Heraeus

Technical Data Sheet

β-Silicon Nitride Coating

Heraeus High Performance Coatings

Description

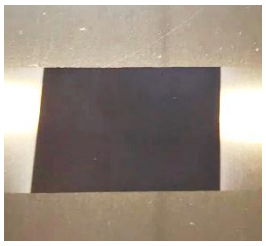
Silicon Nitride (Si_3N_4) applied by aerosol deposition is a high-performance ceramic coating with high hardness and very good anti-wear properties at high temperatures. It shows excellent stability during exposure to temperature cycling and thermo shock testing. β-Si_3N_4 coatings also exhibit anti-viral and anti-bacterial characteristics.

Potential fields of application:

- Friction reduction
- Ball Bearings
- Medical components
- Electronics

Substrates: Metals, ceramics, glass, polymers, silicon

Si_3N_4 coated bone screw



Si_3N_4 coating on titanium

Key benefits

- Room temperature coating process
- Low vacuum
- No chemical reaction or phase transition
- High deposition rate
- Excellent adhesion
- Dense and crack-free
- No pretreatment of substrates necessary

General film properties

Film thickness: 0,5 µm – 10 µm

Homogeneity: ± 15 % of film thickness

Purity: conforming to source material

Roughness: Conform to substrate
(e.g. R_a = 0,20 µm on polished steel)

Contact angle (medical): < 10 °

Density: > 99 %

Long term reliability

Thermo-shock: > 1000 cycles: -65 °C ↔ 150 °C
Adhesion > 30 MPa
no change in appearance

Typical mechanical properties

Adhesion: > 30 MPa

Scratch-Test: Class 0

According to DIN EN ISO 26443 and EN ISO2050:2016

Contact
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