COATING.
APPLICATION-SPECIFIC SOLUTIONS.

SWISSOPTIC
BERLINER GLAS GROUP

COATING.

SwissOptic AG, a company of the Berliner Glas Group, produces sophisticated coatings for various applications. The spectral range extends from UV (190 nm) to the infrared range (6 µm, metal mirror up to 12 µm). In addition, 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–3µm
  - 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 ±20 %
- Lowest specification < 17 Ω/cm² 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
- 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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