LPCVD LOW PRESSURE
CHEMICAL VAPOR DEPOSITION

Technical Data Sheet

PROCESS/PRODUCT DESCRIPTION

Deposition Sciences’ exclusive IsoDyn™ low pressure chemical vapor deposition (LPCVD) coating technology is a thermally driven organo-metallic process that is configured to deposit single layers of aluminum oxide and multi-layers of silicon dioxide and tantalum pentoxide. LPCVD is a high-temperature process (450°C – 500°C) that provides extremely conformal and seamless coatings on a wide variety of substrates including glass, ceramics, and metals.

The unique aspect of the LPCVD process is its capability to uniformly coat all surfaces, even the most complex shapes, with a high quality multi-layer optical coating. Deposition Sciences’ IsoDyn™ ultra-durable optical coatings also feature laser damage threshold (LDT) levels as high as 25 MW/cm².

APPLICATIONS

Deposition Sciences IsoDyn™ coatings are used in a multitude of industries. Applications that require high durability, seamless and conformal deposition on highly curved surfaces are supported utilizing our LPCVD process.

- Telecom
- Medical Devices
- Imaging Systems
- Laser Systems
- Wafer Level Testing
- Complex Geometries
- Curved Surfaces
- Barrier Coatings
- Domes

BENEFITS

- Multi-layer coating capability for high performance single-wavelength, dual-wavelength and broadband ARs and dichroic filters.
- Compatible with a broad range of substrate materials.
- All coatings deposited in a single vacuum, resulting in improved manufacturing efficiency and lower cost.
FEATURES

- Hard, scratch resistant coatings (passes 20 eraser rub).
- Coating uniformly deposited on entire surface.
- High Laser Damage Threshold (25 MW/cm² CW and 4.5 J/cm² pulsed @ 1µm)

STANDARD SPECIFICATIONS

- Single wavelength reflectance ≤ 0.25% per surface at wavelength of interest (e.g.: 1310nm)
- Dual wavelength reflectance ≤ 0.5% per surface at wavelengths of interest (e.g.: 905nm & 1550nm)
- Broadband reflectance customized to specific customer requirements (e.g.: average reflectance ≤ 1% from 1000nm to 2000nm)
- Dichroic performance customized to specific customer requirements (e.g., transmittance ≤ 10% from 400nm to 750nm, and ≥ 99% from 880nm to 930nm)
- Spectral range 0.35 microns to 5 microns

ENVIRONMENTAL TESTING

Environmental Testing can be performed in accordance with various military specifications, including MIL-C-48497 and MIL-F-48616.

- Humidity
- Salt Fog
- Abrasion
- Temperature Cycle
- Adhesion
- Solubility
- Cleanability

STANDARD COATING MATERIALS

- Ta₂O₅
- SiO₂

COMMON COATED OPTICS

- Optical Materials – diamond, ceramics, cubic zirconia, fused silica, gallium arsenide, gallium phosphide, glasses, metals, sapphire, silicon, zinc sulfide, zinc selenide
- Domes up to Ø8”
- Cylinders up to Ø8” × 24”
- Sphere diameters from 0.2mm to 10mm+
- Fiber diameters from 0.08mm to 1.0mm+