



Coating.
Application-specific solutions.

Coating.

The coatings listed show only a part of our coating options within the BERLINER GLAS GROUP. We also develop customized solutions and advise you. Environmental- and stress tests of the coatings for the qualification are carried out in-house.

Substrate

Typical substrates are:

- Wide variety of optical and colored glasses
- Flat glass, lenses and prisms
- Sapphire, quartz as well as glass ceramic and ceramic
- Infrared materials such as silicon, germanium and zinc sulfide (ZnS)
- Plastic limited to Zeonex
- Substrate size up to 400 x 1,000 mm, Ø 400 mm
- Contract coating on customer substrates on request

Specifications*

General

- Wavelength ranges for:
 - Metallic mirror 120 nm–12 µm
 - Dielectric mirror 190 nm–3 µm
 - Filter, beam splitter, black chrome 250 nm–3 µm
 - Anti reflection coatings 190 nm–5 µm
 - Conductive layers 400 nm–1.6 µm
- Angle of incidence ranges 0–45° typical
0–85° possible
- All polarization types are specifiable (p, s and average value)
- Reflection, transmission and optical density
- Phase specification
- Very high LIDT for Pulse and CW laser applications

Mirrors

- Metallic, dielectric and hybrid mirrors
- Narrowband and broadband mirrors
- Front and back surface mirror
- Reflection to 99.9 % possible
- Laser mirrors for one or more wavelengths

Antireflection coatings

- Narrow, multi- and wide-band spectral ranges
- Residual reflection to <0.1 % possible

Filters

- Edge Filters: Long- (LWP) and short pass (SWP)
- Edge position tolerance from 0.5 % of the nominal wavelength
- Narrowband filter (T band) and Notch filters (R band)
 - Center position tolerance from 0.2 % of the nominal wavelength
 - High peak transmittance and high blocking possible
 - Half width from 2 % of the nominal wavelength

- Laser protection filter
- Single and multi-band filters with freely definable widths and positions
- Graduated variable filters

Beam splitters

- Available on a plane-parallel plate or embedded in a cube:
 - Cemented
 - Optically contacted
 - With defined airspace
- Polarizing beam splitter (PBS)
- Non-polarizing beamsplitter (NPBS)
- Neutral beam splitter
- Narrow, wide or multiple spectral regions with freely definable splitting ratios

Transparent and electrically conductive layers (ITO)

- Defined electrical resistance, tolerance $\pm 20\%$
- Lowest specification <17 Ω/cm^2 for EMI protection
- Transmission >80 % in the visible range and >40 % at 1,550 nm
- Low reflection <20 % possible
- Structuring with mechanical masks
- Metal contact electrodes

Absorbing layers

- Typically made with black chrome layers
- Chrome-free absorber layers available
- High blocking, low reflection
- Narrow- and broadband
- Efficient from air and/or glass sides
- Structurable (etch and lift-off processes)

Layers for non-optical applications

- Wear protection layers
 - For glass, glass ceramic and ceramic
 - Nitridic layers, e. g. CrN
- Barrier layers, e. g. etch stop
- Layers to connect components
- Conductive layers

Development of customized coatings

Surface imperfections

- Assessment according to ISO 10110/MIL-O-13830A/DIN3140
- Specifications depending on the layer system e.g.:
 - AR: 5/C3 x 0.025 over Ø 25 mm (MIL 20/10)
 - Filter: 5/C3 x 0.040 over Ø 25 mm (MIL 40/20)

* The following error and tolerance data indicate possible limit values.



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