



TOQUARTZ

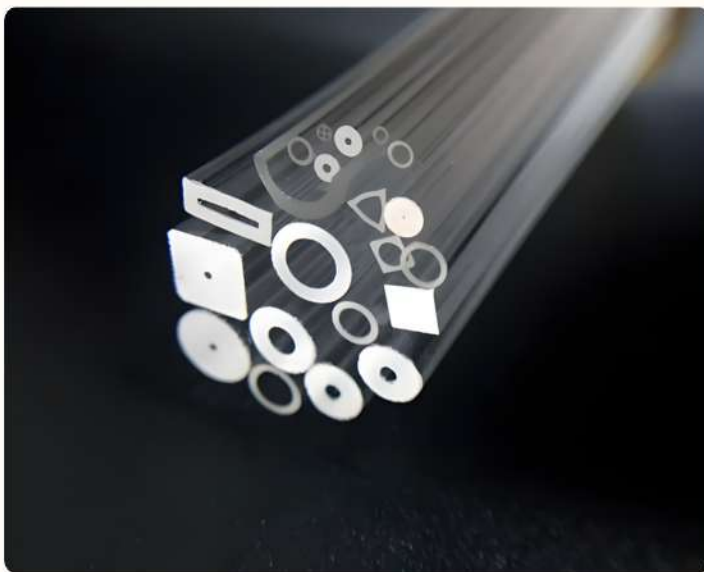
Tech Specifications

Quartz Tube

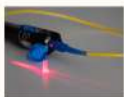
Integrated Engineering & Agile Production
for Demanded Specifications



CAPILLARY QUARTZ TUBE



- 1,200°C sustained thermal endurance with ultra-low thermal expansion coefficient
- >93% visible & >80% UV spectral transmittance across full wavelength bands
- Chemical inertness resisting all acids except hydrofluoric acid (HF)



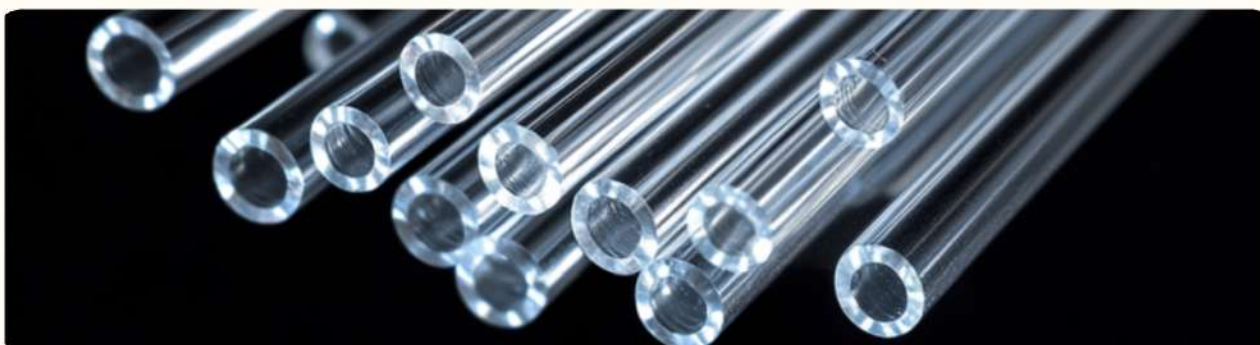
Precision-engineered fused silica capillaries serve mission-critical roles across advanced technology sectors:

- **Fiber optic splitter alignment cores** for telecommunication networks
- **WDM (Wavelength Division Multiplexer) hermetic sealing sleeves**
- **Optical array substrate microfluidic channels**
- **Distributed fiber sensor stress-resistant jackets**
- **UV-Vis spectroscopy sample containment cells**





TECHNICAL DATA SHEET



Quartz capillary tube ensures $\pm 0.1\text{mm}$ dimensional accuracy and 99.98% purity compliance, with fully customizable optical and thermal parameters—submit your project specs for precision-engineered solutions.

Property	Value Range
Chemical Composition	Cr: 0.1, Ge: 0.4, Fe: 1.5, Mg: 0.4, Ti: 0.1, Ga: 0.8; Al: 16, Na: 2.3, Li: 0.5, K: 2.0
Spectral Transmission (at 1.0mm Thickness)	93% transmittance (280-780nm), 93.4% peak at 780nm, UV cutoff <220nm
Thermal Properties	Softening point: 1615~1683°C, thermal expansion: $5.5\sim 6.7\times 10^{-7}/\text{cm}\cdot^{\circ}\text{C}$
Mechanical Strength	Compressive: $>1.1\times 10^9$ Pa, Young's modulus: $7.0\sim 7.5\times 10^{10}$ Pa
Optical Performance	Refractive index: 1.456~1.460, dielectric constant: 3.75~6.0 @1MHz



SIZE CHART

Quartz Capillary Tube



- **Material Consistency:** All models maintain SiO₂ purity **99.99%** (variation < 0.005%).
- **Length Flexibility:** Customizable lengths from **10–2000 mm** (laser cutting with $\pm 0.2\text{mm}$ accuracy).
- **Bore Configuration:** Multi-bore (double/quad/hexagonal/septuple/octuple, twin-row triple), elliptical, rectangular, square, triangular, D-shaped, eccentric

Group 1: $\varnothing 1\text{--}1.4\text{mm}$ - Core Components for Optical Communication

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG001	1	0.5	10-2000	99.99
AT-SY-MXG002	1.35	0.05	10-2000	99.99
AT-SY-MXG003	1.35	0.3	10-2000	99.99
AT-SY-MXG004	1.35	0.38	10-2000	99.99
AT-SY-MXG005	1.35	0.5	10-2000	99.99

SIZE CHART

Quartz Capillary Tube



Group 1: $\varnothing$ 1–1.4mm - Core Components for Optical Communication

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG006	1.35	1	10-2000	99.99
AT-SY-MXG007	1.4	0.8	10-2000	99.99

- Typical Models: MXG001 (1.0mm OD)
- Key Applications:

- ✓ Fiber Splitters: Multi-bore MXG001 enables multi-fiber simultaneous splicing for dense channel alignment.
- ✓ Wavelength Division Multiplexers (WDM): 0.05–0.5mm ID tubes seal ultra-narrow waveguides with <0.1dB insertion loss.
- ✓ Optical Array Substrates: Twin-row triple bores achieve <1 μ m spacing error for 144-fiber ribbon alignment.



SIZE CHART

Quartz Capillary Tube



Group 2: $\varnothing$ 1.7–3.0mm - Precision Integration in Laser Systems

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG008	1.7	0.5	10-2000	99.99
AT-SY-MXG009	2	0.05	10-2000	99.99
AT-SY-MXG010	2	0.3	10-2000	99.99
AT-SY-MXG011	2	0.5	10-2000	99.99
AT-SY-MXG012	2	0.1	10-2000	99.99
AT-SY-MXG013	2	1	10-2000	99.99



SIZE CHART

Quartz Capillary Tube

Group 2: $\varnothing$ 1.7–3.0mm - Precision Integration in Laser Systems

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG014	2.5	0.55	10-2000	99.99
AT-SY-MXG015	2.9	0.1	10-2000	99.99
AT-SY-MXG016	2.9	0.2	10-2000	99.99
AT-SY-MXG017	2.9	0.3	10-2000	99.99
AT-SY-MXG018	2.9	0.5	10-2000	99.99
AT-SY-MXG019	2.9	0.6	10-2000	99.99
AT-SY-MXG020	3	1	10-2000	99.99
AT-SY-MXG021	3	2	10-2000	99.99

- Typical Models: MXG008 (1.7mm OD), MXG021 (3.0mm OD)
- Key Applications:
 - ☒ CO₂ Laser Cooling Circuits: MXG008’s 0.5mm ID controls coolant flow at $\pm$ 2ml/min accuracy for thermal stabilization.
 - ☒ UV Beam Collimation Tubes: MXG021’s 2.0mm ID nestles collimating lenses with <3 μ m radial runout.

SIZE CHART

Quartz Capillary Tube



Group 3: $\varnothing$ 3.2–6.0mm - Industrial Sensor Resilience Solutions

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG022	3.2	0.45	10-2000	99.99
AT-SY-MXG023	4	0.5	10-2000	99.99
AT-SY-MXG024	4	1	10-2000	99.99
AT-SY-MXG025	4	2	10-2000	99.99
AT-SY-MXG026	4	3	10-2000	99.99
AT-SY-MXG027	4.75	0.375	10-2000	99.99



SIZE CHART

Quartz Capillary Tube

Group 3: $\varnothing$ 3.2–6.0mm - Industrial Sensor Resilience Solutions

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG028	5	0.4	10-2000	99.99
AT-SY-MXG029	5	0.5	10-2000	99.99
AT-SY-MXG030	5	1	10-2000	99.99
AT-SY-MXG031	5	4	10-2000	99.99
AT-SY-MXG032	6	0.4	10-2000	99.99
AT-SY-MXG033	6	0.5	10-2000	99.99
AT-SY-MXG034	6	0.8	10-2000	99.99
AT-SY-MXG035	6	1	10-2000	99.99
AT-SY-MXG036	6	1.5	10-2000	99.99



SIZE CHART

Quartz Capillary Tube

Group 3: $\varnothing$ 3.2–6.0mm - Industrial Sensor Resilience Solutions

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG037	6	2	10-2000	99.99
AT-SY-MXG038	6	3	10-2000	99.99
AT-SY-MXG039	6	4	10-2000	99.99
AT-SY-MXG040	6	5	10-2000	99.99

- Typical Models: MXG036 (6.0mm OD/1.5mm ID)
- Key Applications:
 -  Distributed Temperature Sensors (DTS): 1.5/2.0mm ID jackets withstand >500N/cm² lateral stress on FBG arrays.
 -  High-Temperature Probe Sheaths: MXG038’s 3.0mm ID accommodates thermocouple axial movement (0.4mm tolerance).

SIZE CHART

Quartz Capillary Tube



Group 4: $\varnothing 7-10.0\text{mm}$ - Heavy-Duty Optical Platforms

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG041	7	0.38	10-2000	99.99
AT-SY-MXG042	7	0.5	10-2000	99.99
AT-SY-MXG043	7	0.6	10-2000	99.99
AT-SY-MXG044	8	1	10-2000	99.99



SIZE CHART

Quartz Capillary Tube

Group 4: $\varnothing$ 7–10.0mm - Heavy-Duty Optical Platforms

Model	OD (mm)	ID (mm)	Length (mm)	SiO ₂ (%)
AT-SY-MXG045	8	2.4	10-2000	99.99
AT-SY-MXG046	10	1	10-2000	99.99

- Typical Models: MXG046 (10.0mm OD)
- Key Applications:
- Ultrafast Laser Waveguides: 10.0mm OD tubes maintain <0.01mm/m deformation under 100kW pulsed loads.
- X-Ray Collimator Mounts: MXG045’s 8.0mm OD structure reduces annual radiation attenuation to <0.1%.



CUSTOM MACHINING

Machining Precision

Ultra-precise fused silica capillary tubes guarantee $\pm 0.03\text{mm}$ radial tolerance and cut-to-length ($\pm 0.2\text{mm}$) control, engineered for critical applications — request tolerance-specific validation reports for your system.

OD-Specific Tolerances & Industry Applications

1 3.0mm OD:

- Tolerance: OD/ID $\pm 0.025\text{mm}$ | Wall uniformity $>97\%$
- Typical Use: Fiber optic collimator alignment cores (angular deviation $<0.1^\circ$)
- Industry: 5G/WDM multiplexers, endoscopic laser probes

2 3.1–6.0mm OD:

- Tolerance: Straightness 0.015mm/m | ID surface roughness $R_a < 0.4\mu\text{m}$
- Typical Use: Distributed temperature sensor jackets resisting $\pm 5^\circ\text{C}$ thermal drift
- Industry: Oil/gas downhole monitoring, nuclear reactor diagnostics

3 $>6.0\text{mm}$ OD:

- Tolerance: Mass concentricity $<0.008\text{mm}$ | Ovality 0.02mm
- Typical Use: Kilowatt-level laser beam delivery waveguides
- Industry: Photovoltaic cell scribing, aerospace composite cutting



CUSTOM MACHINING

Material Options

Precision-engineered fused quartz capillary tubes deliver application-specific performance, customizable to your UV filtration or spectral transmission requirements — dedicated OEM support guaranteed.



Full UV-Blocking Grade

- Blocks **100% Uv-B/C** & **90% Uv-A** radiation
- **Cerium-doped** fused silica matrix
- High visible-light transmittance (**>92%**)



JGS2 Optical Grade

- **200-2500nm** bandwidth coverage
- Hydroxyl content **200ppm**
- Cost-effective for **non-laser** applications