

ASTRONOMY

For more than 100 years SCHOTT has delivered a large variety of optical materials and components enabling the stunning advancement of ASTRONOMY. Highlights achieved with SCHOTT's support are the telescopes of the ESO-VLT (8 m), KECK and GRANTECAN (10 m) and the x-ray space telescope CHANDRA.

The coming generation of giant observatories with 30 m (TMT) or 42 m (E-ELT) require large sets of hexagonal mirror elements. SCHOTT has proven the capability to deliver such sets with the extreme and reproducible quality, which is crucial for these projects. But not only the extremely large telescopes, also wide field survey telescopes of the 4-m class and smaller ones need sophisticated instruments with optical materials in outstanding quality sometimes in large dimensions.

SCHOTT offers a large variety of materials covering almost all areas of specification needs of optical designers and providing excellent material- and optical-homogeneity even in large sizes.



Materials

- ZERODUR® zero expansion glass ceramic for mirrors and structures, ZERODUR K20® for high temperatures
- More than 100 optical glass types, among them N-BK7, F2, LLF1, N-FK5, LF5, SF6 in large sizes (1 m)
- UV transmitting materials Fused Silica LITHOSIL®, LITHOTEC® CaF₂, Also in large dimensions
- More than 50 colored filter glass types
- Infrared transmitting glasses (IRG2)

Quality Assurance

As the inventor of the high quality optical glass production process and on the basis of 125 years of ongoing developments and experience SCHOTT masters all melting and tempering processes with outstanding and highly reproducible quality results. Careful inspections at all stages of fabrication from raw material to the final product secure highest quality throughout the entire process chain. Certificates for all products are provided comprising the quality inspection results. For large projects these results will be verified in the presence of the customer. State-of-the-art measurement equipment is used for internal and dimensional quality inspection. All sites in our global production network operate certified quality and environmental management systems (ISO 9001/ ISO 14001).

Main Products:

Applications:

ZERODUR®



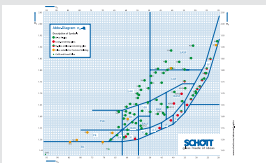
ZERODUR® is an inorganic, non-porous glass ceramic with a very low thermal expansion coefficient. It is extremely homogeneous, chemically stable and can be processed and polished to very high surface qualities. It is used for telescope mirror substrates for astronomy, for reflecting optical elements in lithography and as dimensional reference in metrology.

ZERODUR® Lightweight Structures



SCHOTT has a wide range of capabilities for shaping and light-weighting of ZERODUR®. With grinding up to 90% weight reduction can be achieved. Subsequent acid etching can be used to increase the strength of the structures significantly.

Optical Glasses



Optical Glasses are used for imaging cameras, in focal reducers, for guiding the light of astronomical objects to spectrographs and for correction of the atmospheric dispersion. SCHOTT offers special quality grades in the refractive index, dispersion, optical homogeneity, inclusion content, striae and stress birefringence, for some glasses in diameters up to 1000mm, enabling excellent lenses working at the diffraction limit over a wide spectral range.

Optical Lenses, Prisms and other Components



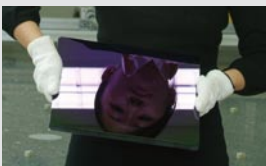
SCHOTT is capable to provide lenses, prisms and components of almost arbitrary shape from optical glass and other optical materials. Possible delivery forms can be ground near net shape, also plane-parallel substrates as well as prisms and aspherical lenses polished to high optical quality.

UV- and IR materials



LITHOTEC® CaF₂ and Fused Silica LITHOSIL® are the materials of choice for many UV and IR applications. Key quality features of both materials are the very low stress birefringence and the high optical homogeneity. LITHOTEC® CaF₂ blanks are available with dimensions up to 350mm, Fused Silica LITHOSIL® up to 700mm.

Astronomical Filters



Optical filter sets made from colored glasses or coated glass substrates or from a combination of both serve for wavelength band selection in astronomical observation. SCHOTT has all production processes in house. So filter elements as well as complete filters even in larger dimensions can be provided.

Optical Fibers and Fiber Components



Optical fibers with very high transmittance also in the short wavelength range serve for guiding multiobject light e.g. from a telescope focal plane to spectrographs. Fibers can be arranged in virtual any order thus allowing to produce tapers and faceplates e.g. for CCD coupling.

For more information please contact:

Detailed product datasheets available!

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SCHOTT
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