



Product Guide

SEMICONDUCTOR AND CLEANROOM

Micro Technologies, Big Ideas.

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ABOUT THIS GUIDE

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SEMICONDUCTOR

M2300-NPT1 and **M2300-NPT2** Particle Deposition Systems (PDS™) are the latest, most advanced particle deposition tools for creating polystyrene latex (PSL) sphere size standards needed to calibrate KLA-Tencor, Hitachi, Applied Materials, TopCon, Hitachi and other wafer surface inspection systems. The new NPT (Nano Particle Technology) tools provide:

- True 20nm deposition capability
- Up to 12 different PSL sphere sizes and up to 50 different spots of particles in a single recipe
- $\pm 1.0\text{nm}$ for particles $< 50\text{nm}$ and $\pm 2\%$ particle size accuracy for particles $> 50\text{nm}$
- Full deposition and pattern deposition (spot, arc, and ring)

ABOUT MSP

MSP uses its expertise in nano/micro particles to design, develop, and manufacture scientific instruments and equipment for airborne particle sampling and measurement, pharmaceutical inhaler testing, and semiconductor applications. MSP is noted for its innovative products and creative use of aerosols.



M2300-NPT1



M2300-NPT2

SEMICONDUCTOR, cont'd

The new NPT models retain all the desirable features of the popular Model 2300 tools:

- Differential mobility analyzer (DMA) technology for accurate particle sizing and size classification
- Automated NIST traceable calibration routine
- Recipe control
- Deposition of Process Particles (Si, SiO₂, Al₂O₃, TiO₂, Si₃N₄, Ti, W, Ta, Cu, etc.) as well as PSL spheres and SiO₂ spheres

M2800, M2810, M2820, and M2830 Turbo Vaporizers™ are droplet-vaporization (DV), direct liquid injection (DLI) vaporizers for vaporizing precursor liquids for thin film deposition. They can be used for conventional chemical vapor deposition (CVD) as well as advanced atomic layer deposition (ALD) processes. The advanced design features have made it possible to deposit high quality thin films needed for cutting-edge products in the 60nm and 45nm technology nodes. Available with:

- Liquid flow from 50 to 120,000 mg/min
- Carrier gas flow from 100 to 20,000 sccm
- Vaporization temperature from 40 to 350°C

Available models include:

- **Model 2800:** for vaporizing highly heat-sensitive precursor in batch tools
- **Model 2810:** for vaporizing highly heat-sensitive precursor in single-wafer and mini-batch tools
- **Model 2820:** a high-capacity vaporizer for less heat-sensitive precursor for semiconductor and industrial applications such as surface coating and optical fiber preform manufacturing

- The 2300-NPT1 requires manual wafer loading while the 2300-NPT2 has automated wafer handling, including dual FOUP load ports and an ISO Class 1 mini-environment. Bridge tool options for handling 200 and 300mm wafers are available. Please contact factory for more details.

- **Model 2830:** for vaporizing less heat-sensitive precursor in single-wafer and mini-batch tools. Please contact factory for details and recommendations for your applications.



M2800



M2830

In addition to MSP's standardized products, MSP is engaged in developing and delivering unique designs made to meet the customer's specific industrial needs. MSP offers consulting, design, manufacturing, and training, to solve new industrial manufacturing challenges, utilizing its many years of experience in the nano/micro particle field. If you have a specific industrial problem you would like to solve, please contact MSP.

CLEANROOM

M2001 and M2010 Ultrapure Cleanroom Foggers

- A non-contaminating fogger for air flow visualization in cleanrooms
- Produces highly visible fog of water droplets by quenching steam with liquid nitrogen
- High purity water droplets leave no measurable residue when water evaporates
- Small (~3µm) droplet size and neutrally buoyant fog for faithful airflow tracking over long distances
- Suitable for photographic or video recording of air flow patterns in cleanrooms
- Ideal for operator training for good cleanroom practices
- The full-sized Model 2001 will provide ~45 minutes of steady fog output without fluid recharging

- The portable Model 2010 will provide ~25 minutes of fog output without fluid recharging



M2010

CLEANROOM, cont'd

Model 2110 Cleanroom Cascade Impactor™

A cascade impactor for sampling airborne particles onto silicon and other flat substrates for particle size, shape, and compositional analysis by SEM, XRF, Auger, and other techniques.

- Sample flow rate: 3.0 L/min
- Six impactor stages
- Built-in pump permits sampling with the 0.05 or 0.1 μm stage and additional stages at 0.3, 1.0, 3.0, and 10 μm
- Snap-together O-ring seals allow impactor stages to be used in any combination



M2110

M2045 High Output PSL Aerosol Generator

A high output polystyrene latex (PSL) aerosol generator for HEPA/ULPA filter testing, leak detection and cleanroom certification

- Generates up to 7.2×10^{10} PSL spheres per minute at 0.12 μm
- Produces 1×10^8 PSL per cubic foot when injected into 720 cfm of air flow for testing 24"x48" filters at 90 ft/min face velocity, sufficient to produce a downstream concentration of 100 particles/ft³ for a six-nine efficiency (99.9999%) ULPA filter
- Monodisperse size distribution with very few doublets and triplets
- High efficiency atomizer reduces liquid consumption
- Stable and repeatable operation
- High purity, all stainless steel atomizer for easy cleaning and maintenance



M2045

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