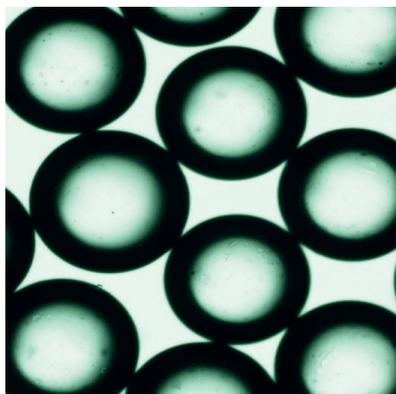


# Thermo Scientific Duke Standards - 3K / 4K Series Particle Counter Size Standards

Ensure accurate performance in air or liquid particle counter instruments

- Beads have very narrow diameter standard deviations, making them an excellent calibration material for applications requiring NIST traceability
- Calculated concentration simplifies the dilution process and minimizes the need to make multiple adjustments during sample preparation
- Particles are suspended in a low residue diluent to minimize any background interference, allowing for more precise calibration and insight into the dynamic range and calibration of the instrument



Available in uniform sizes of 0.1 to 100  $\mu\text{m}$ . Mean diameter of these particles is determined by: transmission electron microscopy ( $<1 \mu\text{m}$ ), or optical microscopy ( $> 1 \mu\text{m}$ )



The Thermo Scientific Duke Standards 3K/4K Series is comprised of certified, NIST traceable beads that provide a simple, precise method for calibrating or checking the performance of airborne or liquid particle counters and dispersion systems. Typical applications include cleanrooms and other contamination monitoring applications.

By ensuring accurate instrument performance, these particles prevent costly, time-consuming errors due to misleading or inconsistent data.

They are also prepared and supplied as low residue aqueous suspensions for minimal background interference, which allows for more precise calibration and insight into the dynamic range and calibration of the instrument.

Manufactured under strict quality and GMP control in our FDA registered and ISO-13485 certified facility, these monodisperse polystyrene beads are precisely diluted for immediate use.

**Thermo**  
SCIENTIFIC

Authorized Distributor in your area

**Distrilab**  
microsphere technology

Wapenrustlaan 11-31  
7321 DL Apeldoorn  
The Netherlands

www.distrilab.nl  
info@distrilab.nl  
+31 (0) 85 040 9913



## Duke Standards - 3K/4K Series - Particle Counter Size Standards

### Instrument Calibration:

The 3K/4K Series of beads provides third party traceability to national and international standards which is documented through an unbroken chain of measurements (with specified uncertainties) that are tied back to the National Institute of Standards and Technology. Additionally, the beads are also used in the development and testing of new analytical instruments and particle count analyzers.

### Particle Counting Instrument Validation:

By performing routine checks with these beads, the user can be alerted in advance to any shift in laser function or calibration curve shape that could possibly result in working with misleading or inconsistent data.

### Specifications

Composition	Polystyrene
Density	1.05 g/cm <sup>3</sup>
Index of refraction	1.59 @ 589 nm (25°C)
Additives	Trace amount of surfactant to inhibit agglomeration and promote stability
Fill volume	15 mL
Shelf life	≥ 24 months
Documentation	Certificate of Calibration and Traceability to NIST, Safety Data Sheet available upon request
Storage and Handling	Unless otherwise stated, store at room temperature or refrigerate (2-8 °C) product when not in use but do not freeze. Store upright and keep bottle tightly sealed.

### 3K Series

Catalog Number	Nominal Diameter	Particle Count per mL
<i>Aqueous Suspensions, Calibrated by TEM*</i>		
3K-100	0.1 µm	10 <sup>9</sup>
3K-150	0.15 µm	10 <sup>9</sup>
3K-200	0.2 µm	10 <sup>9</sup>
3K-220	0.22 µm	10 <sup>9</sup>
3K-269	0.27 µm	10 <sup>9</sup>
3K-300	0.3 µm	10 <sup>9</sup>
3K-350	0.35 µm	10 <sup>9</sup>
3K-400	0.4 µm	10 <sup>9</sup>
3K-500	0.5 µm	10 <sup>9</sup>
3K-600	0.6 µm	10 <sup>9</sup>
3K-700	0.7 µm	10 <sup>9</sup>
3K-800	0.8 µm	10 <sup>9</sup>
3K-900	0.9 µm	10 <sup>9</sup>
<i>Aqueous Suspensions, Calibrated by Optical Microscopy*</i>		
3K-990	<1.0 µm	10 <sup>9</sup>
3K1000	>1.0 µm	10 <sup>9</sup>
3K1600	1.6 µm	10 <sup>9</sup>

### 4K Series

Catalog Number	Nominal Diameter	Particle Count per mL
<i>Aqueous Suspensions, Calibrated by Optical Microscopy*</i>		
4K-02	2.0 µm	5 x 10 <sup>8</sup>
4K-03	3.0 µm	5 x 10 <sup>7</sup>
4K-04	4.0 µm	5 x 10 <sup>7</sup>
4K-05	5.0 µm	10 <sup>7</sup>
4K-06	6.0 µm	10 <sup>7</sup>
4K-07	7.0 µm	10 <sup>7</sup>
4K-10	10 µm	10 <sup>6</sup>
4K-15	15 µm	10 <sup>6</sup>
4K-20	20 µm	3 x 10 <sup>5</sup>
4K-25	25 µm	3 x 10 <sup>5</sup>
4K-30	30 µm	3 x 10 <sup>5</sup>
4K-40	40 µm	8 x 10 <sup>4</sup>
4K-50	50 µm	8 x 10 <sup>4</sup>
4K-60	60 µm	8 x 10 <sup>4</sup>
4K-70	70 µm	8 x 10 <sup>4</sup>
4K-80	80 µm	3 x 10 <sup>4</sup>
4K100	100 µm	3 x 10 <sup>4</sup>

\*To learn about our traceable sizing methods, review TN-010 "Internal Standard Method for Size Calibration of Sub-Micrometer Spherical Particles by Electron Microscope" and TN-018 "Improved Array Method for Size Calibration of Monodisperse Spherical Particles by Optical Microscope". These documents can be obtained by request or are available at [www.thermofisher.com/particletechnology](http://www.thermofisher.com/particletechnology)

[thermoscientific.com/particletechnology](http://thermoscientific.com/particletechnology)

© 2014 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.

Clinical Diagnostics  
Particle Technology

46500 Kato Road  
Fremont, California 94583  
U.S.A.

1-800-232-3342 (USA)  
+1-510-979-5000 (International)  
[info.microparticles@thermofisher.com](mailto:info.microparticles@thermofisher.com)

**Thermo**  
**SCIENTIFIC**  
Part of Thermo Fisher Scientific

PS1000.1\_06/10

Authorized Distributor in your area

**Distrilab**  
microsphere technology

Wapenrustlaan 11-31  
7321 DL Apeldoorn  
The Netherlands

[www.distrilab.nl](http://www.distrilab.nl)  
[info@distrilab.nl](mailto:info@distrilab.nl)  
+31 (0) 85 040 9913

