



TOQUARTZ

TOQUARTZ CATALOGUE

Quartz Tube

Integrated Engineering & Agile Production
for Demanded Specifications





TOQUARTZ

Tech Specifications

Quartz Tube

Integrated Engineering & Agile Production
for Demanded Specifications



TRANSPARENT QUARTZ TUBE



- **1,450°C** thermal endurance with **$5.5 \times 10^{-7}/^{\circ}\text{C}$** expansion coefficient
- Full-spectrum UV-IR transmission (**>93%** visible light / **>80%** UV)
- **Hydrofluoric acid-exclusive corrosion resistance** in high-temperature processing



- **High-Purity Optical Transmission:**

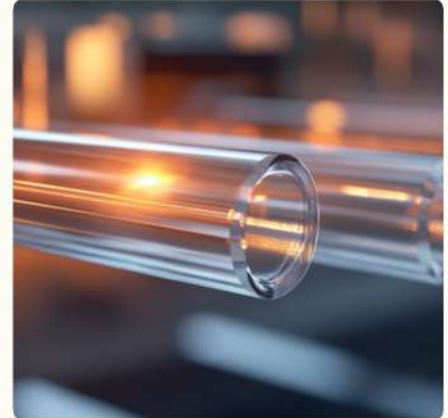
- | Laser system enclosures
- | UV lamp housings
- | Spectral analysis light guides
- | High-intensity lighting sleeves

- **Industrial Thermal Management:**

- | Chemical reactor observation windows
- | Pharmaceutical sterilizer protection layers
- | Food processing thermal barrier tubes

- **Laboratory Instrumentation:**

- | Corrosive fluid testing chambers
- | Cell culture observation vessels
- | Gas chromatography columns
- | Precision measurement device windows





TECHNICAL DATA SHEET



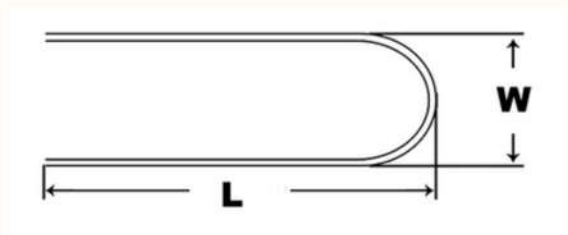
Fused Silica tubing ensures **$\pm 0.1\text{mm}$ dimensional accuracy** and **99.98% purity compliance**, with fully customizable optical and thermal parameters—submit your project specs for precision-engineered solutions.

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

Single-End Open Quartz Tube



- **Consistency in Purity:** All variants maintain **99%–99.98% purity** (industry standard for high-performance applications).
- **Length Flexibility:** Most tubes support **20–1400mm lengths**, with AT-QTZ-G1011 being an exception (fixed 230mm length).
- **Customizable Options:** AT-QTZ-G1024 offers **wide OD (0.8–450mm)** and **wall thickness (0.09–10mm)** ranges for specialized needs.

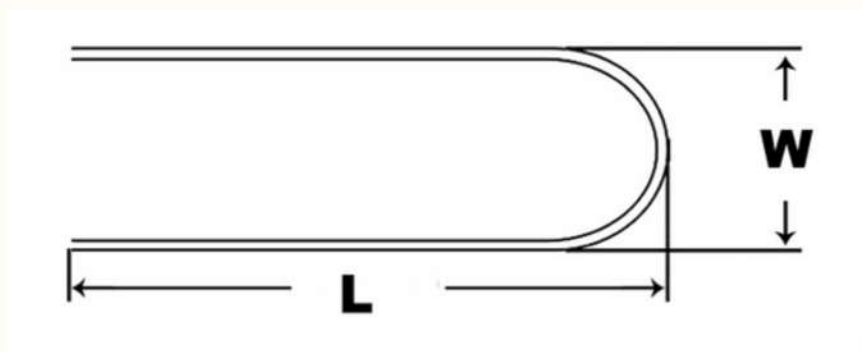
Group 1: Standard Single-End Open Quartz Tubes

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G1001	0.8	0.3	20-1400	99%-99.98%
AT-QTZ-G1002	1.5	0.5	20-1400	99%-99.98%
AT-QTZ-G1003	2.4	0.4	20-1400	99%-99.98%
AT-QTZ-G1004	3	0.8	20-1400	99%-99.98%
AT-QTZ-G1005	6	1	20-1400	99%-99.98%



SIZE CHART

Single-End Open Quartz Tube



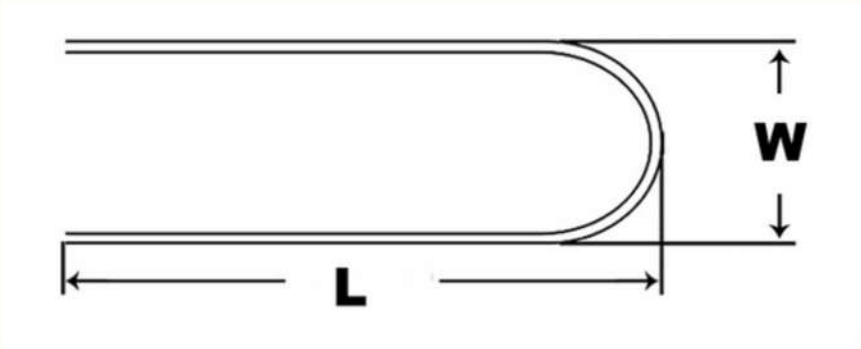
Group 2: Mid-to-Large Diameter Tubes

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G1006	10	2.2	20-1400	99%-99.98%
AT-QTZ-G1007	15	5	20-1400	99%-99.98%
AT-QTZ-G1008	20	8	20-1400	99%-99.98%
AT-QTZ-G1009	27	6	20-1400	99%-99.98%
AT-QTZ-G1010	32	4	20-1400	99%-99.98%
AT-QTZ-G1011	40	2.5	230	99%-99.98%



SIZE CHART

Single-End Open Quartz Tube



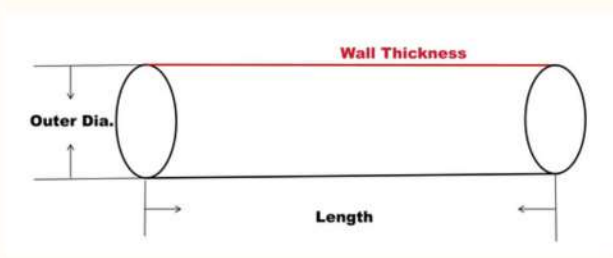
Group 3: Customizable Specifications

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G1024	0.8-450	0.09-10	20-1400	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



- **Consistency in Purity:** All end-open quartz tubes maintain **99%-99.98% SiO₂ purity**, ideal for high-temperature, UV-transparent, and corrosive-resistant applications.
- **Dimensional Adaptability:**
 1. **Outer Diameter (OD): 0.8–100mm** (standard), extending to **1.5–450mm** for custom orders.
 2. **Wall Thickness: 0.09–10mm**, supporting ultra-thin to heavy-duty configurations.
 3. **Length:** 20–2000mm (customizable for bulk industrial or precision lab requirements).
- **Industrial-Grade Optimization:**
 1. Small OD tubes (< 10mm): Prioritize thin-wall precision ($\pm 0.02\text{mm}$ tolerance) for optics and sensors.
 2. Medium/Large OD tubes (15–100mm): Emphasize thermal shock resistance (tested up to 1,450°C) for semiconductor and metallurgical applications.

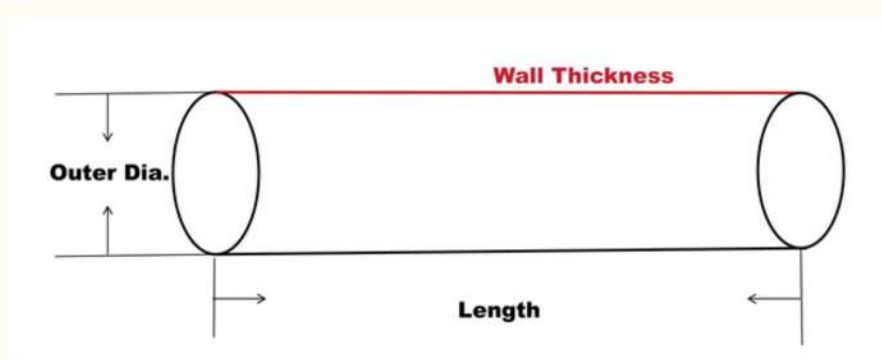
Group 1: Small-Diameter Tubes (0.8–4.35mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2001	0.8	0.3	20	99%-99.98%
AT-QTZ-G2002	1.5	0.5	30	99%-99.98%
AT-QTZ-G2003	2.4	0.4	50	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



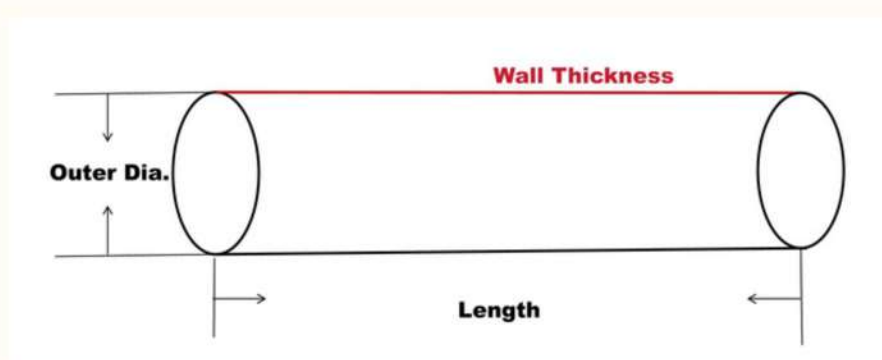
Group 1: Small-Diameter Tubes (0.8–4.35mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2004	3	0.8	50	99%-99.98%
AT-QTZ-G2005	3	0.09	80	99%-99.98%
AT-QTZ-G2006	3.6	0.6	80	99%-99.98%
AT-QTZ-G2007	3.65	0.65	100	99%-99.98%
AT-QTZ-G2008	4.35	1	150	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



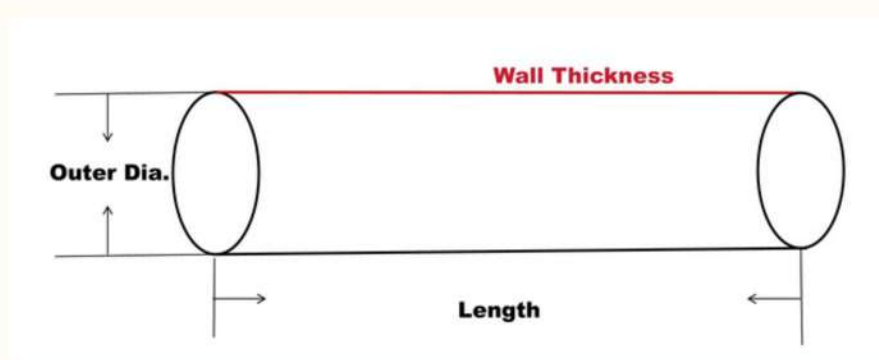
Group 2: Medium-Diameter Tubes (6–20mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2009	6	1	150	99%-99.98%
AT-QTZ-G2010	10	2.2	200	99%-99.98%
AT-QTZ-G2011	15	5	300	99%-99.98%
AT-QTZ-G2012	20	8	500	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



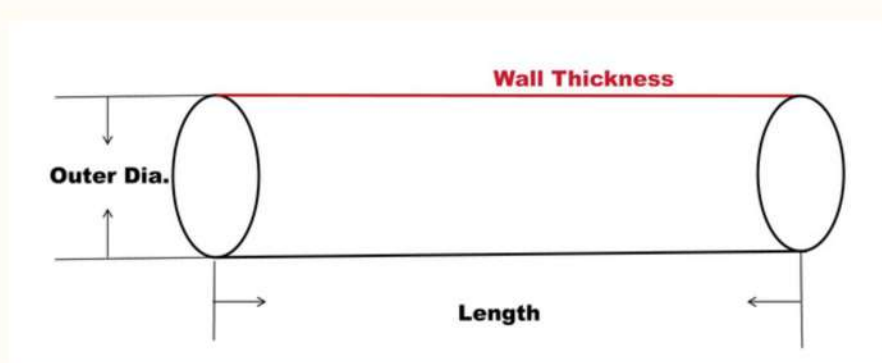
Group 3: Large-Diameter Tubes (27–60mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2013	27	6	350	99%-99.98%
AT-QTZ-G2014	32	4	500	99%-99.98%
AT-QTZ-G2015	40	3	800	99%-99.98%
AT-QTZ-G2016	40	3	1000	99%-99.98%
AT-QTZ-G2017	50	3	450	99%-99.98%
AT-QTZ-G2018	50	3	500	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



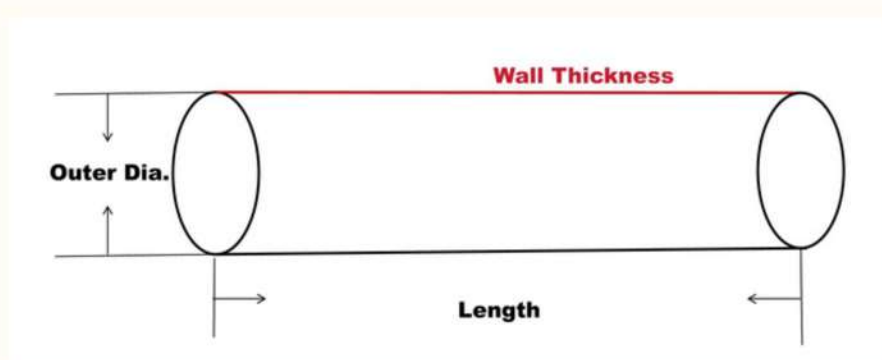
Group 3: Large-Diameter Tubes (27–60mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2019	50	3	600	99%-99.98%
AT-QTZ-G2020	50	3	700	99%-99.98%
AT-QTZ-G2021	50	3	800	99%-99.98%
AT-QTZ-G2022	50	3	1000	99%-99.98%
AT-QTZ-G2023	50	4	450	99%-99.98%
AT-QTZ-G2024	50	4	500	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



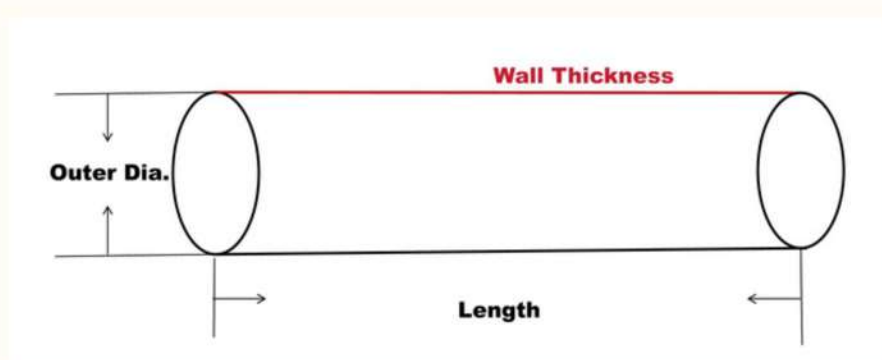
Group 3: Large-Diameter Tubes (27–60mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2025	60	3	800	99%-99.98%
AT-QTZ-G2026	60	3	1000	99%-99.98%
AT-QTZ-G2027	60	3	1400	99%-99.98%
AT-QTZ-G2028	60	4	1000	99%-99.98%
AT-QTZ-G2029	60	5	1000	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



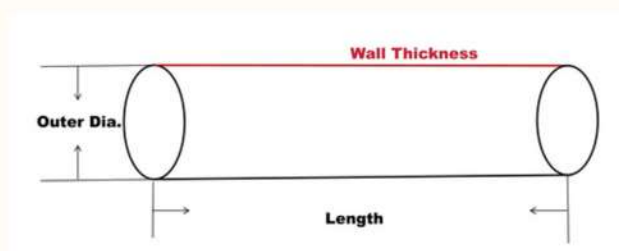
Group 4: Extra-Large & Custom Tubes (80–100mm+)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2030	80	3	1000	99%-99.98%
AT-QTZ-G2031	80	3	1200	99%-99.98%
AT-QTZ-G2032	80	4	1000	99%-99.98%
AT-QTZ-G2033	80	5	1000	99%-99.98%
AT-QTZ-G2034	100	3	1000	99%-99.98%
AT-QTZ-G2035	100	3	1200	99%-99.98%



SIZE CHART

2-Open-End Quartz Tube



Group 4: Extra-Large & Custom Tubes (80–100mm+)

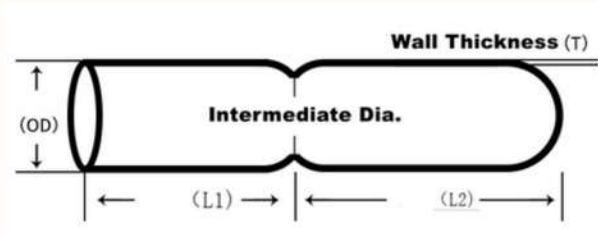
Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2036	100	4	1000	99%-99.98%
AT-QTZ-G2037	100	5	1000	99%-99.98%
AT-QTZ-G2038	1.5–450	0.09–10	20–2000	99%-99.98%

- **Small OD Tubes:** Critical for **medical fiber optics** (e.g., endoscopes) requiring $\pm 0.02\text{mm}$ concentricity.
- **Medium/Large OD Tubes:** Pre-annealed at **1,200°C** to minimize microcracks in **CVD reactors**.
- **Custom OD Tubes:** Use **AI-driven rotational molding** to ensure uniform wall thickness for **HF acid transfer systems**.



SIZE CHART

Special-Shaped Quartz Tubes (1-End Open)



- **High Purity:** All variants maintain **99%-99.98% SiO₂ purity**, suitable for industrial and laboratory applications requiring chemical inertness and thermal stability.
- **Geometric Precision:**
 1. **Outer Diameter (OD):** Ranges from **20–100mm** ($\pm 0.1\text{mm}$ tolerance).
 2. **Intermediate Diameter (ID):** Critical for flow optimization in chemical reactors (e.g., AT-QTZ-G3008: 55mm).
- **Custom Wall Thickness:** 3–8mm options support high-pressure ($\leq 10\text{MPa}$) and vacuum environments.

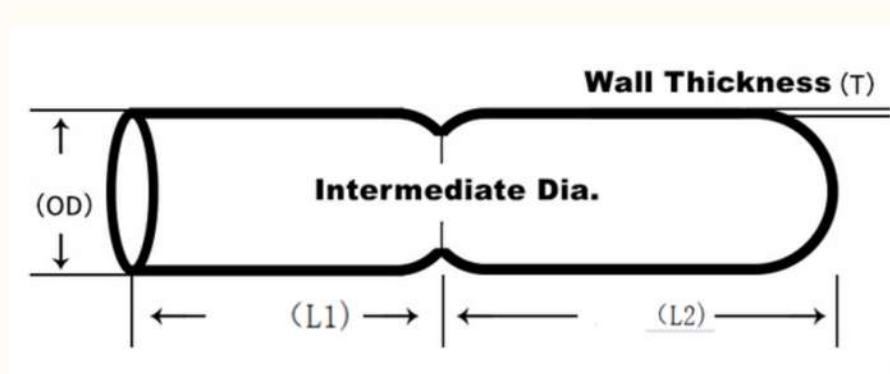
Group 1: Medium Diameter (OD 20–50mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Intermediate Diameter (mm)	Length L1 (mm)	Purity
AT-QTZ-G3001	20	8	16	150	99%-99.98%
AT-QTZ-G3002	27	6	23	140	99%-99.98%
AT-QTZ-G3003	32	4	28	90	99%-99.98%



SIZE CHART

Special-Shaped Quartz Tubes (1-End Open)



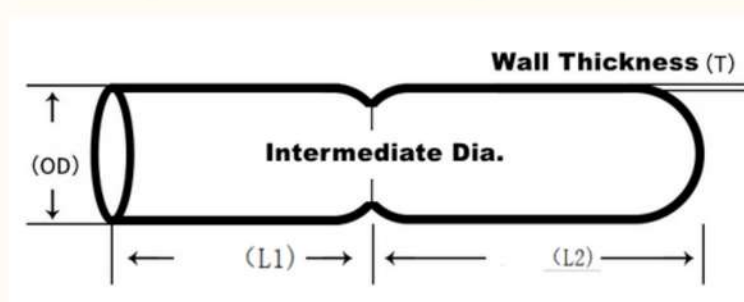
Group 1: Medium Diameter (OD 20–50mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Intermediate Diameter (mm)	Length L1 (mm)	Purity
AT-QTZ-G3004	40	3	36	280	99%-99.98%
AT-QTZ-G3005	50	3	45	105	99%-99.98%
AT-QTZ-G3006	50	4	46	100	99%-99.98%
AT-QTZ-G3007	50	4	48	350	99%-99.98%



SIZE CHART

Special-Shaped Quartz Tubes (1-End Open)



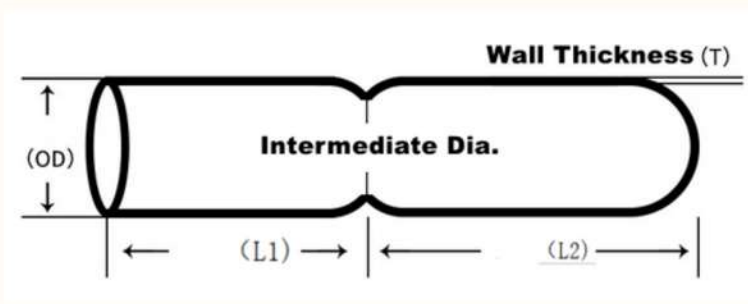
Group 2: Large Diameter (OD 60–80mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Intermediate Diameter (mm)	Length L1 (mm)	Purity
AT-QTZ-G3008	60	3	55	385	99%-99.98%
AT-QTZ-G3009	60	4	56	243	99%-99.98%
AT-QTZ-G3010	60	5	58	400	99%-99.98%
AT-QTZ-G3011	80	3	74	685	99%-99.98%
AT-QTZ-G3012	80	4	76	204	99%-99.98%
AT-QTZ-G3013	80	5	78	530	99%-99.98%



SIZE CHART

Special-Shaped Quartz Tubes (1-End Open)



Group 3: Extra-Large Diameter (OD 100mm)

Model	Outer Diameter (mm)	Wall Thickness (mm)	Intermediate Diameter (mm)	Length L1 (mm)	Purity
AT-QTZ-G3014	100	3	94	236	99%-99.98%
AT-QTZ-G3015	100	4	96	630	99%-99.98%
AT-QTZ-G3016	100	5	98	630	99%-99.98%

- **Intermediate Diameter Applications:**
 - 1.AT-QTZ-G3008 (55mm): Optimized for **gas diffusion uniformity** in CVD reactors.
 - 2.AT-QTZ-G3011 (74mm): Designed for **high-viscosity fluid flow** in petrochemical systems.
- **Thermal Stability:** Thicker walls (5–8mm): Withstand **rapid thermal cycling (25°C 1,200°C)** in metallurgical furnaces (e.g., AT-QTZ-G3010).
- **Custom Configurations:** Specify **intermediate diameter tolerances (±0.05mm)** for precision photonics alignment.



CUSTOM MACHINING

Machining Precision

Fused Silica tubing delivers sub-millimeter accuracy down to $\pm 0.1\text{mm}$ and $<1\%$ roundness deviation, supporting laser-cut or CNC-tailored geometries for high-precision fabrication.

OD Range (mm)	OD Tolerance	Wall Thickness Tolerance	Siding(max)	Ovality (max)
6.00	$\pm 2.0\%$	$\pm 12\%$	12%	2%
6.00-15.00	$\pm 1.25\%$	$\pm 8\%$	10%	2%
15.00-20.00	$\pm 1.25\%$	$\pm 10\%$	15%	2%
20.00-25.00	$\pm 1.25\%$	$\pm 10\%$	15%	2%
25.00-30.00	$\pm 1.35\%$	$\pm 12\%$	15%	2%
30.00-80.00	$\pm 1.5\%$	$\pm 14\%$	15%	2%



CUSTOM MACHINING

Material Options

Fused Silica tubing delivers sub-millimeter accuracy down to $\pm 0.1\text{mm}$ and $<1\%$ roundness deviation, supporting laser-cut or CNC-tailored geometries for high-precision fabrication.



Low-Expansion Titanium-Doped Quartz Glass

- Ultra-low CTE ($0.3 \times 10^{-7}/^{\circ}\text{C}$)
- Titanium oxide (TiO_2) doping process
- 10x lower thermal expansion vs standard quartz
- Critical for laser systems/thermal cycling



Radiation-Resistant Quartz Glass Classifications

- Type I: High metallic impurities ($1\text{e}-5$ – $1\text{e}-4$)
 - Graphite crucible melting with oxygen vacancies
 - Triple absorption peaks post-irradiation
- Type II: H_2 - O_2 flame melting
 - 215nm/300nm dual absorption peaks
- Type III: Synthetic high-purity feedstock
 - Single 215nm absorption peak



JGS1 Far-UV Optical quartz Glass

- 185–2500nm spectral transmission
- Bubble-free synthetic silica structure
- High hydroxyl content ($\sim 2000\text{ppm}$)
- 2730nm IR absorption band
- Zero striae/stress birefringence



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HIGH-PURITY FUSED SILICA SPIRAL TUBE



Quartz spiral tube has high temperature resistance, corrosion resistance and excellent thermal stability, and has important applications in chemical and food processing, as well as laboratory equipment and other fields.

QUARTZ SPIRAL TUBE PROPERTIES



✓ Extreme Temperature Resilience

- Continuous operation at 1100°C with 1450°C peak capacity
- Ultra-low thermal expansion coefficient ($5.5 \times 10^{-7}/^{\circ}\text{C}$)
- Sustained structural integrity under 800°C thermal cycling



✓ Chemical Attack Resistance

- Stable reactivity with 98% sulfuric acid at 300°C
- Negligible metal ion leaching ($<0.5\text{ppm}$ @ 24hr/150°C)

✓ Thermal-Chemical Synergy

- Zero performance degradation after 200 thermal shock cycles
- Oxidation resistance maintained in 10^{-6} Torr vacuum environments



QUARTZ SPIRAL TUBE APPLICATIONS

+ Process Reactor Temperature Control

- 1,200°C-rated thermal jackets for acid vapor condensation systems
- 102% H_3PO_4 compatibility in continuous chemical cycling operations



+ Fluid Monitoring Instrumentation

- $\pm 0.025\%$ FS accuracy in 300-bar pressure sensing modules
- Non-invasive liquid level detection via refractive index matching ($\Delta n < 0.0015$)



+ Laboratory Measurement Systems

- Protective sheathing for 800°C molten salt electrochemical cells
- UV-Vis spectroscopy validation units with $> 92\%$ transmittance @ 190nm



TECHNICAL DATA SHEET



Fused Quartz Spiral Tubing 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



CUSTOM MACHINING

Machining Precision

Precision-engineered helical quartz solutions maintain custom dimensional accuracy through material-specific CNC protocols.

Material Options

Precision quartz helical components adapt material characteristics to operational demands with JGS3 grade achieving >85% IR transmittance across 260–3500nm spectra.



JGS3 Optical Grade

- 85% Transmittance @2500nm
- Hydroxyl <5ppm
- 190–2800nm Cutoff



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OPAQUE QUARTZ TUBING



Frosted quartz glass tube delivers unparalleled performance in extreme industrial environments through three core technical advantages:

- **Superior Thermal Endurance**

- Operational stability at 1100°C sustained + 1450°C short-term exposure
- Ultralow coefficient thermal expansion ($5.5 \times 10^{-7}/^{\circ}\text{C}$) for thermal shock resistance



- **Optimized Infrared Transmittance**

- 93% visible light transmission + 85% UV transparency (185-2500nm range)
- 5-15 μm wavelength IR radiation for precision heating systems



- **Chemical Inertness Assurance**

- HF acid-exclusive vulnerability with 99.6% acid corrosion resistance
- Stable molecular structure under 800°C reactive gas environments

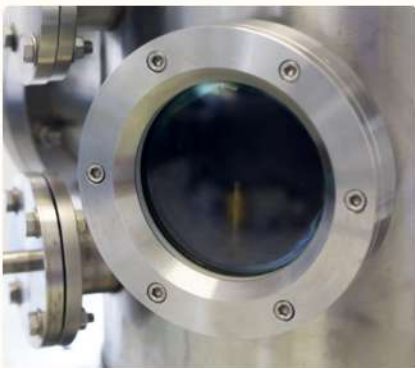
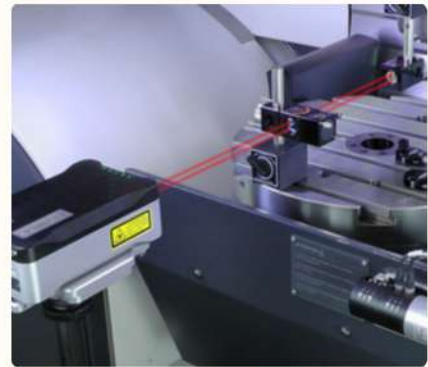


OPAQUE QUARTZ TUBING

Opaque quartz tubing enables mission-critical operations in technologically demanding industries through three primary implementation areas:

- **High-precision optical equipment fabrication**

- Laser housing components with UV transparency optimization
- Microscope lens mounting systems requiring thermal stability



- **Advanced laboratory instrumentation systems**

- Spectrometer chamber assemblies with low thermal expansion
- Vacuum deposition apparatus needing chemical inertness

- **High-temperature chemical processing units**

- Reactor viewport modules under corrosive atmospheres
- Sensor protection sleeves for 1300°C thermal cycling





TECHNICAL DATA SHEET



Opaque quartz tubing redefines industrial performance with **99.98% SiO₂ purity**, **1,100°C thermal resilience**, and the milky quartz tube itself can absorb infrared spectrum with wavelengths below 4μ, and the heat generated by the tube itself increases the heat radiation.

I . Thermal Properties

Property	Specification	Typical Applications
Continuous Working Temp	1,100°C	Lab furnace liners, sensor housings
Peak Short-term Temp	1,450°C	Semiconductor diffusion processes
Softening Point	1,630°C	High-temp optical assemblies



TECHNICAL DATA SHEET

II . Optical Performance

Property	Specification	Typical Applications
Visible Light Transmittance	93%	Laser guidance systems
UV Transmission (185nm)	85%	Lithography equipment

III. Mechanical Properties

Mohs Hardness	6.6	Vacuum flange interfaces
Density	2.2 g/cm ³	Weight-sensitive R&D setups
UV Transmission (185nm)	85%	Lithography equipment

IV. Chemical Resistance

Property	Specification	Typical Applications
Acid Corrosion Resistance	150× stainless steel	HCl/HNO ₃ reactor components



SIZE CHART

Frosted Quartz Glass Tube

I . Open-End Tubes



- **Critical Specs**

Surface roughness Ra 0.8 μ m for 1-10mm OD models, optimal for optical alignment.

- **Customization**

Wall thickness tolerance ± 0.02 mm, max working temperature 1450°C.

Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG1001	1	0.25	20-2000	99%-99.98%
AT-SY-MSG1002	2	1.5	20-2000	99%-99.98%
AT-SY-MSG1003	2	5	20-2000	99%-99.98%
AT-SY-MSG1004	5	4.5	20-2000	99%-99.98%
AT-SY-MSG1005	5	4.2	20-2000	99%-99.98%



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Frosted Quartz Glass Tube

I . Open-End Tubes



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- **Customization**

Wall thickness tolerance ± 0.02 mm, max working temperature 1450°C.

Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG1006	5	4	20-2000	99%-99.98%
AT-SY-MSG1007	10	8	20-2000	99%-99.98%
AT-SY-MSG1008	15	14	20-2000	99%-99.98%
AT-SY-MSG1009	20	16	20-2000	99%-99.98%
AT-SY-MSG1010	50	45	20-2000	99%-99.98%



SIZE CHART

Frosted Quartz Glass Tube

I . Open-End Tubes

Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG1011	100	80	20-2000	99%-99.98%
AT-SY-MSG1012	150	125	20-2000	99%-99.98%
AT-SY-MSG1013	200	180	20-2000	99%-99.98%
AT-SY-MSG1014	1-500	0.25-450	20-2000	99%-99.98%

• Typical Applications

Industry	Application Component	Supported OD Range	Functional Rationale
Optical Devices	Laser housing collimators	1-10mm	Precision bore alignment with UV transparency (85%+ @185nm)
Lab Instruments	Vacuum coating fixtures	10-50mm	Chemically inert for thin-film deposition processes
Chemical Machinery	Thermal probe sleeves	15-200mm	Sustained thermal cycling at 1300°C, max 0.5% deformation



SIZE CHART

Frosted Quartz Glass Tube

II . Closed-End Tubes



- **Critical Specs**

Sealed-end concentricity 0.05mm,
internal pressure rating 10bar max.

- **Customization**

End closure curvature options
(flat/hemispherical).

Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG2001	6	5	20-1500	99%-99.98%
AT-SY-MSG2002	6	5.5	20-1500	99%-99.98%
AT-SY-MSG2003	10	9	20-1500	99%-99.98%
AT-SY-MSG2004	15	13	20-1500	99%-99.98%
AT-SY-MSG2005	20	18	20-1500	99%-99.98%



SIZE CHART

Frosted Quartz Glass Tube

II . Closed-End Tubes

Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG2006	30	27	20-1500	99%-99.98%
AT-SY-MSG2007	50	45	20-1500	99%-99.98%
AT-SY-MSG2008	80	70	20-1500	99%-99.98%

• Typical Applications

Industry	Application Component	Supported OD Range	Functional Rationale
Optical Devices	Microscopy light guides	6-20mm	Uniform light diffusion via ground-glass finish
Lab Instruments	Chromatography columns	10-50mm	Acid-resistant for aggressive solvent storage
Chemical Machinery	Reaction vessel sight glasses	20-50mm	Thermal shock resistance (-196°C 1200°C transitions)



SIZE CHART

Frosted Quartz Glass Tube

III. U-Bend Tubes



- **Critical Specs**

Bend radius accuracy $\pm 0.5\text{mm}$, 90-180° bend angles.

- **Customization**

Threaded/fused connection interfaces.

Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG3001	10	9	Custom	99%-99.98%
AT-SY-MSG3002	12	11	Custom	99%-99.98%
AT-SY-MSG3003	15	13.2	Custom	99%-99.98%
AT-SY-MSG3004	18	15	Custom	99%-99.98%
AT-SY-MSG3005	20	18	Custom	99%-99.98%



SIZE CHART

Frosted Quartz Glass Tube

III. U-Bend Tubes



- **Critical Specs**

Bend radius accuracy $\pm 0.5\text{mm}$, 90-180° bend angles.

- **Customization**

Threaded/fused connection interfaces.

Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG3006	32	28	Custom	99.0-99.98
AT-SY-MSG3007	50	45	Custom	99.0-99.98
AT-SY-MSG3008	80	70	Custom	99.0-99.98



SIZE CHART

Frosted Quartz Glass Tube

III. U-Bend Tubes



- **Critical Specs**

Bend radius accuracy $\pm 0.5\text{mm}$, 90-180° bend angles.

- **Customization**

Threaded/fused connection interfaces.

- **Typical Applications**

Industry	Application Component	Supported OD Range	Functional Rationale
Optical Devices	Fiber optic splice protectors	10-15mm	Vibration damping via textured surface
Lab Instruments	Gas-phase reactor loops	15-32mm	Zero particle shedding under vacuum (10^{-6} Torr)
Chemical Machinery	Heat exchanger manifolds	32-50mm	Corrosion protection in HCl/HNO ₃ vapor environments



SIZE CHART

Frosted Quartz Glass Tube

IV. Helical Tubes



- **Critical Specs**

Pitch tolerance $\pm 2\%$, helix diameter $3 \times$ OD.

- **Customization**

Multi-coil stacking configurations.

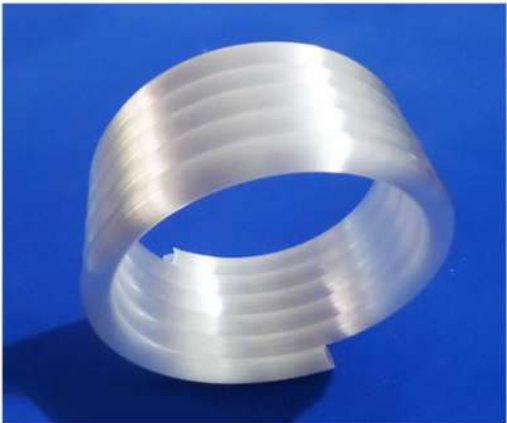
Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG5001	15	13	Custom	99.0-99.98
AT-SY-MSG5002	30	27	Custom	99.0-99.98
AT-SY-MSG5003	50	47	Custom	99.0-99.98
AT-SY-MSG5004	60	56	Custom	99.0-99.98
AT-SY-MSG5005	80	75	Custom	99.0-99.98



SIZE CHART

Frosted Quartz Glass Tube

IV. Helical Tubes



- **Critical Specs**

Pitch tolerance $\pm 2\%$, helix diameter 3x OD.

- **Customization**

Multi-coil stacking configurations.

- **Typical Applications**

Industry	Application Component	Supported OD Range	Functional Rationale
Optical Devices	Laser cooling jackets	15-50mm	Turbulent flow optimization via helical geometry
Lab Instruments	Thermal analysis cells	50-80mm	Minimized thermal gradient through uniform heating
Chemical Machinery	High-viscosity fluid heaters	50-80mm	Continuous 1450°C operation in oxidizing atmospheres



CUSTOM MACHINING

Machining Tolerances

Translucent quartz tube achieves **±1.25% OD precision** and **1.5% ovality** across critical industrial dimensions – specify your tolerance thresholds for millimetric accuracy.

Outer Diameter Range (mm)	OD Tolerance (%)	Wall Thickness Tolerance (%)	Wall Thickness Variation (%)	Ovality (%)	Straightness (mm)
6.00	±2.0%	±15%	12%	2.0%	2.5
8.00–15.00	±1.25%	±8%	10%	1.5%	2.5
15.00–20.00	±1.25%	±10%	15%	1.5%	2.5
20.00–25.00	±1.25%	±10%	15%	1.5%	3.0
25.00–30.00	±1.35%	±12%	15%	1.5%	3.0
30.00–80.00	±1.5%	±14%	15%	2.0%	3.0

For Optical Devices (Laser housings, microscope mounts):

- 15mm OD tubes with 1.25% OD tolerance ensure beam alignment accuracy (deviation <0.1°).
- Wall thickness variation 12% stabilizes refractive index uniformity.

For Lab Instruments (Spectrometer chambers, vacuum coating tools):

- 15–30mm OD ranges prioritize 1.5% ovality control for vacuum sealing integrity.
- ±1.5% straightness guarantees laminar flow in deposition processes.

For Chemical Machinery (Reactor viewports, sensor sleeves):

- 25mm OD tubes focus on ±14% wall thickness tolerance for 10bar pressure resilience.
- 3.0mm straightness max prevents stress cracks during thermal cycling (ΔT=1,300°C).



TOQUARTZ

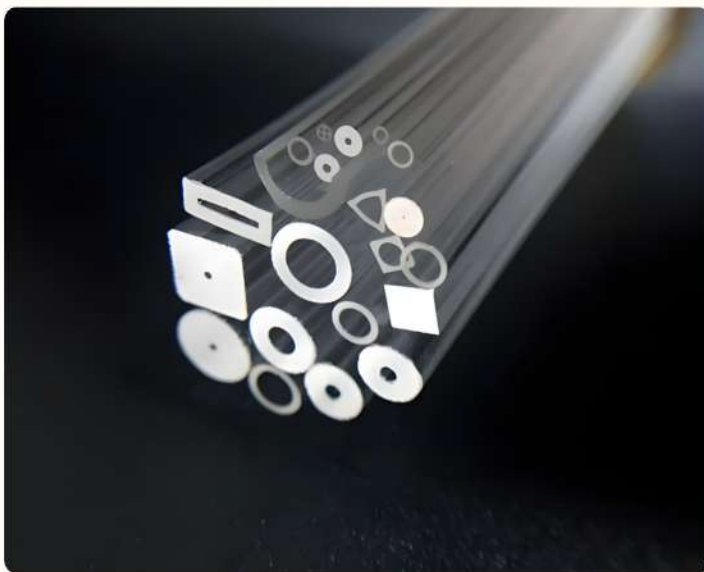
Tech Specifications

Quartz Tube

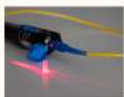
Integrated Engineering & Agile Production
for Demanded Specifications



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)



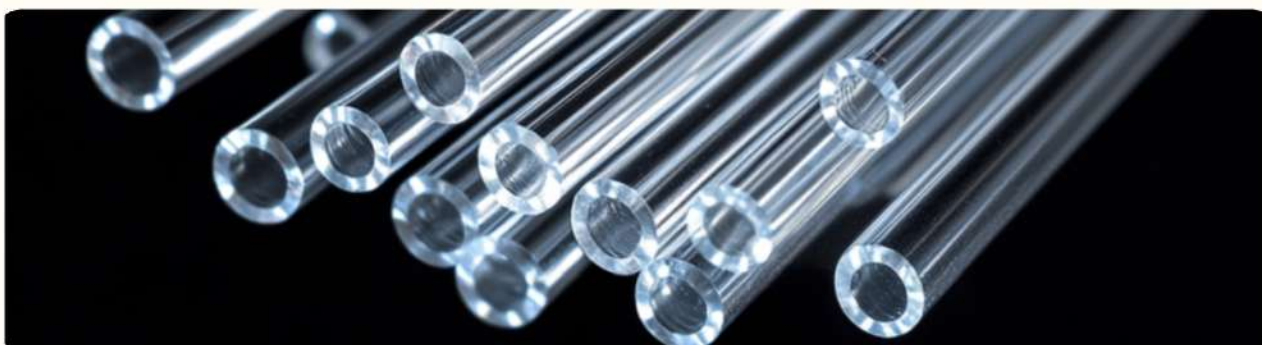
Precision-engineered fused silica capillaries serve mission-critical roles across advanced technology sectors:

- **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 ±0.2mm accuracy).
- **Bore Configuration:** Multi-bore (double/quad/hexagonal/septuple/octuple, twin-row triple), elliptical, rectangular, square, triangular, D-shaped, eccentric

Group 1: $\varnothing$ 1–1.4mm - 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

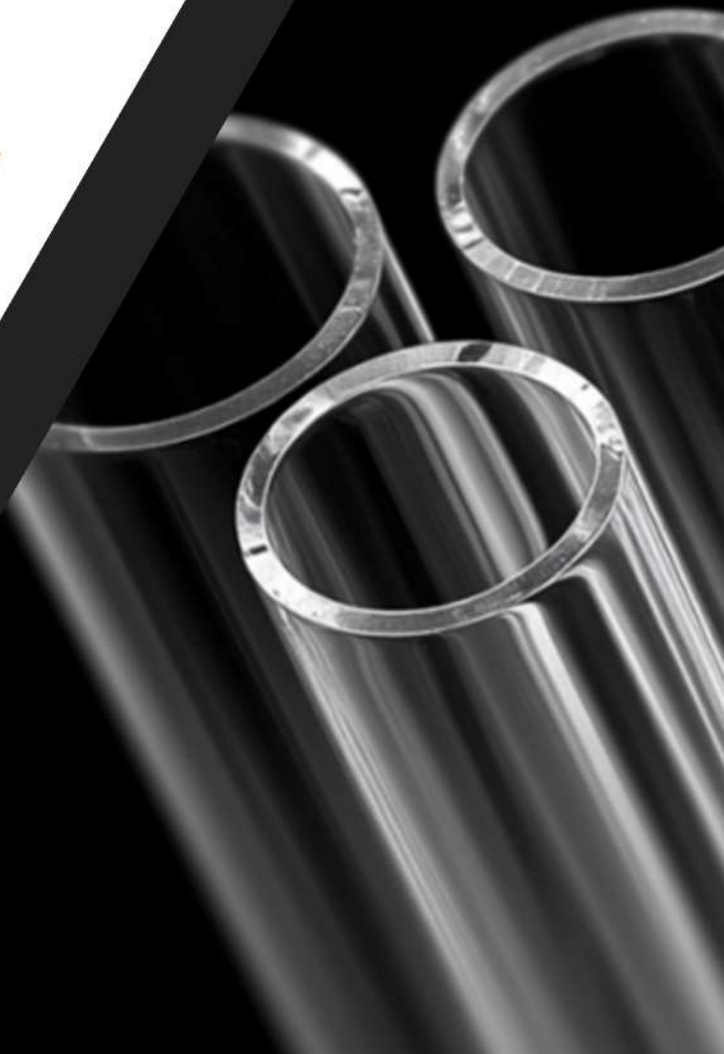


TOQUARTZ

Tech Specifications

Quartz Tube

Integrated Engineering & Agile Production
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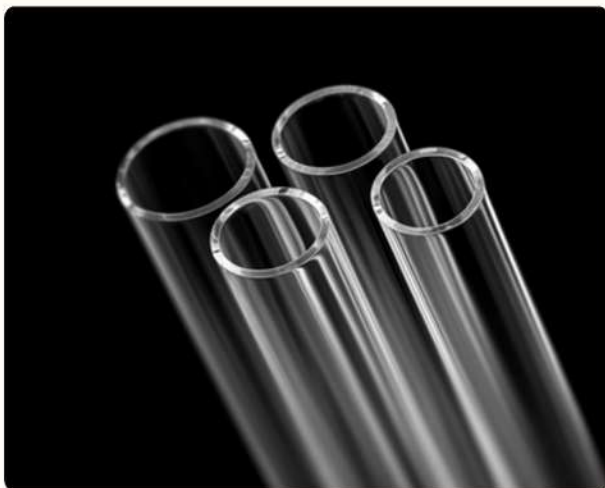
HIGH-TRANSMITTANCE UV QUARTZ TUBES



UV Quartz Tubes deliver >70% UV-C transmittance at 253.7nm with sub-220nm cutoff, engineered for industrial-grade photochemistry stabilization.

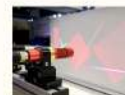
ULTRAVIOLET SILICA GLASS TUBE ATTRIBUTES

UV quartz tubes are engineered for demanding industrial performance.



✓ Superior Thermal Stability (1100°C Continuous / 1450°C Peak)

Withstand 1,100°C continuous thermal loads and rapid 800°C thermal shocks – verified through 200+ cyclic stress tests. JGS1/JGS2/JGS3 materials adapt to your exact photochemical requirements.



✓ Targeted UV Transmittance (70%+ at 233.7nm)

For sterilization engineers demanding 253.7nm UV-C efficiency, our titanium-doped quartz tubes achieve >70% spectral transmission while blocking ozone-producing <220nm wavelengths.

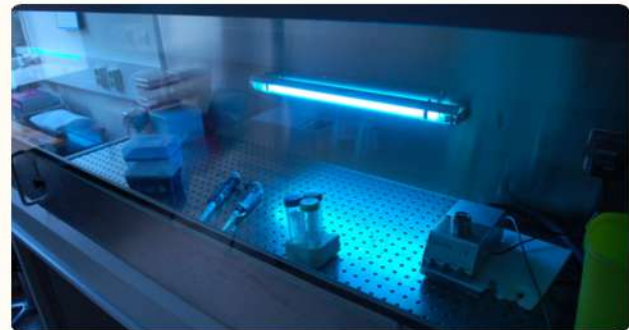
✓ Acid-Resistant Molecular Structure



UV QUARTZ TUBE APPLICATIONS

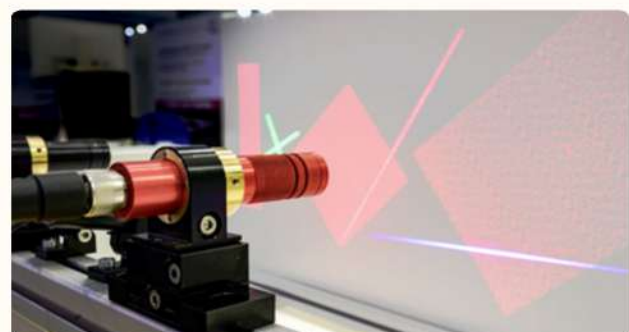
+ Medical Sterilization Systems

Ozone-free UV-C lamp integration for biocontamination control



+ Wastewater Treatment Plants

High-transmittance reactors for pathogen elimination



+ Laser Optics Production

Spectral stability for excimer laser component assembly



PRECISION UV QUARTZ TUBE CUSTOMIZATION



Fused quartz engineering solutions allow $\pm 1.25\%$ diameter control and multi-spectrum JGS material selection, optimized for your industrial-grade specifications through proprietary thermal forming protocols.



CUSTOM MACHINING

Tolerance Specifications

Custom quartz components maintain dimensional tolerance ranges ($\pm 1.25\%$ to $\pm 1.35\%$) and wall thickness precision ($\pm 10\%$ to $\pm 12\%$) across thermal forming process stages.

Material Options

Precision-engineered fused quartz solutions offer JGS1/JGS2/JGS3 variants, optimized for spectrum-specific industrial photonics.



JGS1 Quartz Optical Grade

Deep-UV transmission ($< 260\text{nm}$)



JGS2 Quartz Optical Grade

UV-VIS optimization ($220\text{-}2500\text{nm}$)



JGS3 Quartz Optical Grade

Visible light enhancement



TOQUARTZ

Tech Specifications

Quartz Tube

Integrated Engineering & Agile Production
for Demanded Specifications



LASER QUARTZ CAVITY FILTERS



- Enhanced mechanical durability: Abrasion-resistant surfaces withstand 10,000+ high-frequency operational cycles.
- Chemical corrosion immunity: Full pH stability (0-14) with zero reactivity to acidic/caustic process environments.
- Maintenance-optimized design: Non-porous surfaces reduce cleaning frequency by 60% through hydrophobic anti-contamination treatment.
- Ultra-low optical distortion: >99% transmittance consistency across 190-2700nm wavelengths for laser coherence.
- Thermal drift elimination: Coefficient of thermal expansion ($5.0 \times 10^{-7}/^{\circ}\text{C}$) ensures micron-scale dimensional stability up to 1,250°C.



High-purity laser quartz cavity filters serve as mission-critical optical solutions across advanced technology sectors, with key implementations in:

- **Industrial material processing lasers**

Cutting/welding system light path stabilization

- **Laboratory analytical instruments**

Spectroscopic detection excitation cavity assemblies

- **Non-implantable medical laser devices**

Dermatology/Ophthalmology light source encapsulation

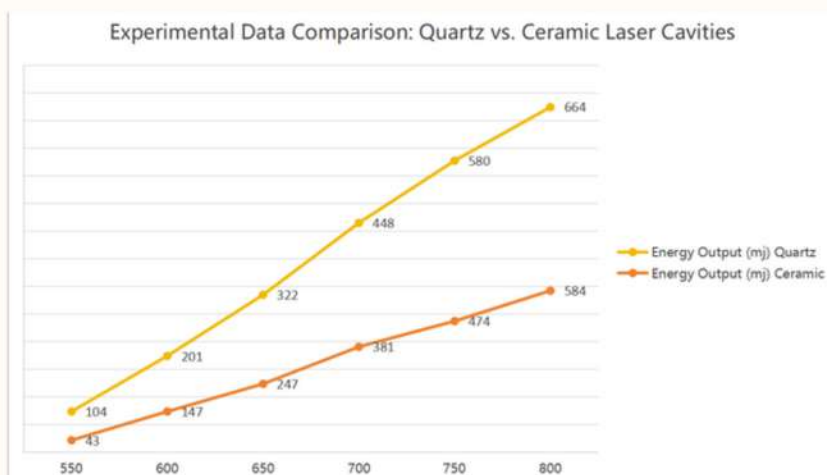




WHY CHOOSE QUARTZ CAVITY FILTER OVER CERAMIC?

Optic-grade quartz cavity modules achieve higher energy efficiency and stable pulse management compared to ceramic counterparts.

Input Voltage (V)	Energy Output (mj)		Energy Ratio (Ceramic : Quartz)	Pulse Width (ns)	
	Ceramic	Quartz		Ceramic	Quartz
550	43	104	1:2.374	44	40
600	147	201	1:1.371	23	22
650	247	322	1:1.304	18	18
700	381	448	1:1.177	13	13
750	474	580	1:1.222	12	12
800	584	664	1:1.138	11	11





TECHNICAL DATA SHEET



Engineered laser quartz cavity filters exhibit uncompromising material performance, enabling precise adaptation to custom optical system requirements.

I. Mechanical & Physical Properties

Parameter	Value	Parameter	Value
Density	2.203 g/cm ³	Modulus of Rigidity	31,000 MPa
Compressive Strength	1,100 MPa	Mohs Hardness	5.5–6.5
Flexural Strength	67 MPa	Poisson's Ratio	0.14–0.17
Tensile Strength	48.3 MPa	Young's Modulus	72,000 MPa
Optical Performance	Refractive index: 1.456–1.460, dielectric constant: 3.75–6.0 @1MHz		



TECHNICAL DATA SHEET

II. Thermal Properties

Parameter	Value	Parameter	Value
Softening Point	1,680°C	Thermal Conductivity (20°C)	1.4 W/m·°C
Annealing Point	1,210°C	Thermal Expansion Coefficient	5.5×10^{-7} cm/cm·°C
Short-Term Service Temp.	1,300°C	Hot Work Temp. Range	1,700–2,000°C
Long-Term Service Temp.	1,100°C	Specific Heat (20–350°C)	670 J/kg·°C

III. Electrical Properties

Parameter	Value	Parameter	Value
Resistivity	$7 \times 10^7 \Omega \cdot \text{cm}$	Dielectric Constant (ϵ)	3.7–3.9
Dielectric Strength	250–400 kV/cm	Dielectric Loss Coefficient	$< 1 \times 10^{-4}$



TECHNICAL DATA SHEET

IV. Chemical Resistance (Corrosion Rate in g/cm²)

Solution	Conditions	Corrosion Rate
98% H ₂ SO ₄	20°C, 2h	1.4×10 ⁻⁸
60% HNO ₃	20°C, 2h	5.0×10 ⁻⁸
36% HCl	20°C, 2h	15×10 ⁻⁸
5% NaOH	100°C, 10h	1.35×10 ⁻³





CUSTOM SOLUTIONS

High-precision quartz cavity filters support tailored configurations for optimized lasing performance across industrial, analytical, and medical systems.

I. Laser Cavity Structures

Cavity Configuration	Applications	Material Recommendation
Single Lamp + Single Rod	Low-power medical dermatology devices	Synthetic quartz, Ce-doped quartz
Dual Lamp + Dual Rod	Industrial sheet metal cutting lasers	Fused silica, Ti-doped quartz
Triple Lamp + Triple Rod (Elliptical)	Laboratory fluorescence spectrophotometry	Eu-doped quartz, Sm-doped quartz
Pentagonal Array (Cylindrical)	High-throughput material engraving systems	Borosilicate glass with AR coating





CUSTOM SOLUTIONS

II. Material Selection Matrix

Material Type	Key Properties	Ideal Use Cases
Fused Silica	CTE: $5.5 \times 10^{-7} / ^\circ\text{C}$, >99% UV transmittance	Extreme thermal stability systems
Ce-doped Quartz	Radiation hardening, 280-350nm absorption cutoff	MRI-guided surgical lasers
Ti-doped Quartz	Enhanced IR filtration (1,200-2,500nm)	Industrial CO ₂ laser cutting

III. Specialty Coatings

Gold Film

- Reflectivity: >98% @ 1,064nm
- Operational lifespan: 15,000+ hours

Silver Film

- Cost efficiency: 30% lower vs. gold
- Recommended for prototype development



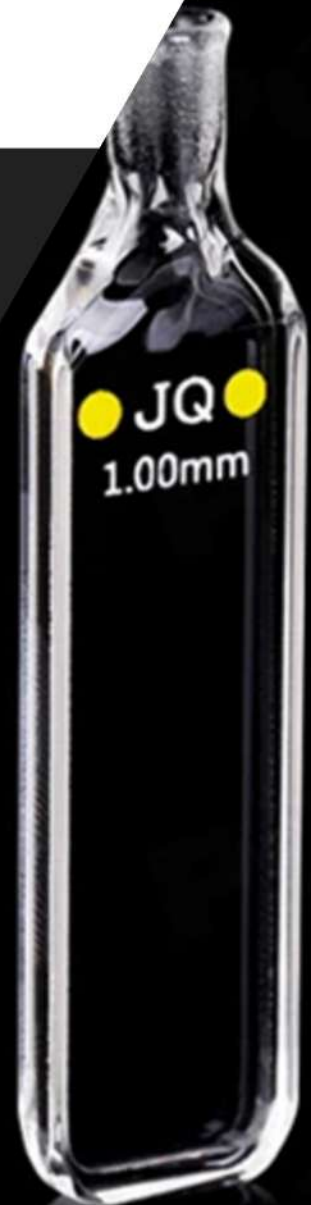


TOQUARTZ

Tech Specifications

Quartz Tube

Integrated Engineering & Agile Production
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UV QUARTZ CUVETTE

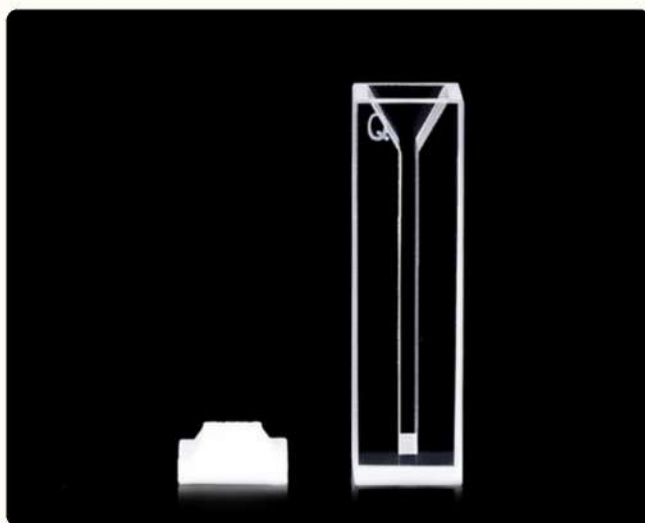


Quartz cuvette (also known as absorption cell, sample cell) is used to hold reference liquid or sample liquid, supporting spectral analysis instruments, such as UV-Vis spectrophotometer, hemoglobin analyzer, particle size analyzer, etc., for quantitative and qualitative analysis of substances.

It is widely used in chemical industry, metallurgy, medicine, food, water treatment and other industries.



QUARTZ CUVETTE PROPERTIES



- ✓ Quartz cuvette has good light transmission and wide light transmission range, which is suitable for spectral analysis including ultraviolet light, the wavelength range is from 120nm-4500nm, and there is no absorption peak in this spectrum range, so the test results are accurate and reliable, meeting the requirements of high-precision and high-sensitivity analysis.

- ✓ Quartz cuvette has good corrosion resistance, can be applied to the analysis of various acids, alkalis and chemical reagents, and has good chemical stability.

- ✓ Quartz cuvette can be reused after cleaning, saving comprehensive use cost.





FUSED QUARTZ MATERIAL PROPERTIES



- Wide wavelength range, no absorption peak within 120-4500nm, good light transmission performance;
- Good corrosion resistance, in addition to hydrofluoric acid, quartz cuvette almost does not react with other acids;
- High temperature resistance, can be used at 1100°C for a long time, short time high use temperature up to 1450°C.

QUARTZ CUVETTE APPLICATIONS

- + Quartz cuvette is suitable for various types of spectral analysis instruments such as ultraviolet visible spectrophotometer, microplate reader, colorimeter.



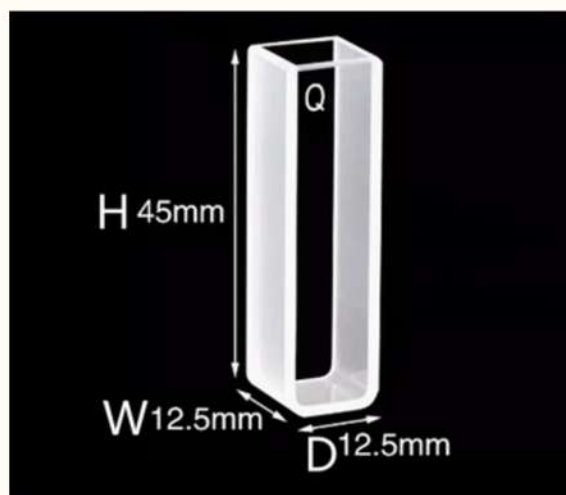
- + Quartz cuvette is used in the spectrum analyzer for substance analysis, widely used in chemical industry, metallurgy, medicine, food, water treatment and other industries.





SIZE CHART

Quartz Cuvette 2 Parallel Windows

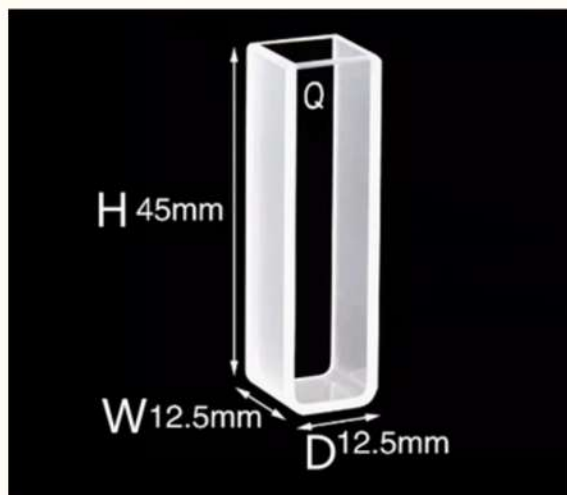


Model	Window Material	Pathlength (L)	Optical Windows	Overall Dimensions (H*W*D)	Volume	Internal Width	Base Thickness	Vertical Positioning	Aperture Size (Φ)
AT-SY-M001	Quartz	1mm	2	45×12.5×3.5mm	350μl	10mm	1.5mm	\	\
AT-SY-M002	Quartz	2mm	2	45×12.5×4.5mm	700μl	10mm	1.5mm	\	\
AT-SY-M003	Quartz	3mm	2	45×12.5×5.5mm	1050μl	10mm	1.5mm	\	\
AT-SY-M004	Quartz	5mm	2	45×12.5×7.5mm	1750μl	10mm	1.5mm	\	\
AT-SY-M005	Quartz	10mm	2	45×12.5×12.5mm	3500μl	10mm	1.5mm	\	\
AT-SY-M007	Quartz	20mm	2	45×12.5×22.5mm	7000μl	10mm	1.5mm	\	\
AT-SY-M008	Quartz	30mm	2	45×12.5×32.5mm	10500μl	10mm	1.5mm	\	\
AT-SY-M009	Quartz	40mm	2	45×12.5×42.5mm	14000μl	10mm	1.5mm	\	\
AT-SY-M010	Quartz	50mm	2	45×12.5×52.5mm	17500μl	10mm	1.5mm	\	\
AT-SY-M011	Quartz	100mm	2	45×12.5×102.5mm	35000μl	10mm	1.5mm	\	\



SIZE CHART

Quartz Cuvette 2 Parallel Windows

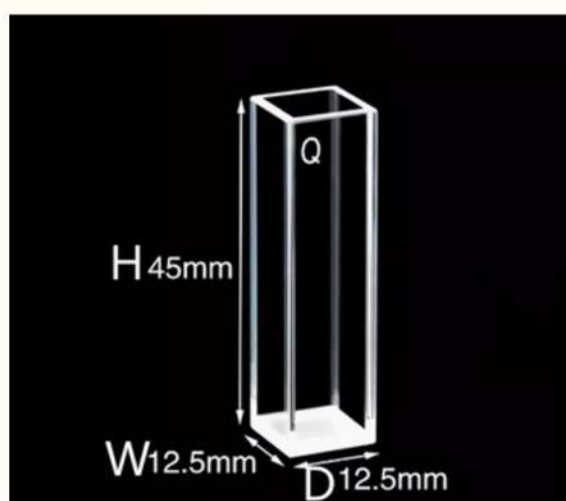


Model	Window Material	Pathlength (L)	Optical Windows	Overall Dimensions H*W*D	Path Dimensions H*W*D	Volume	Internal Width	Base Thickness	Vertical Positioning	Aperture Size (Φ)
AT-SY-M006	Quartz	10×10mm	4	48×12.5×22.5mm	\	3500μl	10mm	2mm	\	\
AT-SY-M019	Quartz	10×2mm	4	45×12.5×12.5mm	\	50μl	\	\	15mm	h3*w2mm
AT-SY-M020	Quartz	10×2mm	4	45×12.5×12.5mm	\	100μl	\	\	15mm	h5*w2mm
AT-SY-M021	Quartz	10×2mm	4	45×12.5×12.5mm	\	200μl	\	\	15mm	h10*w2mm
AT-SY-M022	Quartz	10×10mm	4	45×12.5×12.5mm	\	3300μl	\	\	\	h33*w10mm
AT-SY-M023	Quartz	20mm	4	21.5×23×23mm	20×20×20mm	6000μl	\	\	\	\
AT-SY-M024	Quartz	30mm	4	31.5×33×33mm	30×30×30mm	22500μl	\	\	\	\
AT-SY-M025	Quartz	40mm	4	41.5×43×43mm	40×40×40mm	56000μl	\	\	\	\
AT-SY-M026	Quartz	50mm	4	52×54×54mm	50×50×50mm	112500μl	\	\	\	\



SIZE CHART

Quartz Cuvette 4 Parallel Windows



Model	Window Material	Pathlength (L)	Optical Windows	Overall Dimensions (H*W*D)	Volume	Internal Width	Base Thickness	Vertical Positioning	Aperture Size (Φ)
AT-SY-M012	Quartz	10mm	2	45×12.5×12.5mm	50μl	\	\	15mm	h2*w2mm
AT-SY-M013	Quartz	10mm	2	45×12.5×12.5mm	50μl	\	\	8.5mm	h2*w2mm
AT-SY-M014	Quartz	10mm	2	45×12.5×12.5mm	100μl	\	\	15mm	h3*w3mm
AT-SY-M015	Quartz	10mm	2	45×12.5×12.5mm	100μl	\	\	8.5mm	h3*w3mm
AT-SY-M016	Quartz	10mm	2	45×12.5×12.5mm	200μl	\	\	15mm	h5*w4mm
AT-SY-M017	Quartz	10mm	2	45×12.5×12.5mm	200μl	\	\	8.5mm	h5*w4mm
AT-SY-M018	Quartz	10mm	2	45×12.5×12.5mm	350μl	\	\	15mm	h17.5*w2mm



CUSTOM REQUEST

Machining requirements

Provide the following information:

Dimensions, transmittance wavelength range, transmittance surface design requirements (double-sided or four-sided transmittance), and whether to include stoppers or covers.



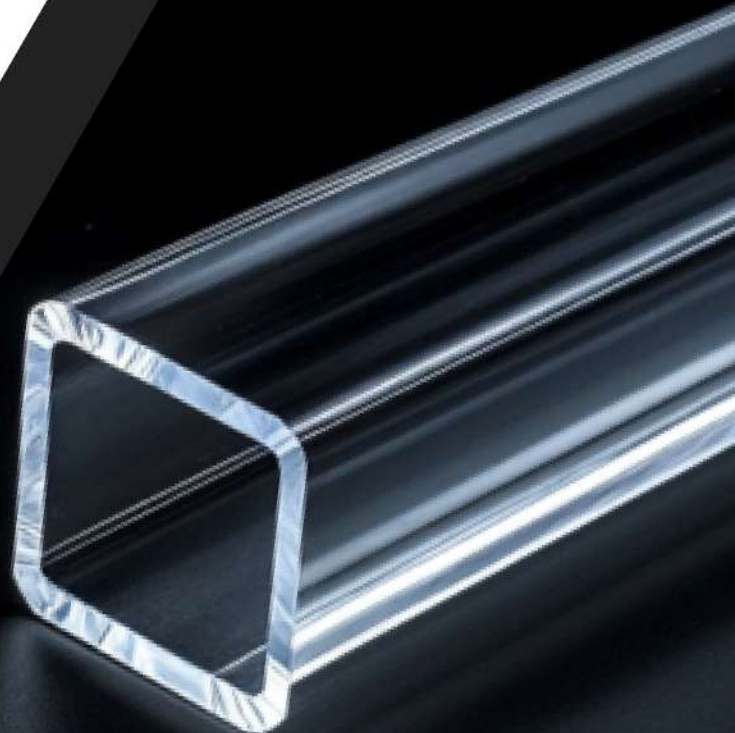


TOQUARTZ

Tech Specifications

Quartz Tube

Integrated Engineering & Agile Production
for Demanded Specifications





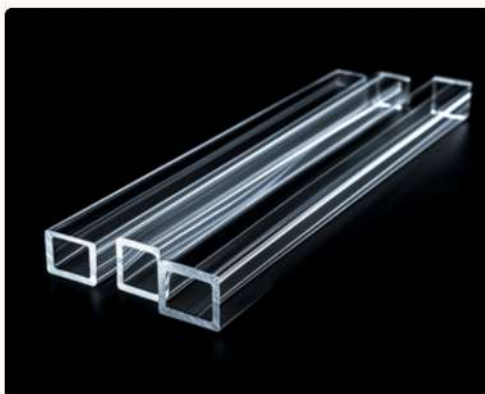
RECTANGULAR QUARTZ TUBE



Optical-grade quartz rectangular tubing delivers unmatched stability across extreme environments through three critical attributes:

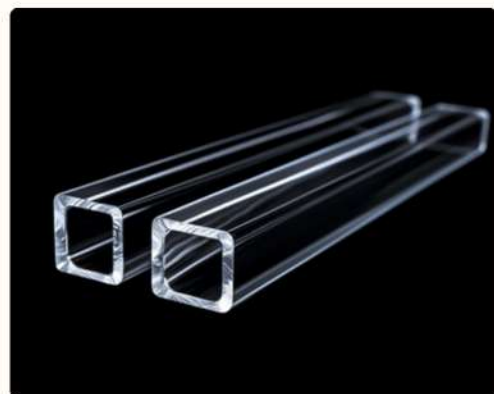
- **Ultra-High Thermal Resilience**

- Contiguous 1100°C operation with 1450°C peak tolerance
- Thermal expansion coefficient $0.5 \times 10^{-6}/^{\circ}\text{C}$ ensuring dimensional integrity
- Thermal shock resistance (1200°C ambient survival verified)



- **Full-Spectrum Light Transmission**

- 93%+ visible light transmittance with 0.15% refractive index fluctuation
- UV spectrum (185-350nm) >80% transparency
- Infrared wave penetration up to 4μm wavelength



- **Chemical Inertness Assurance**

- HF acid resistance >72h at 25°C (PPM leakage <0.02)
- Non-reactive to 98% mineral acids at 300°C
- Zero devitrification in moist heat (ISO 3585 compliance)

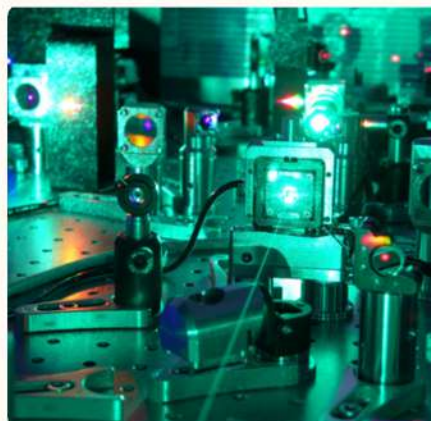


RECTANGULAR QUARTZ TUBE

Precision transparent quartz rectangular tubing enables mission-critical functionality across three industrial domains:

- **High-Precision Optical Systems**

- Laser & mercury vapor lamp housings with UV transparency
- IR radiation-containment assemblies
- Photolithography alignment conduits



- **Demanding Thermal Environments**

- Semiconductor furnace protection sleeves
- Molten metal observation ports
- Chemical vapor deposition reactors

- **Laboratory Performance Solutions**

- High-purity chemical reaction vessels
- Sterilization-resistant culture chambers
- Plasma etching process instrumentation





TECHNICAL DATA SHEET



Square quartz 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

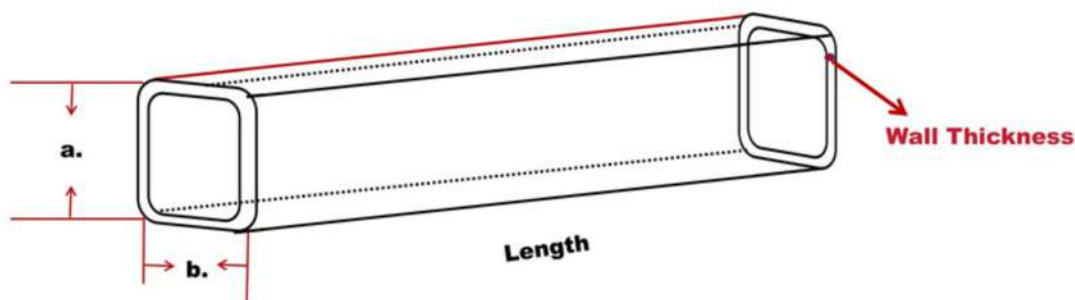
Quartz Rectangular Tube

• Standard Products(AT-QTZ-FG001~FG016)

- Cross-section precision $\pm 1.35\%$
- Variant-specific wall thickness: 3-6mm
(600×600mm) / 7-10mm (700×700mm)

• Customizable Features

- Edge parallelism: Optimizable to 0.05° deviation for optical alignment
- Batch consistency: <0.5% dimensional variation across production lots

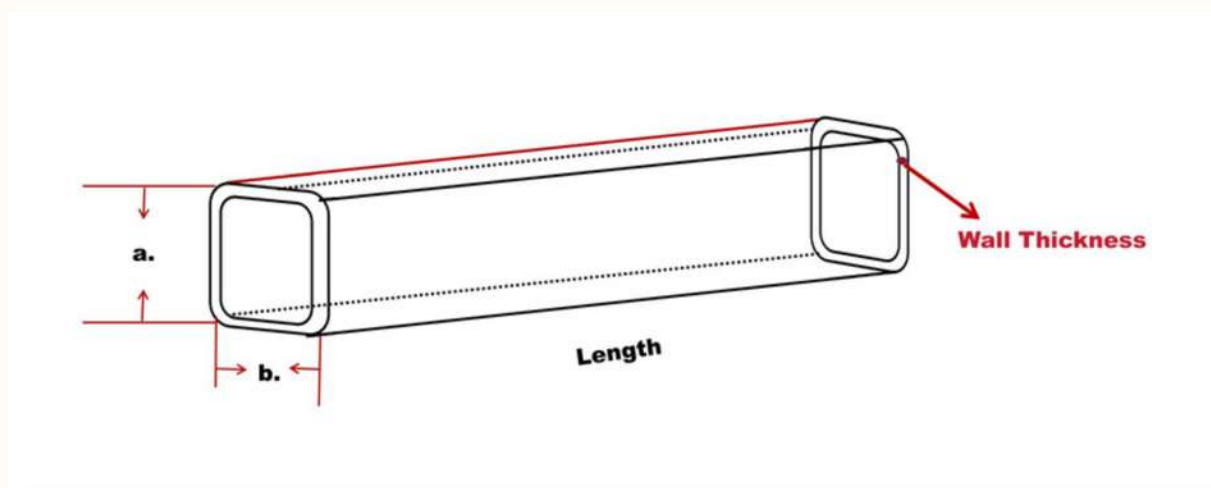


Model	Cross-Section Dimension (mm) <u>a. x b.</u>	Wall Thickness (mm)	Length (mm)	SiO ₂ (%)
AT-QTZ-FG001	20 × 20	3-6	1000	99 - 99.98
AT-QTZ-FG002	30 × 30	3-6	1000	99 - 99.98
AT-QTZ-FG003	40 × 40	3-6	1000	99 - 99.98



SIZE CHART

Quartz Rectangular Tube

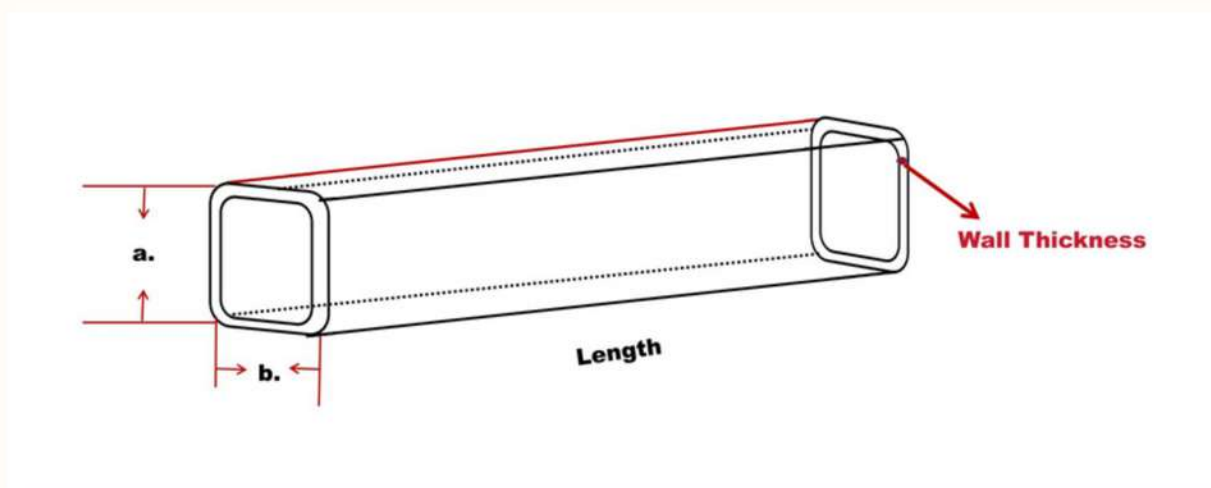


Model	Cross-Section Dimension (mm) <u>a. x b.</u>	Wall Thickness (mm)	Length (mm)	SiO ₂ (%)
AT-QTZ-FG004	50 × 50	3-6	1000	99 - 99.98
AT-QTZ-FG005	75 × 65	3-6	1000	99 - 99.98
AT-QTZ-FG006	80 × 70	3-6	1000	99 - 99.98
AT-QTZ-FG007	100 × 100	3-10	1000	99 - 99.98
AT-QTZ-FG008	200 × 200	3-10	1000	99 - 99.98



SIZE CHART

Quartz Rectangular Tube

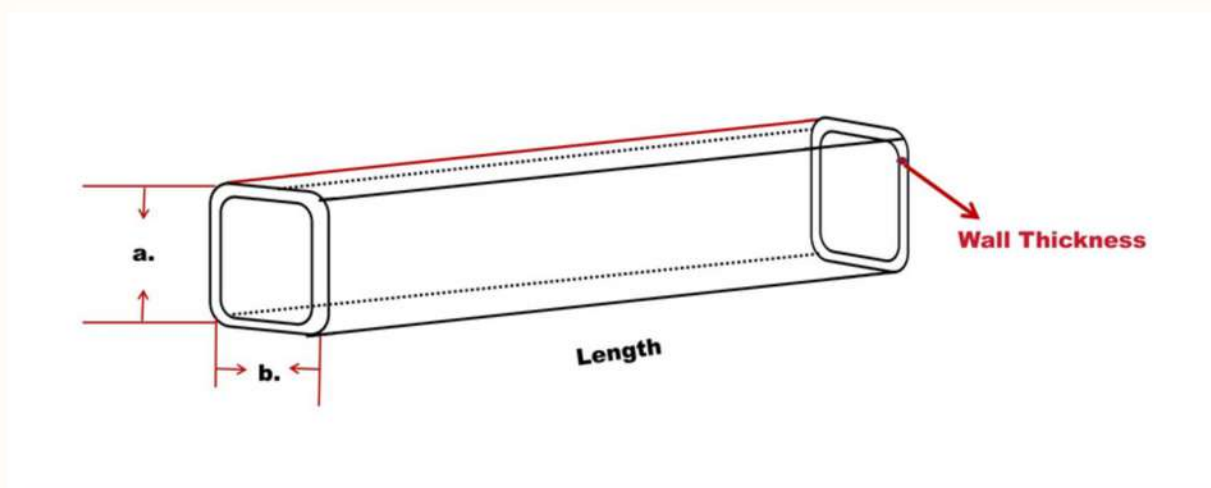


Model	Cross-Section Dimension (mm) <u>a. x b.</u>	Wall Thickness (mm)	Length (mm)	SiO ₂ (%)
AT-QTZ-FG009	300 × 300	3-10	1000	99 - 99.98
AT-QTZ-FG010	400 × 400	3-10	1000	99 - 99.98
AT-QTZ-FG011	500 × 500	3-10	1000	99 - 99.98
AT-QTZ-FG012	600 × 600	3-10	1000	99 - 99.98
AT-QTZ-FG013	700 × 700	7-10	1000	99 - 99.98



SIZE CHART

Quartz Rectangular Tube



Model	Cross-Section Dimension (mm) <u>a. x b.</u>	Wall Thickness (mm)	Length (mm)	SiO ₂ (%)
AT-QTZ-FG014	800 × 800	7-10	1000	99 - 99.98
AT-QTZ-FG015	900 × 900	7-10	1000	99 - 99.98
AT-QTZ-FG016	1000 × 1000	7-10	1000	99 - 99.98

• Cross-Section Dimensions

- Model codes FG001-FG004: Standard square profiles (1:1 aspect ratio).
- Model codes FG005-FG006: Optimized rectangular profiles for specific flow dynamics.
- Model codes FG007-FG016: Progressive scaling with increased wall thickness capacity.



CUSTOM MACHINING

Machining Precision

Optical-grade rectangular quartz tubing achieves $\pm 1.25\%$ OD tolerance across 6-25mm profiles with 12% wall consistency for custom configurations.

OD Range (mm)	OD Tolerance	WT Tolerance	Siding	Out of Round	Bow/1220mm
6	$\pm 20\%$	$\pm 10\%$	12%	2.00%	2.5mm
6-15	$\pm 1.25\%$	$\pm 8\%$	10%	1.50%	2.5mm
15-25	$\pm 1.25\%$	$\pm 10\%$	15%	1.50%	3.0mm
25-38	$\pm 1.35\%$	$\pm 12\%$	15%	1.50%	3.0mm



CUSTOM MACHINING

Material Options

Precision transparent quartz rectangular tubing provides 3 standardized grades and 2 specialty formulations optimized for extreme environments.

2 Specialty Formulations

- Low-Expansion Variant: $0.3 \times 10^{-7} / ^\circ\text{C}$ thermal shift (20-100°C range) via titanium doping
- Radiation-Resistant Types:
 - Class I: 215/300/550nm absorption peaks for semiconductor ion implanter windows
 - Class III: Single 215nm attenuation for nuclear instrumentation

3 Standardized Grades



JGS1

UV spectrum transmission
(185-2500nm) with 2000ppm
hydroxyl content



JGS2

Visible-IR performance
(220-2500nm) for furnace
viewports



JGS3

Cost-effective photonic
solutions
(> 70% UV transmittance)



TOQUARTZ

Tech Specifications

Quartz Tube

Integrated Engineering & Agile Production
for Demanded Specifications





QUARTZ HEATING TUBES



High-performance quartz thermal radiation tubes deliver unmatched durability and precision for industrial thermal processing. Engineered to optimize critical manufacturing parameters:

- **Extreme-environment resilience**

1,200°C sustained operation, ASTM C3 corrosion resistance



- **Instant thermal response**

- 30s temperature stabilization, $\pm 1^\circ\text{C}$ control accuracy

- **Focused infrared spectrum**

95%+ wavelength-material compatibility for UV curing/drying



- **Collateral damage prevention**

- Zero heavy metal leaching, ISO 14001-compliant material purity

- **Shock-tolerant architecture**

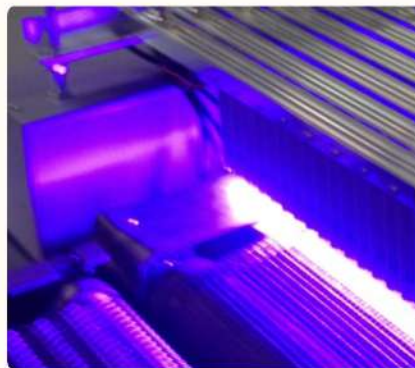
20-cycle rapid thermal fluctuation endurance



QUARTZ HEATING TUBES

Frosted quartz tube enables mission-critical operations in technologically demanding industries through three primary implementation areas:

- **High-speed PCB curing & semiconductor sealing**
 - $\pm 1^{\circ}\text{C}$ tolerance electronics manufacturing
- **Printing UV ink polymerization**
 - 95%+ spectral alignment presses
- **Automotive paint curing**
 - 30s thermal response powder coating systems
- **Chemical reactor heating**
 - HCl-resistant thermal jackets
- **Lithium battery drying**
 - ATEX-compliant electrode processing



TECHNICAL SPECIFICATION



Customizable quartz infrared heating tubes achieve **95% electrothermal efficiency** across **24-380V** industrial systems, engineered to meet mission-critical thermal processing parameters with TÜV-validated consistency.

Voltage Tier Application Mapping:

- Low Voltage (24V-72V): Compact UV curing units (printing), R&D prototyping systems
- Standard Industrial (110V-240V): Textile dryers, automotive paint lines, food dehydration
- High Voltage (380V): Chemical reactor heating jackets, battery electrode drying tunnels



TECHNICAL SPECIFICATION

Parameter	Specification
Voltage Range	24V, 36V, 72V, 100V, 110V, 115V, 120V, 220V, 230V, 240V, 380V
Power Range	150W - 3500W
Power Tolerance	-5% ~ +10%
Electrothermal Conversion Efficiency	95%
Max Operating Temperature	800°C
Thermal Radiation Efficiency	70%
Hemispherical Emissivity	88%
Infrared Wavelength	1.512μm (Peak Spectral Output)
Color Temperature	800K - 1500K
Service Life	6,000 Hours (Continuous Operation)



SIZE CHART

Quartz Tube Heating Element

Group 1: Quartz tube heating element



- Standard **220V** variants (AT-SY-JRG001~015) feature precision sizing (**8-14mm diam.**) for confined spaces in **electronics drying (PCB curing) & compact textile dryers.**
- Multi-voltage industrial models (**380V** optimal) (AT-SY-JRG016~028) with **18-32mm diam.** suit **automotive paint curing tunnels** and **chemical reactor jackets.**

Model	Tube Diameter (mm)	Tube Length (mm)	Operating Voltage (V)	Power (W)
AT-SY-JRG001	8	120	220	300
AT-SY-JRG002	10	120	220	300
AT-SY-JRG003	11	220	220	700
AT-SY-JRG004	12	120	220	300
AT-SY-JRG005	12	160	220	300



SIZE CHART

Quartz Tube Heating Element

Group 1: Quartz tube heating element



- Standard **220V** variants (AT-SY-JRG001~015) feature precision sizing (**8-14mm diam.**) for confined spaces in **electronics drying (PCB curing)** & **compact textile dryers**.
- Multi-voltage industrial models (**380V** optimal) (AT-SY-JRG016~028) with **18-32mm diam.** suit **automotive paint curing tunnels** and **chemical reactor jackets**.

Model	Tube Diameter (mm)	Tube Length (mm)	Operating Voltage (V)	Power (W)
AT-SY-JRG006	12	180	220	300
AT-SY-JRG007	12	205	220	300
AT-SY-JRG008	12	220	220	300
AT-SY-JRG009	12	230	220	300
AT-SY-JRG010	12	250	220	300



SIZE CHART

Quartz Tube Heating Element

Group 1: Quartz tube heating element



- Standard **220V** variants (AT-SY-JRG001~015) feature precision sizing (**8-14mm diam.**) for confined spaces in **electronics drying (PCB curing) & compact textile dryers.**
- Multi-voltage industrial models (**380V** optimal) (AT-SY-JRG016~028) with **18-32mm diam.** suit **automotive paint curing tunnels** and **chemical reactor jackets.**

Model	Tube Diameter (mm)	Tube Length (mm)	Operating Voltage (V)	Power (W)
AT-SY-JRG011	12	260	220	300
AT-SY-JRG012	12	280	220	300
AT-SY-JRG013	12	300	220	300
AT-SY-JRG014	12	330	220	300
AT-SY-JRG015	14	330	220	300



SIZE CHART

Quartz Tube Heating Element

Group 1: Quartz tube heating element



- Standard **220V** variants (AT-SY-JRG001~015) feature precision sizing (**8-14mm diam.**) for confined spaces in **electronics drying (PCB curing) & compact textile dryers**.
- Multi-voltage industrial models (**380V** optimal) (AT-SY-JRG016~028) with **18-32mm diam.** suit **automotive paint curing tunnels** and **chemical reactor jackets**.

Model	Tube Diameter (mm)	Tube Length (mm)	Operating Voltage (V)	Power (W)
AT-SY-JRG016	18	400	110/220/380	100-5000
AT-SY-JRG017	18	500	110/220/380	100-5000
AT-SY-JRG018	18	600	110/220/380	100-5000
AT-SY-JRG019	18	700	110/220/380	100-5000
AT-SY-JRG020	18	800	110/220/380	100-5000



SIZE CHART

Quartz Tube Heating Element

Group 1: Quartz tube heating element



- Standard **220V** variants (AT-SY-JRG001~015) feature precision sizing (**8-14mm diam.**) for confined spaces in **electronics drying (PCB curing)** & **compact textile dryers**.
- Multi-voltage industrial models (**380V** optimal) (AT-SY-JRG016~028) with **18-32mm diam.** suit **automotive paint curing tunnels** and **chemical reactor jackets**.

Model	Tube Diameter (mm)	Tube Length (mm)	Operating Voltage (V)	Power (W)
AT-SY-JRG021	18	900	110/220/380	100-5000
AT-SY-JRG022	18	1000	110/220/380	100-5000
AT-SY-JRG023	18	1500	110/220/380	100-5000
AT-SY-JRG024	18	1800	110/220/380	100-5000
AT-SY-JRG025	22	180-1800	110/220/380	100-5000



SIZE CHART

Quartz Tube Heating Element

Group 1: Quartz tube heating element



- Standard **220V** variants (AT-SY-JRG001~015) feature precision sizing (**8-14mm diam.**) for confined spaces in **electronics drying (PCB curing) & compact textile dryers.**
- Multi-voltage industrial models (**380V** optimal) (AT-SY-JRG016~028) with **18-32mm diam.** suit **automotive paint curing tunnels** and **chemical reactor jackets.**

Model	Tube Diameter (mm)	Tube Length (mm)	Operating Voltage (V)	Power (W)
AT-SY-JRG026	25	180-1800	110/220/380	100-5000
AT-SY-JRG027	28	180-1800	110/220/380	100-5000
AT-SY-JRG028	32	180-1800	110/220/380	100-5000



SIZE CHART

Quartz Glass Tube Heating Element

Group 2: U-Bend Quartz Heating Tubes



- Custom-length **220V** U-tubes for retrofit upgrades in **printing UV curing systems & textile conveyor ovens**
- **380V**-capable models enable modular configurations for **large-scale battery electrode drying**

Model	Tube Diameter (mm)	Tube Length (mm)	Operating Voltage (V)	Power (W)
AT-SY-JRG029	10	Custom	220	300
AT-SY-JRG030	12	Custom	220	300
AT-SY-JRG031	14	Custom	220	300
AT-SY-JRG032	18	Custom	110/220/380	100-5000

Voltage Tier Application Guidance:

- **110V:** Compact UV ink curing units (printing) & laboratory R&D systems
- **220V:** Standard industrial equipment (textile dryers, food dehydrators)
- **380V:** Heavy-duty chemical reactors & battery production drying tunnels

CUSTOM ENGINEERING

Machining Tolerances

Precision-engineered fused silica IR heating tubes guarantee **+5%/-10% power variance**, **$\pm 2\text{mm}$ length control**, and **$\pm 0.05\text{mm}$ diameter accuracy** for critical industrial thermal processes.

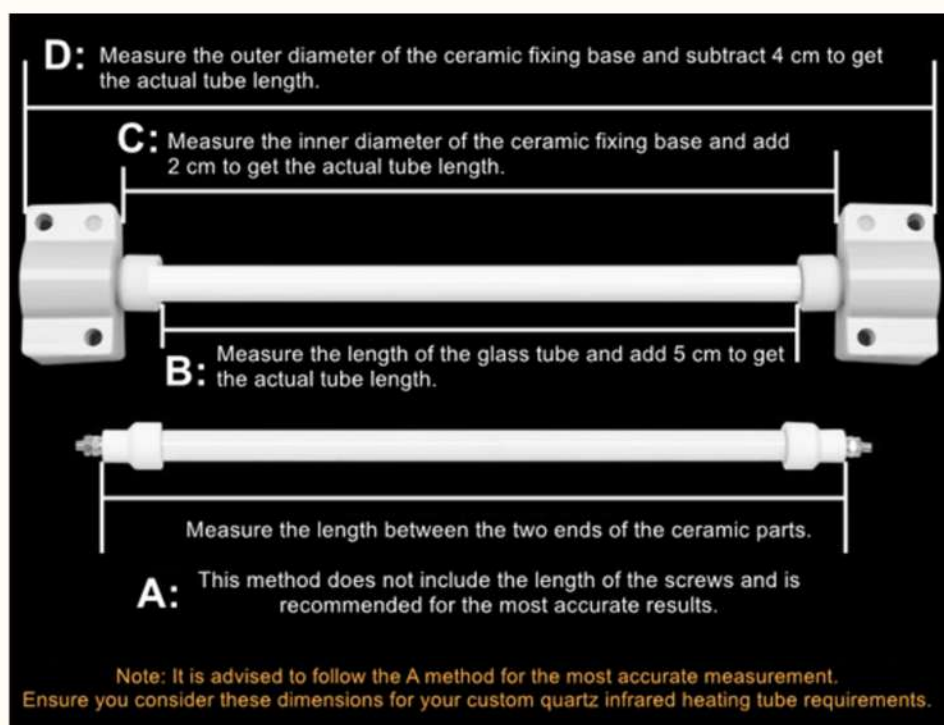


Industrial quartz infrared heating tubes require exact outer diameter specifications, power/voltage configurations, surface temperature thresholds ($\geq 900^{\circ}\text{C}$), and specialized coating requests for precision integration into thermal processing chambers.



CUSTOM ENGINEERING

Custom Measurement



Step	Method	SchematicReference
A	Distance between ceramic mounts (excluding terminal screws)	Schematic 1
B	Glass tube length +5cm adjustment	Schematic 2
C	Inner span of ceramic mounts +2cm	Schematic 3
D	Outer span of ceramic mounts -4cm	Schematic 4



TOQUARTZ

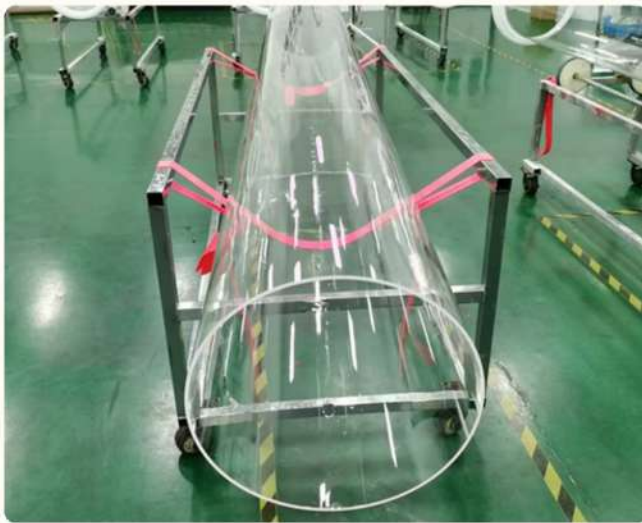
Tech Specifications

Quartz Tube

Integrated Engineering & Agile Production
for Demanded Specifications



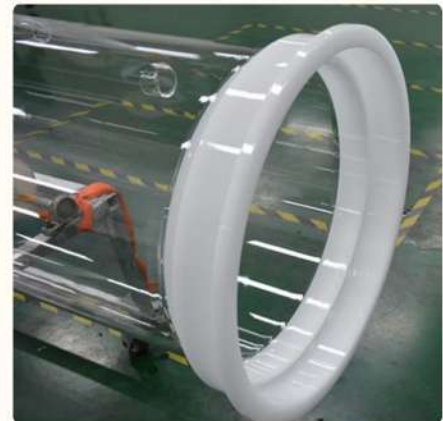
QUARTZ DIFFUSION FURNACE TUBE



- **Ultra-high thermal stability:**
Withstands **1200°C** continuous operation | **0.02%/100h** creep rate
- **Advanced corrosion resistance:**
5,000+ hours in H_2/O_2 environments | HCl corrosion rate **<30µm/month**
- **Optimized optical transmission:** UV-NIR **>90%** transmittance | Minimized light scattering defects



- **Semiconductor wafer doping systems:**
Phosphorus/Boron diffusion | Oxidation furnace core assemblies
- **Solar cell $POCl_3$ diffusion lines:** N-type TOPCon cell production | PERC silicon wafer processing
- **LED epitaxial reactor chambers:** MOCVD equipment liners | GaN deposition thermal management
- **Power device annealing stations:** IGBT/SiC substrate treatment | RTP furnace configurations





TECHNICAL DATA SHEET



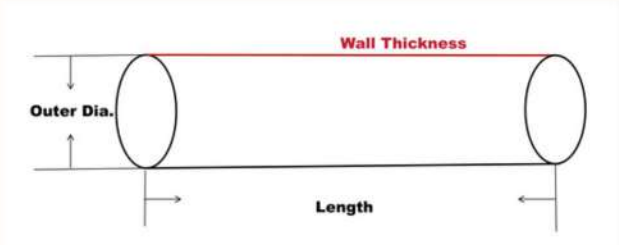
High-precision quartz diffusion furnace tubes with **$\pm 0.5\%$ OD tolerance** and **$\pm 10\%$ wall thickness** compliance ensure structural integrity, while **tight 0.5% ovality** and **0.3% curvature limits** optimize sealing performance across **200–550mm OD ranges** for solar cell and semiconductor thermal processing.

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 Diffusion Furnace Tube



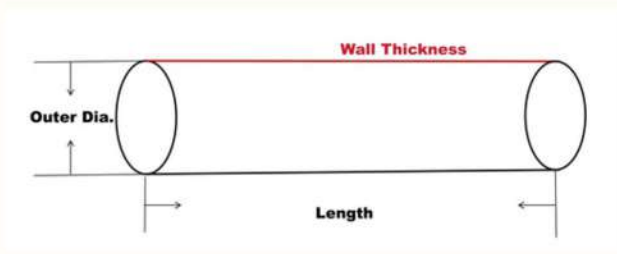
- **Dimensional Stability:** All models maintain $\pm 0.05\text{mm}$ tolerance across heated operations.
- **Customization Basis:** Length ranges serve as standard offerings, with precision-cut options available.
- **Purity Assurance:** 99.99% SiO_2 certified via glow discharge mass spectrometry (GDMS).

Model	OD (mm)	ID (mm)	Wall Thickness (mm)	Length (mm)	SiO ₂ Purity (%)
AT-SY-XG001	55	50	2.5	1500–2000	99.99
AT-SY-XG002	90	83	3.5	1500–2000	99.99
AT-SY-XG003	200	190	5	2000–3500	99.99
AT-SY-XG004	330	314	8	2000–3500	99.99



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Model	OD (mm)	ID (mm)	Wall Thickness (mm)	Length (mm)	SiO_2 Purity (%)
AT-SY-XG005	430	410	10	2000--3500	99.99
AT-SY-XG006	550	520	15	2000--3500	99.99

Application Alignment by OD Range

- 55-90mm Units: Optimal for LED epitaxial reactors (MOCVD) and compact RTP systems requiring rapid thermal cycling.
- 200-330mm Units: Preferred in semiconductor wafer doping (8-12" wafer lines) and mid-scale PERC solar cell production.
- 430-550mm Units: Engineered for large-area TOPCon solar diffusion and SiC power device annealing at industrial throughput.



CUSTOM MACHINING

Machining Precision

High-purity furnace-grade tubing adheres to $\pm 0.5\%$ OD precision with 0.3% curvature limit, critical for vacuum seal integrity in thermal processing environments.

OD Range (mm)	OD Tolerance	Wall Thickness Tolerance	Roundness Deviation	Max Curvature	End Face Flatness	End Face Perpendicularity
200 $\varphi <$ 250	$\pm 0.5\%$	$\pm 10\%$	$\pm 0.5\%$	0.3%	± 0.1 mm	± 0.5 mm
φ 250	$\pm 0.5\%$	$\pm 10\%$	$\pm 0.5\%$	0.3%	± 0.1 mm	± 0.5 mm

Custom Solutions

Semiconductor-grade fabrication quartz diffusion furnace tubes adapt to ± 0.05 mm precision demands and custom gas port configurations, engineered through collaborative technical review of your CAD drawings and parametric specifications.