

Flow Tubes made from Cerium- and Samarium-doped Filter Glass



Laser Cavity Flow Tubes & Filter Glasses

Product Information

SCHOTT Flow Tubes are used as filter media in the laser cavity of flash lamp pumped solid-state laser systems. Flow Tubes transmit the ideal pumping bands while filtering undesired UV radiation and parasitic lasing. The Flow Tubes improve beam amplification in a highly efficient way and safely protect the laser medium from solarization and heat.

Forms of Supply

We supply fully finished laser components fabricated from our high-quality laser filter glass. We realize completely customized designs to perfectly meet the requirements of your application. (For examples see illustrations below)

Advantages

- Possibility for chemical strengthening and acid etching in order to increase resistance to breakage due to thermal shock
- Protects laser medium from UV and IR light
- Absorption of parasitic laser radiation
- Completely customized designs are possible
- Improves laser efficiency

Applications

- Medical/Cosmetic Applications
- High Power Applications
- LIDAR (long distance measurement)

Specifications

Length max.	120 mm
Holes diameter min.	8 mm
Parallelism	0.05 mm
Minimum Wall Thickness	1 mm
Tolerances of Dimensions	According to ISO2768-F
Surface Quality (inner/outer)	Fine ground or polished

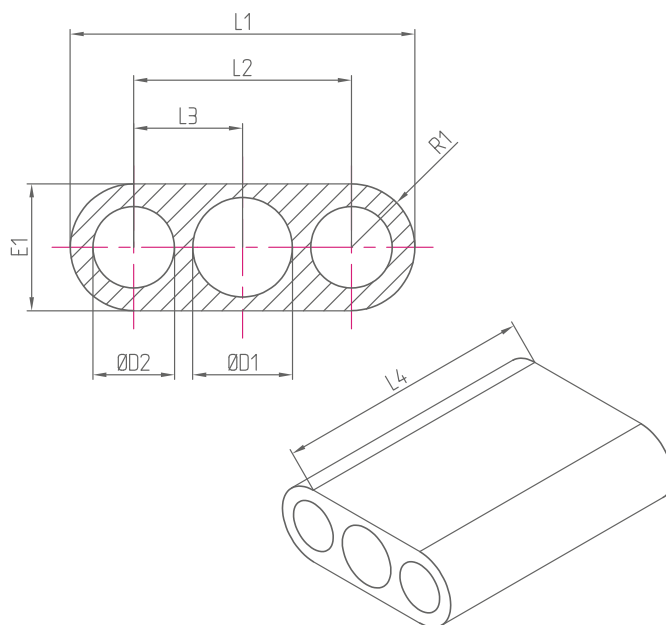
Materials

SCHOTT Laser Cavity Filter Glasses:

- S7000
- S7005
- S7010N

Application Support

Contact our experts anytime to discuss your personal product needs. Together we will find your perfect solution.



Geometry, Diameters, Lengths, Thickness, Number of holes to be defined according to customer request.

Laser Cavity Filter Glass

S7000, S7005 and S7010N

Product Information

S7000 is a clear, cerium doped glass usable as laser cavity material. It is also available to serve as a cut-off material.

S7005 is a laser cavity material with 5 % doping of samarium oxide (Sm_2O_3). It is typically used for tube walls thicker than 6 mm.

S7010N is a laser cavity material with 10% doping of samarium oxide. This glass is recommended for most applications.

SCHOTT offers a complete line of these commercial silicate filter glasses and can produce a full range of doping levels for specific applications.

Forms of Supply

The glass is available as Flow Tubes and cut blanks.

Optical Properties

	S7000	S7005	S7010N
n_d	1.5632	1.5623	1.5597
v_d	55.3	55.1	55.3
$n_{1054 \text{ nm}}$ (calculated)	1.553	1.552	1.549
$n_{1540 \text{ nm}}$ (calculated)	1.550	1.549	1.547

Physical Properties

	S7000	S7005	S7010N
Density ρ [g/cm ³]	2.88	2.88	2.88
Thermal Conductivity $\lambda_{25^\circ\text{C}}$ [W/(m·K)]	0.84	0.84	0.84
Thermal Conductivity $\lambda_{90^\circ\text{C}}$ [W/(m·K)]	0.92	0.92	0.92
Young's Modulus E [10 ³ N/mm ²]	78	79	78
Poisson's Ratio μ	0.25	0.25	0.25
Thermal Expansion $\alpha_{(+20/+300^\circ\text{C})}$ [10 ⁻⁶ /K]	11.3	11.4	11.4
Transformation Temperature T_g [°C]	454	456	453

Chemical Properties

	S7000	S7005	S7010N
Water Loss in 50 °C Water [mg/(cm ² ·d)]	0.011	0.012	0.013
SR	1.0	1.0	1.0
AR	1.0	1.0	1.0
FR	0	0	0
CR	1	1	1

