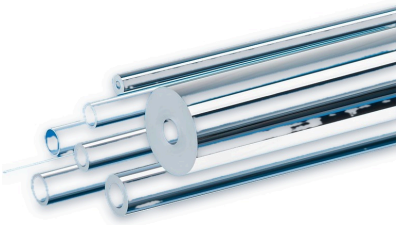


F-Series High-purity Fused Fiber Quartz

Specification Datasheet · TopRays Quartz Materials

A benchmark low-OH synthetic fused quartz for the optical fibre industry. It suits MCVD / FCVD / PCVD CVD core deposition, photonic-crystal-fibre sleeve drawing and RIT rod-and-sleeve processes; its low OH content prevents hydroxyl build-up at the core-cladding interface and suits IR power-delivery fibres and specialty fibre preforms.



Key Features

Key features: extremely low hydroxyl (OH⁻) content — below 1 ppm in the standard grade and down to 0.1 ppm in customised versions. Hydroxyl groups in ordinary synthetic quartz cause strong IR absorption peaks near 2700 nm and 3600 nm; the F series largely removes that absorption through a special dehydration process, giving high transmission across the UV, visible and near-IR ranges.

Typical Applications

- Specialty fibre preforms, power-delivery fibres and laser fibres;
- Near-IR high-power laser optics (1064 nm, 1310 nm, 1550 nm);
- IR spectroscopy and IR thermometry windows;
- High-vacuum and high-temperature optical assemblies;
- Optical systems requiring transmission across the 2.7 – 3.8 μm IR band.

Purity

Parameter	Value
OH content	Specified ≤ 1 ppm; typical ≤ 0.2 ppm
Chlorine (Cl) content	800-2000 ppm
Fluorine (F) content	No fluorine added (F-free)
Trace metal impurities	Below ICP-MS detection limit — ultra-high purity

Thermal & Optical (tested at 1150 °C)

Parameter	Value
Viscosity at 1150 °C	13.1 dPas
Refractive index shift (vs. standard undoped quartz)	+0.35 ~ +0.5 × 10 ⁻³

Supply Geometry

Tube type	OD	Wall thickness		
Small substrate tube	10–20 mm	1–4 mm		
Standard substrate tube (incl. HP precision)	20–40 mm	1–4 mm		
Small sleeve	40–60 mm	4–15 mm		
Large sleeve	60–90 mm	15–30 mm		
Form tolerance	Small substrate tube	Standard substrate tube	Small sleeve	Large sleeve
OD tolerance	±0.02~0.2 mm	±0.03~0.2 mm	±0.1~0.3 mm	±0.2~0.4 mm
Wall thickness tolerance	±0.02~0.2 mm	±0.03~0.2 mm	±0.1~0.3 mm	±0.2~0.4 mm
Ovality	0.03~0.2 mm HP:0.01~0.03 mm	0.05~0.2 mm HP:0.01~0.05 mm	0.1~0.25 mm	0.15~0.3 mm
Wall eccentricity	0.05~0.12 mm HP:0.02~0.05 mm	0.07~0.12 mm HP:0.02~0.05 mm	0.1~0.2 mm	0.15~0.3 mm
Cross-sectional area deviation (CSA)	1~3 %	1~2 %	0.7~2 %	0.5~1 %
Bow	0.2~0.5 mm/m			
Form tolerances (common to all tubes; the HP precision grade improves on these)				

Delivery Forms

- Solid quartz rods and quartz sleeves (the mainstream forms for fiber preforms)
- Optical blocks and discs for downstream finishing into windows and lenses
- Custom tubes and special-shaped parts