



-PRODUCT SPECIFICATION-

Nanostructured MDM Coating

Monodimensionally-modulated (MDM) multilayered coatings based on amorphous alumina and aluminum-oxynitride deposited by reactive DC pulsed magnetron sputtering, are ideal for semiconductor equipments and high-temperature applications such as oxidation/ corrosion protection of metallic alloys. The multilayered nano-structure provides unique properties such as low residual stress, microstructural stability, low diffusion coefficients for both metallic ions and oxygen, and thermo-mechanical compatibility and excellent bonding to the metallic substrate.

Property	Nanostructured MDM Coating
Substrate	Steels, Superalloy, MCrAlY bond coat, most ceramics and polymers
Structure	Amorphous, multi-layered
Deposition Temperature, °C	300
Use Temperature, °C	1150
Coating Thickness, μm	1-10
Substrate size	Up to 16"
Substrate geometry	Any shape, even complex ones
Thermal Conductivity W/m-K	30
Refractive index ($\lambda = 0.589 \mu\text{m}$)	1.793
Elastic Modulus, GPa	380
Hardness, DPHN	2000
Fracture Toughness, (MPa·m ^{1/2})	2.0
Thermal Expansion Co-efficient (10 ⁻⁶ /K)	8.8
Oxidation/Corrosion Resistance	Oxidation resistant up to 1150°C.
Applications	<ul style="list-style-type: none"> • Semiconductor equipments. • High temperature oxidation protection of superalloy; • TBCs for Hot-gas path components of gas turbines

*MDM: mono-dimensionally modulated (only in growth direction)