Technical Data Sheet

α- Alumina Coating
Heraeus High Performance Coatings

Description

α – Alumina Coating applied by aerosol deposition is a cost-efficient high-performance ceramic coating for electrical insulation with very good adhesion, anti-wear purposes and encapsulation in high-temperature applications.

Potential fields of application are Sensors, Batteries, Power-Electronics, Medical components, Vacuum technology

Substrates: Metals, ceramics, glass, polymers, silicon

Key benefits

- Room temperature coating process
- Low Vacuum
- No chemical reaction or phase transition
  → alpha-alumina films in one step
- High deposition rate
- Excellent adhesion
- Dense and crack-free
- No pretreatment of substrates necessary

General film properties

Film thickness: 0,5 µm – 30 µm
Homogeneity: ± 15 % of film thickness
Film composition: α-Al2O3
Purity: up to 99,999 %
Roughness: Conform to substrate
(e.g. Ra = 0,12 µm on silicon wafer)

Typical mechanical properties

Adhesion: > 30 MPa
Hardness: ~ 850 HV 0,015
Abrasion: increased resistance of steel by 1500 %
According to ASTM G99-05 with ceramic counterpart
Scratch-Test: Class 0

Long term reliability

Temperature cycling: 12000 cycles: 900 °C → 20 °C
No change in device functionality
Thermo-shock: 1000 cycles: -65 °C ↔ 150 °C
Adhesion > 30 MPa, no change in appearance

Physical properties

Breakdown Voltage: > 18 kV/mm
Thermal conductivity: ~ 10 W/mK @ RT
Density: > 99,9%
Transparency: > 80 % @ 1 µm film thickness and 600 nm

Contact
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