent pending technology. SNARE was developed in Polysciences' laboratories and offers several advantages over other DNA purification methods.

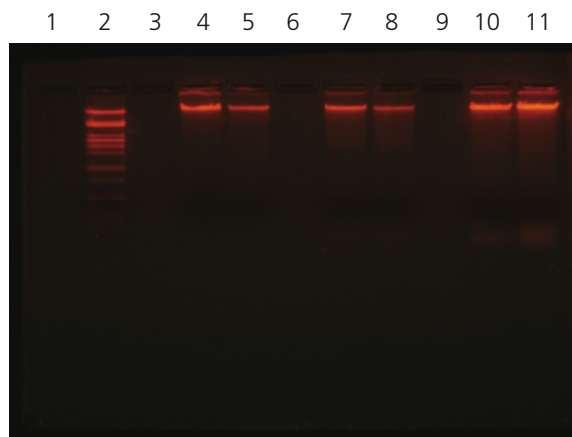
Advantages

- Easy-to-use procedure
- No need for columns or filters
- Eliminates laborious centrifugation steps
- Scalable — easily adjusts for sample size
- DNA is immediately available for PCR, restriction digestion.

Cat # Product Description

85080	SNARE™ Genomic DNA Purification System
85081	SNARE™ Plasmid DNA Purification System
85082	SNARE™ Plant Genomic DNA Purification System

Figure 1: DNA Isolated from Whole Blood



Lane 1: NA; Lane 2: Molecular Weight Standards Lambda DNA PST-1; Lane 3: NA; Lane 4: Competitor Magnetic Separation Protocol; Lane 5: Competitor Magnetic Separation Protocol; Lane 6: NA; Lane 7: SNARE™ DNA Purification System; Lane 8: SNARE™ DNA Purification System; Lane 9: NA; Lane 10: SNARE™ DNA Purification System; Lane 11: SNARE™ DNA Purification System

PolyLink Protein Coupling Kit

Making it Even Easier to Use Our Beads!

The PolyLink Protein Coupling Kit is used for covalent attachment of proteins to carboxyl (COOH) modified microspheres. The kit contents are sufficient for 50 coupling reactions using 1µm+ polymer (or magnetic) microspheres and 200-500µg of protein per reaction.

Water Soluble Chemistry

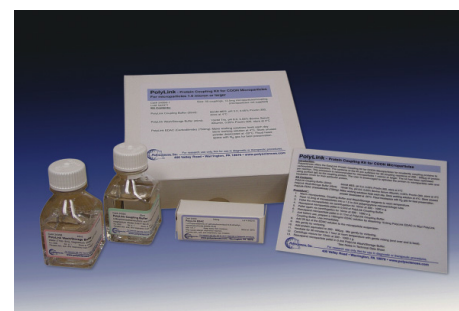
When the microsphere carboxyl groups are activated with water-soluble carbodiimide,

they become highly reactive toward primary amines on the protein of interest. A step-by-step procedure is provided in our Technical Data Sheet 644, 'PolyLink Protein Coupling Kit for COOH Microspheres,' (which may be downloaded from our website). Everything you need has been combined into one easy-to-use kit.

Cat # 24350

Kit Components:

- PolyLink Coupling Buffer
- PolyLink Wash/Storage Buffer
- PolyLink EDAC (Carbodiimide)



PolyLink Protein Coupling Kit