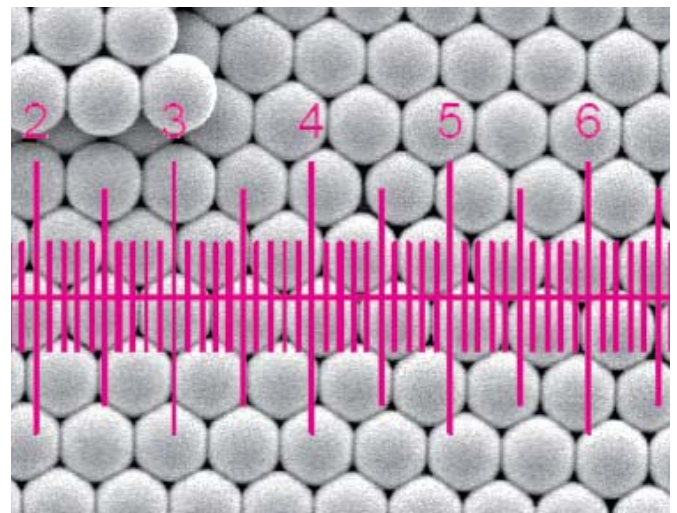


# NanoStandard™ Series MicroStandard™ Series

The NanoStandard™ and MicroStandard™ product line from Applied Microspheres is a series of traceable particle size standards. Particle size standards are widely used in quality control laboratories in the pharmaceutical, semi-conductor, diagnostic and many other industries. They are used to validate particle sizing - and counting instruments as well as for the performance of routine instrument checks and calibrations. Since they are traceable to the standard meter through an unbroken chain of measurements through the National Institute of Standards and Technology, it allows laboratories to prove that their procedures, systems and measurements meet standards as proscribed by international standardisation organisations such as ISO, GMP/GLP, ASTM, CEN amongst others. The use of NanoStandards™ and MicroStandards™ also substantiates inter-laboratory standardization.

Nano- and MicroStandard series particle size standards consist of a series of monodisperse polymer micro-spheres with calibrated mean diameters, traceable to the Standard Reference Meters and Materials through the National Institute of Standards and Technology (NIST) of the United States of America. The diameters are calibrated by validated particle-size analysis instruments



including Dynamic Light Scattering (DLS) and Centrifugal Disc Photo-Sedimentometer (CPS). Imaging technologies of Transmission Electronic Microscopy (TEM), Scanning Electronic Microscopy (SEM), and Optical Microscopy (OM) are applied using NIST Standard Reference Materials and a NIST Scale Calibration Artifact, making them amongst the best characterized particle size standards available.

NanoStandards™ are available in diameters ranging from 20 nm - 800 nm. MicroStandards™ are available in diameters from 1 µm - 200 µm. Larger diameters are available on request. They are suspended in aqueous medium with trace amounts of an anti-microbial agent and proprietary surfactant for optimal colloidal stability. For ease of dispersion they are packaged in 15 ml dropper tip bottles at a concentration of 1% (w/v) for the NanoStandard™ diameters and optimal concentrations for each diameter in the MicroStandards™ range. Each product is provided with a certificate of traceability stating the certified mean diameter and the expanded uncertainty. Product and lot specific physical data such as standard deviation, C.V., composition, density and refractive index are provided, but not certified.



## NanoStandard™

Product Identification number (PIN)	Nominal diameter	Certified mean diameter	Size distribution Std. dev. & CV%
10020	20nm	21nm	6.6nm (32.1%)
10050	50nm	53nm	10.3nm (19.3%)
10060	60nm	64nm	10.3nm (16.2%)
10085	85nm	87nm	10.4nm (11.9%)
10100	100nm	99nm	4.7nm (4.1%)
10150	150nm	158nm	4.6nm (2.9%)
10200	200nm	201nm	3.8nm (1.9%)
10300	300nm	290nm	6.5nm (2.4%)
10400	400nm	396nm	7.4nm (1.9%)
10500	500nm	503nm	4.9nm (1.0%)
10600	600nm	609nm	10.0nm (1.6%)
10700	700nm	711nm	14.3nm (2.0%)
10800	800nm	780nm	12.8nm (1.6%)

## MicroStandard™

Product Identification number (PIN)	Nominal diameter	Certified mean diameter	Size distribution Std. dev. & CV%
11001	1.0µm	1.04µm	0.03µm (2.4%)
11002	2.0µm	2.11µm	0.03µm (1.1%)
11003	3.0µm	3.04µm	0.04µm (1.4%)
11005	5.0µm	4.90µm	0.1µm (0.6%)
11007	7.0µm	7.00µm	0.1µm (2.0%)
11010	10µm	10.06µm	0.1µm (1.3%)
11015	15µm	14.70µm	0.3µm (2.2%)
11020	20µm	20.04µm	0.3µm (1.4%)
11025	25µm	24.35µm	0.4µm (1.5%)
11030	30µm	28.92µm	0.3µm (1.2%)
11040	40µm	38.55µm	0.4µm (1.0%)
11050	50µm	49.28µm	0.4µm (0.8%)
11080	80µm	77.72µm	0.9µm (1.2%)
11100	100µm	97.20µm	4.0µm (4.1%)
11200	200µm	198.00µm	6.3µm (3.2%)