

DSI • DEPOSITION SCIENCES, INC.

A LOCKHEED MARTIN COMPANY

AR COATED MICRO OPTICS

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.

- Endoscopy
- Inspection
- Fiber Optic Coupling
- DPSS Laser Beam Shaping

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 $\leq 0.25\%$ per surface at wavelength of interest (e.g., 1290nm to 1325nm)

Visible transmission of $\geq 98\%$ from 400nm to 700nm

Broadband reflectance customized to specific customer requirements (e.g., average reflectance $\leq 1\%$ from 1060nm to 2000nm)

Dichroic performance customized to specific customer requirements (e.g., transmittance $\leq 10\%$ from 400nm to 750nm, and $\geq 99\%$ 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

TYPICAL SUBSTRATES

- Materials – Fused silica, glasses, sapphire
- Smallest size – 0.2mm