MATERION
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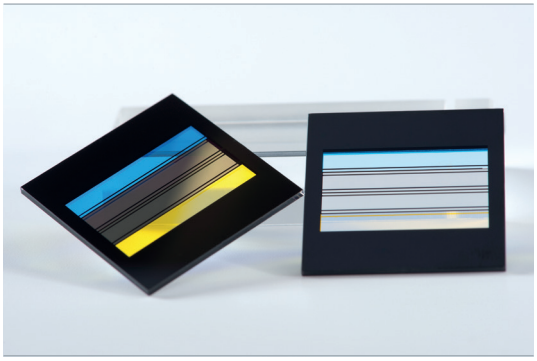
TiBlack™ Coating (UV, VIS, NIR)

Titanium based Optical Black Coating

TiBlack™ is a Titanium-based black coating which is characterized by a high-level of absorption as well as a low reflection from the UV to the NIR spectral range. The coating is well suited for filter and wafer blackening as well for patterned filters. Optical density and performance can be adjusted based on customer needs. Because the coating is fully RoHS compliant, it can be used as a flexible solution for various types of applications.



Benefits

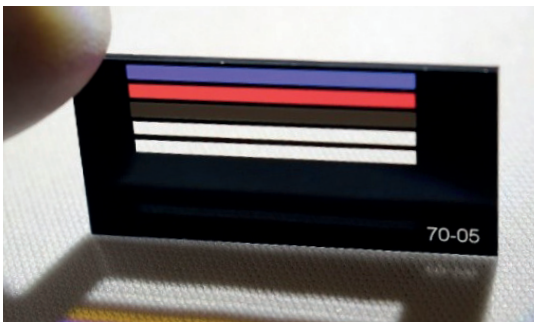
- Optical Black Coating
- High absorption in the UV, VIS and NIR range
- Low reflection in the UV, VIS and NIR range
- Can be patterned by lift-off and chemical etching
- Low defect and pin hole level
- Excellent environmental stability
- Good adhesion on glass and metal substrates
- RoHS conformity

Applications

TiBlack™ coating will mainly be used to reduce scattered light and for blackening. Examples are apertures in lense systems of endoscopes or sensor lids. Furthermore, in projection applications, digital imaging and for scientific solutions. In monolithic arrays of dichroic filters, TiBlack™ is used to cover the interspace between the individual filters resulting in minimized cross-talk and stray light.

- Multi-Bandpass Filters
- Endoscopy
- Space observation
- Sensor lids for cameras
- Multispectral Imaging

TiBlack™ based multispectral filter array



Technical Data

Spectral specification
R<3% avg 350-1200 nm, AOI = 0-45° r-pol
R<5% abs 350-1200 nm, AOI = 0-45° r-pol (R<3% abs for angles up to 15°)
R<3% abs. 350-850 nm AOI= 0-45° r-pol
T<0.001% abs. 350-850 nm (OD5)
T<0.01 abs. 350-1200 nm (OD4)
Better performance for internal reflection possible

Environmental testing
Adhesion according to DIN ISO 9211-04-02-03
Abrasion according to DIN ISO 9211-04
Humidity: +45° C; 95%-100% r.H.; 24 h according to DIN ISO 9022-12-01-1

Temperature resistance
Thermal Cycling (-62 °C ± 2° C / 10 h and +72° C ± 2° C/ 1 Zyklus, <10 K/min (2 K/min)
High temperature storage @ 150°; 72 hours
Vacuum Cycling: -45° C up to +75° C; P< 10-5 mbar; 10 minutes dwell time; 10 cycles

Gamma Radiation exposure
Source: Co-60 gamma irradiation (TID: 200 krad)
Dose rate: 7.25 krad (air)/h (2.0135 E-2 Gy (air)/s)
Proton: 62 MeV for 1h

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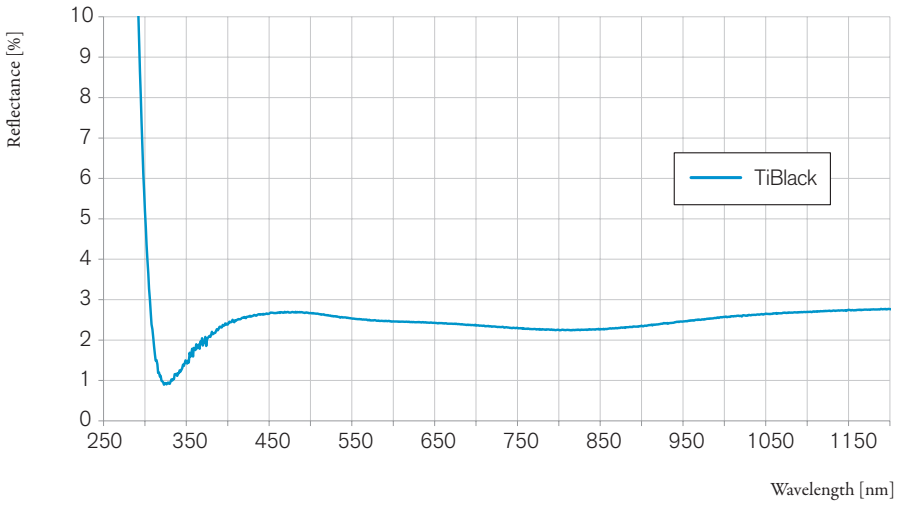
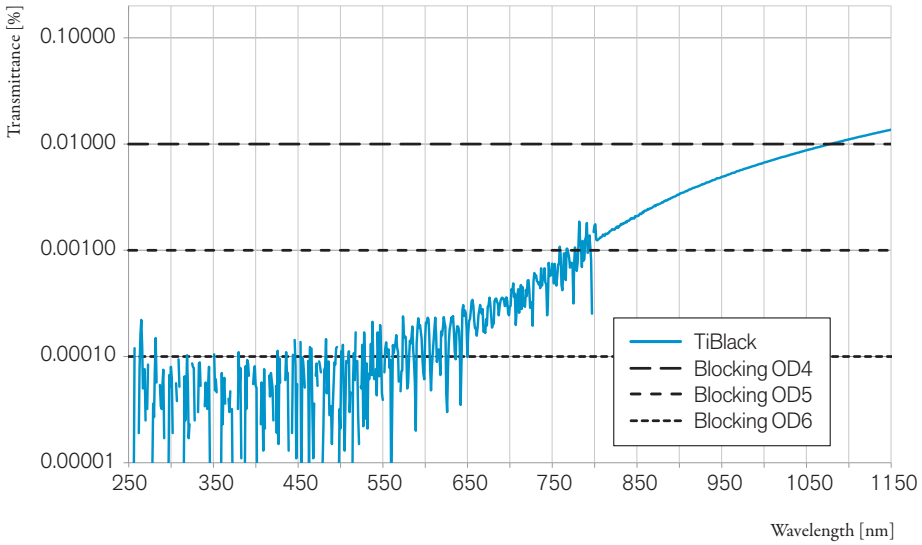


Reflectance TiBlack™ coating.



Transmittance TiBlack™ coating.

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