TechNote 105

Microsphere Size Standards

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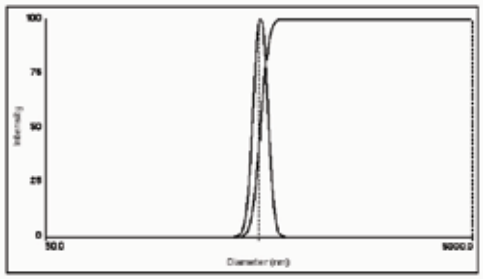
B E A D S ● A B O V E T H E R E S T ™



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I. INTRODUCTION

Microsphere size standards have been utilized in a variety of applications including cell or particle size estimation, as bead surrogates for filter challenge, and for instrument checks and calibrations.[1-5]

II. SIZE REFERENCES

At the most basic level, where microspheres will be used to estimate the size of another particle, the pore size of a filter or membrane, or for in-house performance checks of sizing instruments, customers might consider ordering from our standard product line. These products are sized using standard methods (see the Certificate of Analysis and our TechNote 208 for more information on sizing methods). If the bead composition and reported mean diameter and size distribution are appropriate for the application, such microspheres offer an economical alternative for conducting size estimations and checks.

We also offer a Flow Cytometry Size Standard Kit (Catalog Code 829), which is useful for classification of cell size via forward angle light scatter (FSC). FSC channel values may be plotted against reported bead diameter to generate a curve that may be used for the estimation of sizes of cells run at the same instrument settings (see Product Data Sheet 829). The kit is comprised of five microsphere populations in the range of 4-11µm.

III. NIST TRACEABLE SIZE STANDARDS

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

Our NIST Traceable Size Standards are monodisperse polystyrene spheres available in diameters ranging from 40nm to 175µm (see Catalog Codes NT02N-NT40N). These microspheres are traceable to official primary particle standards (Standard Reference Materials, SRMs) from the National Institute of Standards and Technology (NIST). Suspensions are conveniently packaged in dropper bottles at 1% solids, and each bottle is provided with a Certificate of Traceability.

IV. REFERENCES

1. **Brinda, P.** Comparing efficiencies of 0.1µm rated membranes. Minntech Corporation.
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3. **Hou, K., C.P. Gerba, et al.** 1980. Capture of latex beads, bacteria, endotoxin and viruses by charge-modified filters. *Applied and Environmental Microbiology,* 40(5): 892-896.
4. **Karamata, D.** 1970. Polystyrene spheres in electron microscopy. *J Ultrastructure Research,* 35: 201-209.
5. **Li, Y., S.M. Lindsay.** 1991. Polystyrene latex particles as a size calibration for the atomic force microscope. Revised Scientific Instruments.

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