

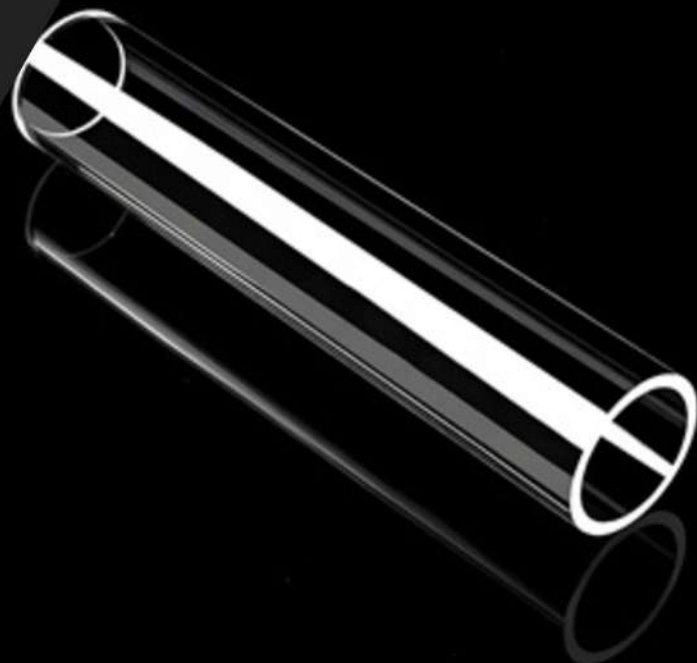


# TOQUARTZ

## Product Catalog

# TOQUARTZ® Clear Fused Quartz Tubing

Integrated Engineering & Agile Production  
**for Demanded Specifications**



# TOQUARTZ® CLEAR FUSED QUARTZ TUBING

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring.

With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Clear Fused Quartz Tubing with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® high Purity Cylindrical Clear Fused Quartz Tubing is a precision-engineered component designed for high-temperature, chemically resistant, and optically stable applications across laboratories, thermal processing systems, optical devices, and chemical sampling environments. Manufactured from  $\geq 99.995\%$   $\text{SiO}_2$  fused silica, TOQUARTZ® tubing ensures tight dimensional control and stable thermal performance.

# TOQUARTZ® CLEAR FUSED QUARTZ TUBING



TOQUARTZ

## Key Features & Benefits

- Material Purity:  $\geq 99.98\%$  fused silica, up to 99.995%
- Thermal Resistance: Continuous use up to 1100–1200 °C
- Low Thermal Expansion: CTE  $\sim 0.5 \times 10^{-6}/K$
- Available Lengths: 48", 60", 72" standard, with custom cutting available
- Geometric Control: Optional roundness, concentricity, bow, and surface quality matching project drawings



# TOQUARTZ® CLEAR FUSED QUARTZ TUBING



## Applications

- Tube Furnaces and Thermal Systems
- CVD/PECVD Equipment and Gas Handling
- UV/IR Lamp Enclosures and Optical Housings
- EPR/NMR Sample Transfer and Reactor Linings
- High-Temperature Chemical Sampling and Flow Tubing





# TECHNICAL SPECIFICATIONS

## 1. Physical Properties

- Density: **2.20 g/cm<sup>3</sup>**
- Softening Point: **1680 °C**
- Annealing Point: **1215 °C**
- Strain Point: **1120 °C**
- Tensile Strength: **≥50 MPa**
- Flexural Strength: **≥65 MPa**
- Fracture Modulus: **≥350 MPa**

## 2. Chemical Properties

- SiO<sub>2</sub> Purity: **≥99.995%**
- OH Content (low-OH): **≤5 ppm available**
- Acid Resistance: Excellent (except HF)
- Alkali Resistance: Excellent
- Gas Compatibility: Stable in Cl<sub>2</sub>, HCl, O<sub>2</sub>, N<sub>2</sub>, Ar, SF<sub>6</sub>, etc.

## 3. Optical Properties

- Transmission Range: **190–4500 nm** (visible + IR)
- UV Cutoff: **~170–180 nm** (depending on grade)
- Index of Refraction: **1.4585 @ 589 nm**
- Birefringence: **<1 nm/cm**
- Transmittance: **>90% @ 300–2500 nm**, depending on OD/thickness



# SIZE CHART

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2001	0.8	0.3	20	99.98%
AT-QTZ-G2002	1.5	0.5	30	99.98%
AT-QTZ-G2003	2.4	0.4	50	99.98%
AT-QTZ-G2004	3	0.8	50	99.98%
AT-QTZ-G2005	3	0.09	80	99.98%
AT-QTZ-G2006	3.6	0.6	80	99.98%
AT-QTZ-G2007	3.65	0.65	100	99.98%
AT-QTZ-G2008	4.35	1	150	99.98%



# SIZE CHART

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2009	6	1	150	99.98%
AT-QTZ-G2010	10	2.2	200	99.98%
AT-QTZ-G2011	15	5	300	99.98%
AT-QTZ-G2012	20	8	500	99.98%
AT-QTZ-G2013	27	6	350	99.98%
AT-QTZ-G2014	32	4	500	99.98%
AT-QTZ-G2015	40	3	800	99.98%
AT-QTZ-G2016	40	3	1000	99.98%





# SIZE CHART

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2017	50	3	450	99.98%
AT-QTZ-G2018	50	3	500	99.98%
AT-QTZ-G2019	50	3	600	99.98%
AT-QTZ-G2020	50	3	700	99.98%
AT-QTZ-G2021	50	3	800	99.98%
AT-QTZ-G2022	50	3	1000	99.98%
AT-QTZ-G2023	50	4	600	99.98%
AT-QTZ-G2024	50	4	1000	99.98%



# SIZE CHART

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2025	60	3	800	99.98%
AT-QTZ-G2026	60	3	1000	99.98%
AT-QTZ-G2027	60	3	1400	99.98%
AT-QTZ-G2028	60	4	1000	99.98%
AT-QTZ-G2029	60	5	1000	99.98%
AT-QTZ-G2030	80	3	1000	99.98%
AT-QTZ-G2031	80	3	1200	99.98%
AT-QTZ-G2032	80	4	1000	99.98%



# SIZE CHART

Model	Outer Diameter (mm)	Wall Thickness (mm)	Length (mm)	Purity
AT-QTZ-G2033	80	5	1000	99.98%
AT-QTZ-G2034	100	3	1000	99.98%
AT-QTZ-G2035	100	3	1200	99.98%
AT-QTZ-G2036	100	4	1000	99.98%
AT-QTZ-G2037	100	5	1000	99.98%
AT-QTZ-G2038	1.5-450	0.09-10	20-2000	99.98%





## CUSTOMIZATION OPTIONS

**TOQUARTZ® provides extensive customization capabilities for cylindrical transparent fused quartz rods:**

- Custom OD/ID and Wall Thickness based on project drawing
- Special Cutting Lengths:  $\pm 0.1$  mm or better on request
- Angled Ends / Bevels / Fire-Polished or Precision Ground Edges
- Design for concentricity, ovality, and bow under specific tolerances
- High-purity low-OH or standard clear fused grades
- Assembly-ready packaging for lab or production integration



# ABOUT TOQUARTZ®

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# TOQUARTZ

## Product Catalog

# TOQUARTZ® Capillary Quartz Tubes

Integrated Engineering & Agile Production  
**for Demanded Specifications**





# TOQUARTZ® CAPILLARY QUARTZ TUBES

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring.

With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Capillary Quartz Tubes with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® Capillary Quartz Tubes are manufactured from  $\geq 99.995\%$  high-purity fused silica, engineered to deliver ultra-fine fluid transfer in chromatography systems, microfluidics, and laboratory diagnostics.

These capillaries offer excellent dimensional consistency, high thermal resistance, and smooth inner surfaces for optimal chemical compatibility and flow dynamics.

Available in custom inner diameters starting from 0.2 mm, our quartz capillary tubes are optimized for OEM integration, R&D sample prototyping, and precision fluid applications

# TOQUARTZ® CAPILLARY QUARTZ TUBES



## Key Features & Benefits

- High-Purity Fused Silica Composition ( $\geq 99.98\%$ , up to 99.995%)
- Inner Diameter Range Starting from 0.2 mm
- Thermal Stability up to 1200 °C
- Excellent Acid/Base and Gas Corrosion Resistance
- Smooth Inner Wall with Minimal Adsorption
- Available in Custom Lengths and Geometries

# TOQUARTZ® CAPILLARY QUARTZ TUBES



**Applications**

- GC / HPLC chromatography channels
- Microfluidic device interfaces
- Sample injection and separation systems
- Transparent conduits in reaction monitoring







# TECHNICAL SPECIFICATIONS

## Physical Properties

- Density: 2.2 g/cm<sup>3</sup>
- Tensile Strength:  $\geq 50$  MPa
- Compressive Strength:  $\geq 1100$  MPa
- Young's Modulus: 72 GPa
- Thermal Expansion Coefficient:  $5.5 \times 10^{-7}$  /K

## Chemical Resistance

- Resistant to all acids except HF
- Compatible with most bases and organic solvents
- Non-reactive to chlorine, ozone, and fluorine environments

## Optical Properties

- UV-Visible Transmission Range: 180–2500 nm
- No absorption peaks in visible spectrum
- Refractive Index (589 nm):  $\sim 1.46$



# SIZE CHART

Model	OD (mm)	ID (mm)	Length (mm)	SiO <sub>2</sub> (%)
AT-SY-MXG001	1	0.5	10-2000	99.98
AT-SY-MXG002	1.35	0.05	10-2000	99.98
AT-SY-MXG003	1.35	0.3	10-2000	99.98
AT-SY-MXG004	1.35	0.38	10-2000	99.98
AT-SY-MXG005	1.35	0.5	10-2000	99.98
AT-SY-MXG006	1.35	1	10-2000	99.98
AT-SY-MXG007	1.4	0.8	10-2000	99.98
AT-SY-MXG008	1.7	0.5	10-2000	99.98



# SIZE CHART

Model	OD (mm)	ID (mm)	Length (mm)	SiO <sub>2</sub> (%)
AT-SY-MXG009	2	0.05	10-2000	99.98
AT-SY-MXG010	2	0.3	10-2000	99.98
AT-SY-MXG011	2	0.5	10-2000	99.98
AT-SY-MXG012	2	0.1	10-2000	99.98
AT-SY-MXG013	2	1	10-2000	99.98
AT-SY-MXG014	2.5	0.55	10-2000	99.98
AT-SY-MXG015	2.9	0.1	10-2000	99.98
AT-SY-MXG016	2.9	0.2	10-2000	99.98



# SIZE CHART

Model	OD (mm)	ID (mm)	Length (mm)	SiO <sub>2</sub> (%)
AT-SY-MXG017	2.9	0.3	10-2000	99.98
AT-SY-MXG018	2.9	0.5	10-2000	99.98
AT-SY-MXG019	2.9	0.6	10-2000	99.98
AT-SY-MXG020	3	1	10-2000	99.98
AT-SY-MXG021	3	2	10-2000	99.98
AT-SY-MXG022	3.2	0.45	10-2000	99.98
AT-SY-MXG023	4	0.5	10-2000	99.98
AT-SY-MXG024	4	1	10-2000	99.98





# SIZE CHART

Model	OD (mm)	ID (mm)	Length (mm)	SiO <sub>2</sub> (%)
AT-SY-MXG025	4	2	10-2000	99.98
AT-SY-MXG026	4	3	10-2000	99.98
AT-SY-MXG027	4.75	0.375	10-2000	99.98
AT-SY-MXG028	5	0.4	10-2000	99.98
AT-SY-MXG029	5	0.5	10-2000	99.98
AT-SY-MXG030	5	1	10-2000	99.98
AT-SY-MXG031	5	4	10-2000	99.98
AT-SY-MXG032	6	0.4	10-2000	99.98



# SIZE CHART

Model	OD (mm)	ID (mm)	Length (mm)	SiO <sub>2</sub> (%)
AT-SY-MXG033	6	0.5	10-2000	99.98
AT-SY-MXG034	6	0.8	10-2000	99.98
AT-SY-MXG035	6	1	10-2000	99.98
AT-SY-MXG036	6	1.5	10-2000	99.98
AT-SY-MXG037	6	2	10-2000	99.98
AT-SY-MXG038	6	3	10-2000	99.98
AT-SY-MXG039	6	4	10-2000	99.98
AT-SY-MXG040	6	5	10-2000	99.98



# SIZE CHART

Model	OD (mm)	ID (mm)	Length (mm)	SiO <sub>2</sub> (%)
AT-SY-MXG041	7	0.38	10-2000	99.98
AT-SY-MXG042	7	0.5	10-2000	99.98
AT-SY-MXG043	7	0.6	10-2000	99.98
AT-SY-MXG044	8	1	10-2000	99.98
AT-SY-MXG045	8	2.4	10-2000	99.98
AT-SY-MXG046	10	1	10-2000	99.98



## CUSTOMIZATION OPTIONS

**TOQUARTZ® provides extensive customization capabilities for cylindrical transparent fused quartz rods:**

- Tailored ID/OD combinations to match lab setups
- End finishing: fire-polished, flat-cut, or flanged
- Optional mirror polishing on inner wall
- Batch traceability and drawing-based production
- Prototype-to-production support





# ABOUT TOQUARTZ®

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# TOQUARTZ

## Tech Specifications

# Quartz Tube

Integrated Engineering & Agile Production  
**for Demanded Specifications**



# 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%  $\text{H}_3\text{PO}_4$  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 Silica Spiral Tubing ensures  $\pm 0.1\text{mm}$  dimensional accuracy and 99.9% 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%, Al: 0.8%, Na: 2.3%, Li: 0.5%
Spectral Transmission	93% transmittance (280-780nm), 93.4% peak at 780nm, UV cutoff <220nm
Thermal Properties	Softening point: 1615–1683°C, thermal expansion: $5.5\text{--}6.7\times 10^{-7}/\text{cm}\cdot^{\circ}\text{C}$
Mechanical Strength	Compressive: $>1.1\times 10^9$ Pa, Young's modulus: $7.0\text{--}7.5\times 10^{10}$ 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



TOQUARTZ  
Tech Specifications

# TOQUARTZ® Threaded Quartz Tubes Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**





# TOQUARTZ® THREADED QUARTZ TUBES

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® threaded quartz tubes with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® Threaded Quartz Tubes are precision-engineered from high-purity fused silica ( $\geq 99.99\% \text{SiO}_2$ ), offering exceptional thermal stability, chemical resistance, and optical clarity. These tubes feature precisely machined male or female threaded ends for secure connections in demanding laboratory, optical, and industrial applications.



# TOQUARTZ® THREADED QUARTZ TUBES



TOQUARTZ

## Key Features

- **Superior Thermal Stability:** Withstands continuous temperatures up to 1250°C with minimal thermal expansion
- **Chemical Resistance:** Highly resistant to acids, alkalis, and corrosive gases
- **Precision Threading:** Machine-tooled threads with  $\pm 0.1\text{mm}$  tolerance for secure, leak-proof connections
- **High Purity:** 99.99%  $\text{SiO}_2$  content ensures minimal contamination in sensitive applications
- **Electrical Insulation:** High dielectric strength for applications requiring electrical isolation

# TOQUARTZ® THREADED QUARTZ TUBES



TOQUARTZ

## Applications

- **Laboratory Analysis Systems:**  
Gas and fluid handling components for analytical equipment
- **UV/IR Optical Systems:**  
Components for UV disinfection and IR heating equipment
- **High-Temperature Processing:**  
Industrial furnaces and thermal processing systems
- **Vacuum Systems:** Gas-tight connections for vacuum applications
- **Research Equipment:** Custom solutions for scientific research facilities





# TECHNICAL SPECIFICATIONS

## Material Properties:

- Material Composition:  $\text{SiO}_2 \geq 99.99\%$
- Density:  $2.2 \text{ g/cm}^3$
- Working Temperature:  $1250^\circ\text{C}$  (continuous)
- Softening Point:  $1730^\circ\text{C}$
- Thermal Expansion Coefficient:  $5.5 \times 10^{-7}/^\circ\text{C}$  (20-1000 $^\circ\text{C}$ )
- Thermal Conductivity:  $1.4 \text{ W/m}\cdot\text{K}$  (25 $^\circ\text{C}$ )
- Mohs Hardness: 5.3-6.5



# CUSTOMIZATION OPTIONS

- Custom thread specifications (metric, imperial, NPT, custom pitch and diameter)
- Specialized dimensions (ID/OD from 3mm to 300mm, custom lengths up to 3000mm)
- Various end configurations (single-threaded, double-threaded, mixed male/female)
- Surface treatments (fire-polished, precision ground, frosted)
- Material options (clear fused quartz, UV-transmitting, IR-blocking, opal quartz)



## CUSTOMIZATION MANUFACTURING

### **TOQUARTZ offers comprehensive custom manufacturing services:**

- Technical drawing assistance
- Material selection consultation
- Prototype development
- Quality inspection and testing

Our engineering team works directly with customers to develop solutions for specific requirements, from prototyping through volume production.





# ABOUT TOQUARTZ®

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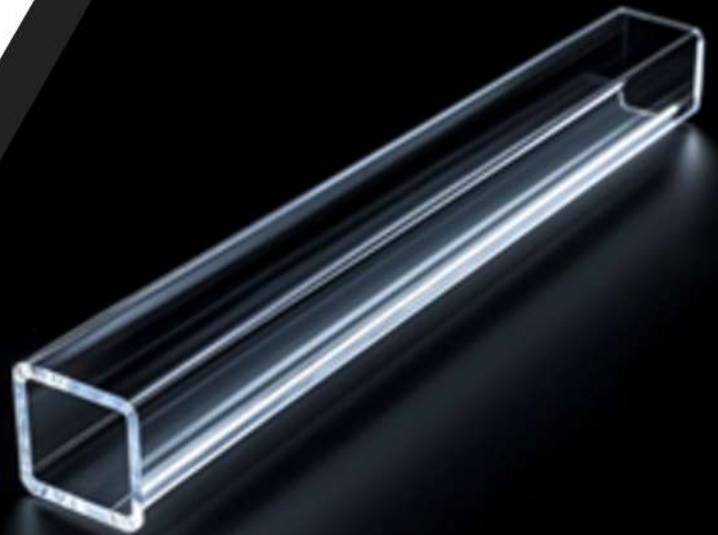
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TOQUARTZ  
Tech Specifications

# TOQUARTZ® Square Quartz Tube Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**



# TOQUARTZ® SQUARE QUARTZ TUBE

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Square Quartz Tubes with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® square quartz tubes are manufactured from high-purity fused silica, offering excellent thermal stability, UV transmission, and chemical resistance. These square quartz glass tubes support a wide range of industrial and scientific applications requiring precision materials.



# TOQUARTZ® SQUARE QUARTZ TUBE



## Key Features

- **High Temperature Resistance:** Withstands continuous operation at 1100°C and short-term exposure up to 1350°C
- **Superior Optical Properties:** >93% visible light transmission and >80% UV transmission
- **Chemical Resistance:** Inert to most acids, bases, and solvents (except HF)
- **Customization Available:** Custom sizes, wall thicknesses, and end finishing options



# TOQUARTZ® SQUARE QUARTZ TUBE



## Applications

- Laboratory equipment and analytical instruments
- UV sterilization and disinfection systems
- Industrial heating and thermal processing
- Semiconductor and solar manufacturing
- Optical instruments and light transmission
- Chemical processing and reactor components



# TECHNICAL SPECIFICATIONS

## Material Properties

Property	Value
Density	2.2 g/cm <sup>3</sup>
Flexure Strength	48 MPa
Elastic Modulus	72 GPa
Poisson's Ratio	0.14-0.17
Compressive Strength	1100 MPa
Bending Strength	67 MPa
Moh's Hardness	5.5-6.5

## Thermal & Optical Properties

Property	Value
Maximum Working Temperature (long-term)	1100°C
Maximum Working Temperature (short-term)	1350°C
Thermal Conductivity	1.4 W/m·K
Refractive Index	1.4585
Thermal Expansion Coefficient	$5.5 \times 10^{-7} / ^\circ\text{C}$
Specific Resistance	$7 \times 10^7 \Omega \cdot \text{cm}$
Transmission (280-780nm)	≥93% (1mm thickness)



# SIZE CHART

Model	Side Length 1 (mm)	Side Length 2 (mm)	Wall Thickness (mm)	Length (mm)	Purity (%)
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%
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

Model	Side Length 1 (mm)	Side Length 2 (mm)	Wall Thickness (mm)	Length (mm)	Purity (%)
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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%
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%





## CUSTOMIZATION MANUFACTURING

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# TOQUARTZ

## Tech Specifications

# Quartz Tube

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# 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



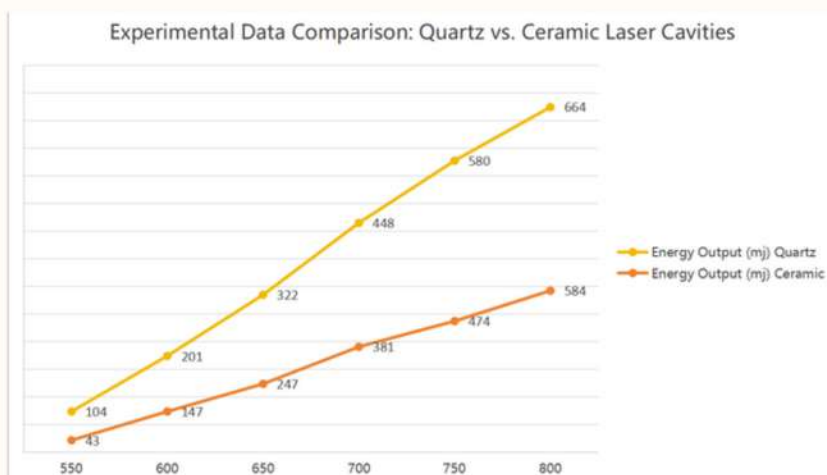




# WHY CHOOSE QUARTZ CAVITY FILTER OVER CERAMIC?

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 <sup>3</sup>	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	$5.5 \times 10^{-7}$ 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 ( $\epsilon$ )	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/cm<sup>2</sup>)

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







# 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 <sub>2</sub> 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

# TOQUARTZ® U-Shaped Quartz Tube Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**



# TOQUARTZ® U-SHAPED QUARTZ TUBE

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® U-Shaped Quartz Tube with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® U-shaped quartz tubes are engineered from 99.99% pure fused silica for extreme thermal, chemical, and optical performance. These precision-bent tubes deliver exceptional performance in UV lamp systems, laboratory equipment, and high-temperature industrial applications.



# TOQUARTZ® U-SHAPED QUARTZ TUBE



## Key Features

### THERMAL RESISTANCE

- Short-term use: 1300°C
- Long-term stability: 1100°C
- Softening point: 1780°C, annealing point: 1250°C

### OPTICAL PERFORMANCE

- UV to IR transparency: 92–93% transmission (1.0mm thickness)
- Refractive index: 1.4585 (at 587.6 nm, Nd line)
- Low OH content: Minimizes UV absorption

### MECHANICAL STRENGTH

- Compressive strength: 1100 MPa
- Young's modulus: 72,000 MPa
- Mohs hardness: 5.5–6.5

### CHEMICAL PURITY & RESISTANCE

- Purity:  $\text{SiO}_2 \geq 99.97\%$
- Impurities: <10 PPM total metals
- Chemical resistance: Resistant to most acids, bases, and solvents

# TOQUARTZ® U-SHAPED QUARTZ TUBE



## Applications

- UV DISINFECTION SYSTEMS

Our U-shaped quartz tubes deliver optimal UV transmission for water treatment, air purification, and medical sterilization equipment.

- LABORATORY EQUIPMENT

Ideal for analytical instruments, gas handling systems, and chemical reactors requiring extreme chemical inertness and temperature stability.

- INFRARED HEATING

Engineered for industrial heating elements, semiconductor processing, and thermal treatment systems operating at extreme temperatures.



# TECHNICAL SPECIFICATIONS

## MATERIAL PROPERTIES

Property	Value
Chemical Composition	SiO <sub>2</sub> ≥ 99.97%
Density	2.2 g/cm <sup>3</sup>
Thermal Conductivity	1.4 W/m·°C
Coefficient of Thermal Expansion	0.55 × 10 <sup>-6</sup> /°C (20–300°C)
Thermal Shock Resistance	ΔT > 1000°C
UV Transmittance (254nm)	92%
Visible Transmittance (550nm)	93%
Maximum Operating Temperature	1100°C (continuous)
Dielectric Constant	3.75



# CUSTOMIZATION OPTIONS

**TOQUARTZ® offers extensive customization capabilities for your specific application requirements:**

- Custom Geometries: Variable bend angles, asymmetrical leg lengths, multi-bend configurations
- End Treatments: Fire-polished, precision ground, flared, or beaded ends
- Special Materials: Low-OH content, doped quartz, ultra-high purity options
- Surface Treatments: Interior/exterior coatings, etching, or texturing





## CUSTOMIZATION MANUFACTURING

### **TOQUARTZ offers comprehensive custom manufacturing services:**

- Technical drawing assistance
- Material selection consultation
- Prototype development
- Quality inspection and testing

Our engineering team works directly with customers to develop solutions for specific requirements, from prototyping through volume production.



# ABOUT TOQUARTZ®

TOQUARTZ® is a specialized manufacturer of high-quality quartz glass products for industrial, laboratory, and optical applications. Our factory-direct approach eliminates intermediaries, providing cost-effective solutions with responsive technical support. We welcome small batch orders and offer 24-hour shipping for standard items.

## Contact Information

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TOQUARTZ® - Precision Quartz Solutions for Industry and Research

*For technical specifications, custom requirements, or pricing information, please contact our sales team.*

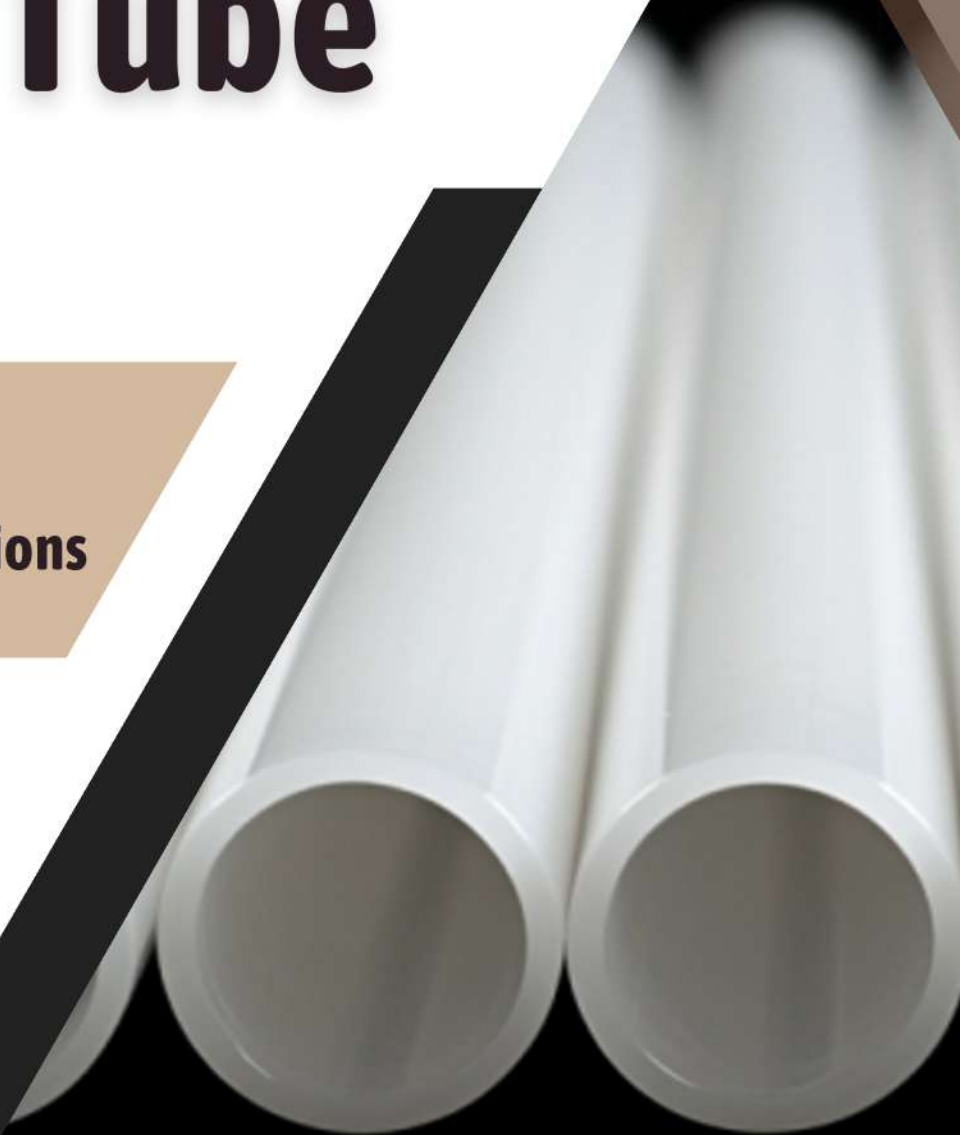


# TOQUARTZ

## Tech Specifications

# Quartz Tube

Integrated Engineering & Agile Production  
**for Demanded Specifications**





# FROSTED QUARTZ TUBING



Frosted quartz tubing 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 $\mu\text{m}$  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



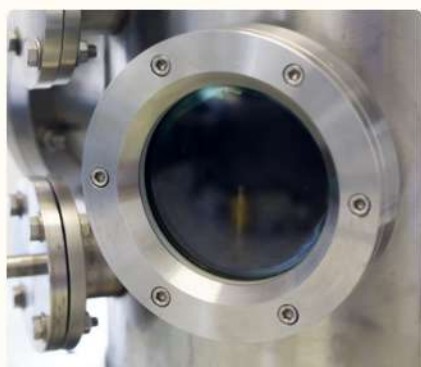
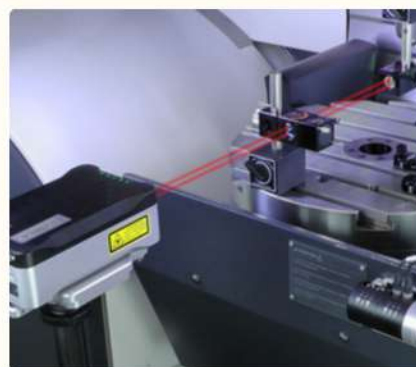


# FROSTED QUARTZ TUBING

Frosted 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 **99.9% SiO<sub>2</sub> purity**, **1,450°C thermal resilience**, and acid resistance **150× superior to** stainless steel – request custom geometries for your precision engineering challenges.

## 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 <sup>3</sup>	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 <sub>3</sub> reactor components



# SIZE CHART

## Frosted Quartz Glass Tube

### I . Open-End Tubes



- **Critical Specs**

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

- **Customization**

Wall thickness tolerance  $\pm 0.02$ 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%





# SIZE CHART

## Frosted Quartz Glass Tube

### I . Open-End Tubes



- **Critical Specs**

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

- **Customization**

Wall thickness tolerance  $\pm 0.02$ 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.

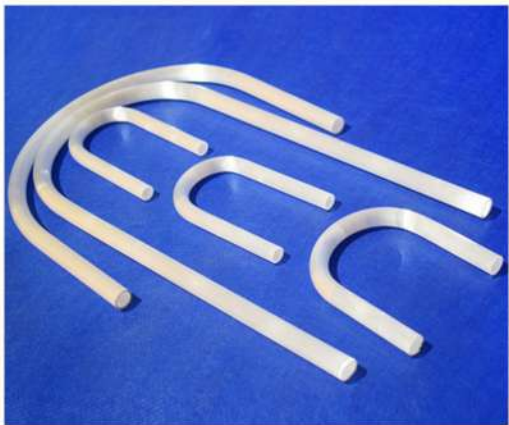
Model No.	OD (mm)	ID (mm)	Length (mm)	Purity (%)
AT-SY-MSG3006	32	28	Custom	99.0-99.98
AT-SY-MSG3007	50	45	Custom	99.0-99.98
AT-SY-MSG3008	80	70	Custom	99.0-99.98



# 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 <sub>3</sub> vapor environments



# SIZE CHART

## Frosted Quartz Glass Tube

### IV. Helical Tubes



- **Critical Specs**

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

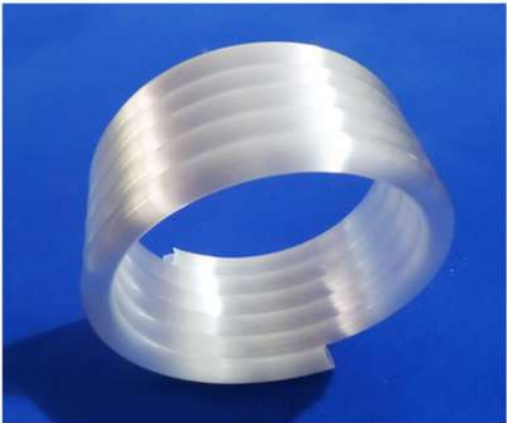




# SIZE CHART

## 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

Frosted quartz tubing 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

# TOQUARTZ® Quartz Tube Plug Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**





# TOQUARTZ® QUARTZ TUBE PLUG

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Quartz Tube Plug with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® Quartz Tube Plugs are precision-engineered from high-purity fused quartz ( $\geq 99.99\% \text{SiO}_2$ ). Available in both transparent and opaque variants with optional hanging loops, these end caps provide reliable sealing solutions for high-temperature furnaces, laboratory equipment, and vacuum systems. Withstanding temperatures up to  $1100^\circ\text{C}$  for continuous operation, our quartz stoppers deliver exceptional thermal stability and chemical resistance.



# TOQUARTZ® QUARTZ TUBE PLUG



## Key Features

- Ultra-High Purity:  $\text{SiO}_2$  Content:  $\geq 99.99\%$ , ensuring minimal contamination in sensitive applications
- Extreme Temperature Resistance: Continuous operating temperature:  $1100^\circ\text{C}$ , Short-term peak tolerance:  $1450^\circ\text{C}$  (up to 2 hours)
- Superior Chemical Resistance: Resistant to acids, bases, corrosive gases, and fluoride environments
- Precision Engineering: Dimensional tolerance:  $\pm 0.2\text{mm}$  standard, Closed-end thickness:  $\geq 3\text{mm}$  for thermal stability
- Customization Options: Available in various diameters, wall thicknesses, and designs including hanging loop for vertical applications

# TOQUARTZ® QUARTZ TUBE PLUG



TOQUARTZ

## Applications

- Laboratory Equipment: Seals for high-temperature furnaces and reaction chambers
- Vacuum Systems: End caps for maintaining vacuum integrity in research equipment
- Vertical Furnaces: Hanging systems for suspended quartz components
- Materials Processing: Controlled atmosphere chambers for materials synthesis
- Research Facilities: Custom configurations for specialized experimental setups





# TECHNICAL SPECIFICATIONS

## Chemical Properties

- **SiO<sub>2</sub> Purity:**  $\geq 99.99\%$  (ASTM E222-23)
- **Trace Impurities (Fe, Al, K):**  $< 10$  ppm (ICP-MS Analysis)

## Physical Properties

- **Density:**  $2.2 \text{ g/cm}^3$  (ASTM C693-93)
- **Thermal Expansion Coefficient:**  $5.5 \times 10^{-7} / ^\circ\text{C}$  (20–300°C) (ASTM E228-22)
- **Thermal Conductivity:**  $1.4 \text{ W/(m}\cdot\text{K)}$  (ASTM E1461-22)
- **Max Working Temperature:** 1100°C (continuous)

## Mechanical Tolerances

- **Dimensional Precision:**  $\pm 0.2 \text{ mm}$  (standard) (ISO 2768-1)
- **Surface Roughness (Ra):**  $\leq 0.4 \text{ }\mu\text{m}$  (ISO 4287:1997)





# CUSTOMIZATION OPTIONS

**TOQUARTZ® offers comprehensive customization services for quartz tube plugs to meet your exact specifications. Our engineering team works directly with you to design and manufacture the perfect solution for your application.**

- Dimensional Customization: Diameter: 5mm to 150mm, Wall thickness: 1mm to 8mm
- Material Options: Clear fused quartz (standard), Opaque/milky quartz for IR applications
- Surface Treatments: Polished, Fire-polished, or Matte finish





## HANDLING & MAINTENANCE

- Wear powder-free gloves when handling to prevent contamination
- Store in original packaging or on clean, soft surfaces
- Clean with ultrapure water or semiconductor-grade solvents
- For optimal performance, follow recommended thermal cycling protocols



# ABOUT TOQUARTZ®

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TOQUARTZ  
Tech Specifications

# TOQUARTZ® Ground Joint Quartz Tube Product Catalog

Integrated Engineering & Agile Production  
for Demanded Specifications



# TOQUARTZ® GROUND JOINT QUARTZ TUBE

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Ground Joint Quartz Tube with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® Ground Joint Quartz Tubes are precision-engineered from high-purity fused quartz ( $\geq 99.99\% \text{SiO}_2$ ), designed for seamless laboratory and industrial system integration. These specialized components feature standardized ground glass joints that ensure reliable, leak-proof connections in complex experimental setups and industrial processes requiring exceptional thermal stability, chemical resistance, and optical clarity.



# TOQUARTZ® GROUND JOINT QUARTZ TUBE



## Key Features

### Superior Thermal Properties

- Working temperature up to 1,200°C with softening point at 1,700°C
- Low thermal expansion coefficient ( $5.5 \times 10^{-7} / ^\circ\text{C}$ ) ensures dimensional stability
- Excellent thermal shock resistance, withstanding rapid temperature changes of  $>1,000^\circ\text{C}$

### High Chemical Resistance

- Resistant to most acids, bases, and organic solvents (except HF)
- Ultra-high purity ( $\geq 99.99\% \text{ SiO}_2$ ) prevents contamination in sensitive processes
- Trace metal impurities below 1-2 ppm, ideal for analytical applications

# TOQUARTZ® GROUND JOINT QUARTZ TUBE



## Key Features

### Precision Ground Joints

- Standard taper ground glass joints (14/20, 19/22, 24/40, 29/42 sizes available)
- Precise grinding to  $\pm 0.1\text{mm}$  tolerance for leak-free connections
- Compatible with standard laboratory glass joints and fittings

### Optical & Electrical Properties

- Exceptional light transmission ( $>93\%$ ) from UV to IR range (220-2500nm)
- Superior electrical insulation properties (volume resistivity  $>10^{18} \Omega\cdot\text{cm}$ )
- Low dielectric constant (3.8 at 1MHz) for applications requiring RF transparency

# TOQUARTZ® GROUND JOINT QUARTZ TUBE



## Applications

- Laboratory Equipment: High-temperature reactions, corrosive chemical handling
- Vacuum Systems: High-purity gas delivery, vacuum-sealed assemblies
- Chemical Reactors: Catalytic processes, controlled atmosphere reactions
- Analytical Instruments: Gas analysis, spectroscopy, optical measurements
- Custom Assemblies: Multi-joint configurations for specialized setups







# TECHNICAL SPECIFICATIONS

## Physical Properties

- Material Composition:  $\geq 99.99\%$   $\text{SiO}_2$
- Density:  $2.2 \text{ g/cm}^3$
- Hardness: 5.5-6.5 Mohs / 580 Knoop

## Thermal Properties

- Maximum Working Temperature:  $1,200^\circ\text{C}$  (continuous)
- Softening Point:  $1,700^\circ\text{C}$
- Coefficient of Thermal Expansion:  $5.5 \times 10^{-7} / ^\circ\text{C}$  (20-300°C)

## Optical Properties

- UV-VIS-NIR Transmission:  $\geq 93\%$  (220-2500nm)
- Refractive Index: 1.458 (589.3nm)





## CUSTOMIZATION OPTIONS

### **TOQUARTZ® offers comprehensive customization services for Ground Joint Quartz Tubes:**

- Non-standard diameters (3mm to 120mm)
- Custom wall thicknesses (0.5mm to 5mm)
- Extended lengths up to 2 meters
- Multi-joint assemblies and custom angle configurations
- Integrated features (frits, restrictors, side arms)
- Ultra-high purity options (99.995% SiO<sub>2</sub>)
- Specialized surface treatments and annealing



# ABOUT TOQUARTZ®

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TOQUARTZ  
Tech Specifications

# TOQUARTZ® Quartz Digestion Tubes Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**





# TOQUARTZ® QUARTZ DIGESTION TUBES

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Quartz Digestion Tubes with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® laboratory quartz digestion tubes manufactured from 99.995% SiO<sub>2</sub> for analytical sample preparation. These vessels feature superior thermal stability, exceptional chemical resistance, and precise dimensional accuracy. Ideal for environmental testing labs, food safety analysis, and research facilities requiring reliable sample preparation equipment.



# TOQUARTZ® QUARTZ DIGESTION TUBES



## Key Features

- **Exceptional Chemical Resistance:** Withstands aggressive acids including HF, HNO<sub>3</sub>, HCl, and H<sub>2</sub>SO<sub>4</sub>
- **Superior Thermal Stability:** Operates reliably at continuous temperatures up to 1100°C (short-term to 1200°C)
- **High Material Purity:** 99.995% SiO<sub>2</sub> with minimal trace element content
- **Precision Manufacturing:** Tight dimensional tolerances (±0.1mm)
- **Optical Clarity:** Transparent construction allows visual monitoring of reactions
- **Versatile Connectivity:** Available with various connection ports and custom fittings

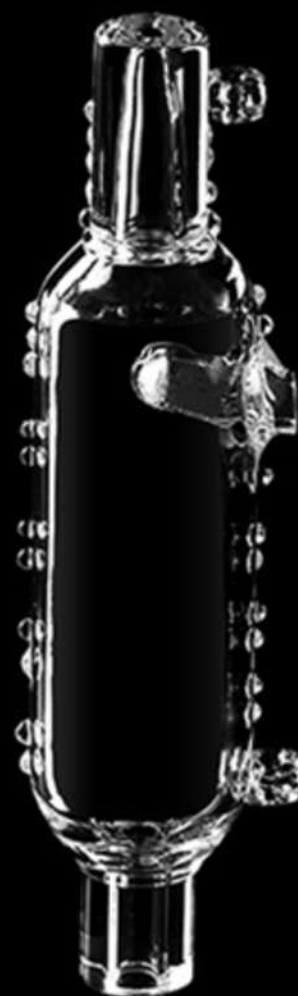
# TOQUARTZ® QUARTZ DIGESTION TUBES



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## Applications

- Environmental Analysis: Soil, water, and waste sample preparation for heavy metals testing
- Food Safety Testing: Trace contaminant detection in food products
- Academic Research: Custom protocols for specialized research applications
- Pharmaceutical Analysis: USP/EP compliant testing procedures
- Geological Sample Preparation: Complete dissolution of mineral samples





# TECHNICAL SPECIFICATIONS

## Material Properties

- **Material Composition:** High-purity fused quartz ( $\text{SiO}_2 \geq 99.995\%$ )
- **Density:**  $2.2 \text{ g/cm}^3$
- **Thermal Expansion Coefficient:**  $5.5 \times 10^{-7} / ^\circ\text{C}$  (20-1000°C)
- **Softening Point:** 1730°C
- **Working Temperature:** Continuous: 1100°C | Short-term: 1200°C
- **Thermal Conductivity:** 1.4 W/m·K at 20°C
- **Electrical Resistivity:**  $7 \times 10^7 \Omega\cdot\text{cm}$  at 20°C
- **Chemical Resistance:** Excellent resistance to all acids (including HF) except phosphoric acid at high temperatures
- **UV Transmission:** >90% at 200-2500nm (1mm thickness)

## Standard Dimensions

- **Inner Diameter Range:** 20mm - 50mm (standard), custom sizes available
- **Wall Thickness:** 1.5mm - 3.0mm ( $\pm 0.1\text{mm}$  tolerance)
- **Standard Lengths:** 100mm, 150mm, 200mm, 250mm, 300mm (custom lengths available)
- **Connection Types:** Standard joints (14/20, 19/22, 24/40, 29/42), custom flanges, threaded connections
- **Surface Finish:** Fire polished, acid etched, or precision ground





# CUSTOMIZATION OPTIONS

**TOQUARTZ® offers comprehensive customization services for quartz digestion tubes tailored to your specific analytical requirements:**

- Dimensional Specifications: Custom diameters, wall thickness, and lengths
- Connection Interfaces: Specialized joints, flanges, and ports
- Material Enhancements: Surface treatments and custom markings
- Complete Engineering Support: Technical consultation and design assistance





# ABOUT TOQUARTZ®

TOQUARTZ® is a specialized manufacturer of high-quality quartz glass products for industrial, laboratory, and optical applications. Our factory-direct approach eliminates intermediaries, providing cost-effective solutions with responsive technical support. We welcome small batch orders and offer 24-hour shipping for standard items.

## Contact Information

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TOQUARTZ®  
Tech Specifications

# Flanged Quartz Glass Tubes Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**



# TOQUARTZ® FLANGED QUARTZ GLASS TUBES

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Flanged Quartz Glass Tubes with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® flanged quartz glass tubes are high-purity fused quartz components featuring precision-formed flanges for secure connections in laboratory and industrial applications.

Manufactured from 99.99% SiO<sub>2</sub>, these tubes provide exceptional thermal stability, chemical resistance, and optical clarity. Our flanged tubes are ideal for applications including CVD reactors, high-temperature furnaces, laboratory equipment, and chemical processing systems.



# TOQUARTZ® FLANGED QUARTZ GLASS TUBES



## Key Features

- **Exceptional Heat Resistance:** Continuous operation up to 1200°C, short-term exposure to 1450°C
- **Superior Chemical Resistance:** Inert to most chemicals except hydrofluoric acid
- **Excellent Thermal Stability:** Extremely low thermal expansion coefficient ( $5.5 \times 10^{-7} / ^\circ\text{C}$ )
- **Superior Optical Transparency:** >93% visible light transmission, >80% UV transmission
- **Excellent Electrical Insulation:** 10,000× greater resistance than ordinary glass
- **Precision Flange Design:** Engineered for optimal sealing and secure connections



# TOQUARTZ® FLANGED QUARTZ GLASS TUBES



## Applications

- Laboratory Equipment: Reaction vessels, sample processing, analytical instruments
- CVD & Semiconductor Processing: Reaction chambers, gas delivery systems
- High-Temperature Furnaces: Sample containment, controlled atmosphere processing
- Chemical Processing: Corrosive media handling, high-purity production
- Optical & UV Systems: Light transmission, controlled environment optics



# TECHNICAL SPECIFICATIONS

## Physical Properties

- Material: High-purity fused quartz ( $\geq 99.99\%$   $\text{SiO}_2$ )
- Density:  $2.2 \text{ g/cm}^3$
- Tensile Strength:  $\geq 50 \text{ MPa}$
- Flexural Strength: Up to  $350 \text{ MPa}$
- Thermal Expansion Coefficient:  $5.5 \times 10^{-7} / ^\circ\text{C}$
- Thermal Conductivity:  $1.3\text{-}1.4 \text{ W/(m}\cdot\text{K)}$

## Thermal Properties

- Maximum Operating Temperature (Continuous):  $1200^\circ\text{C}$
- Maximum Operating Temperature (Short-term):  $1450^\circ\text{C}$
- Softening Point:  $1730^\circ\text{C}$
- Thermal Shock Resistance: Excellent

## Optical Properties

- Visible Light Transmittance:  $\geq 93\%$
- UV Transmittance (254 nm):  $\geq 80\%$
- Refractive Index (589.3 nm): 1.4585

## Electrical Properties

- Volume Resistivity ( $20^\circ\text{C}$ ):  $\geq 10^{18} \Omega\cdot\text{cm}$
- Dielectric Strength:  $25\text{-}40 \text{ kV/mm}$



# CUSTOM DIMENSIONS

## Common Customization Options:

- Tube outer diameter: 5mm - 300mm
- Tube inner diameter: 3mm - 295mm
- Wall thickness: 1mm - 5mm
- Flange outer diameter: 1.5x - 3x tube diameter
- Flange thickness: 2mm - 10mm
- Total length: 50mm - 2000mm
- Surface finish: Fire-polished, ground, or custom



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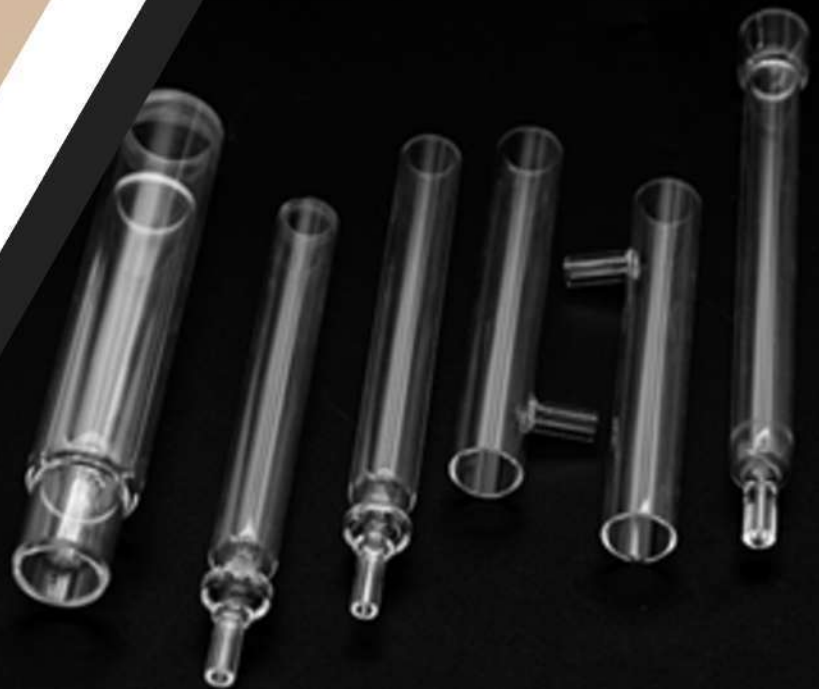




TOQUARTZ®  
Tech Specifications

# Quartz Glass Reduction Tube Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**



# TOQUARTZ® QUARTZ GLASS REDUCTION TUBE

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Quartz Glass Reduction Tube with fast delivery and consistent quality.



## Product Overview

TOQUARTZ® High-purity quartz reducer tubes designed to connect different diameter quartz tubes with precision. Manufactured from 99.995% SiO<sub>2</sub> with excellent thermal stability up to 1200°C and superior chemical resistance. Ideal for laboratory vacuum systems, gas delivery lines, optical applications, and high-temperature industrial environments.

# TOQUARTZ® QUARTZ GLASS REDUCTION TUBE



## Key Features

- **High Purity:** 99.995% SiO<sub>2</sub> content for minimal contamination
- **Thermal Stability:** Withstands continuous operation up to 1200°C
- **Precision Manufacturing:** Dimensional tolerance of  $\pm 0.1\text{mm}$  standard
- **Chemical Resistance:** Resistant to most acids, bases, and corrosive chemicals
- **Customizable:** Available in standard sizes or custom configurations
- **Optical Clarity:** Excellent transmission from UV to IR spectrum



# TOQUARTZ® QUARTZ GLASS REDUCTION TUBE



## Applications

- Laboratory Equipment: Vacuum systems, gas handling, analytical instrumentation
- Optical Systems: Fiber optic preform manufacturing, laser applications
- Industrial Processes: High-temperature gas transport, thermal processing
- Research Facilities: Custom experimental setups, specialized equipment





# TECHNICAL SPECIFICATIONS

## Physical Properties

- **Material:** High-purity fused quartz (99.995% SiO<sub>2</sub>)
- **Maximum Operating Temperature:** 1200°C continuous
- **Thermal Expansion Coefficient:**  $5.5 \times 10^{-7} / ^\circ\text{C}$  (20-1000°C)
- **Density:** 2.2 g/cm<sup>3</sup>
- **Mechanical Strength:** Tensile strength 50 MPa

## Chemical Properties

- **Chemical Resistance:** Resistant to most acids, bases, and corrosive chemicals
- **Exceptions:** Hydrofluoric acid (HF), concentrated phosphoric acid at high temperatures
- **Water Absorption:** Effectively zero
- **Gas Permeability:** Impermeable to gases except helium at high temperatures

## Optical Properties

- **UV Transmission:** >90% at 200nm and above
- **Visible Light Transmission:** >93%
- **IR Transmission:** Excellent up to 3.5μm
- **Refractive Index:** 1.4585 at 587.6nm (20°C)



# CUSTOMIZATION OPTIONS

- **Geometry:** Multi-diameter transitions, custom angles, specialized shapes
- **Surface Finishes:** Fire-polished, ground, custom end treatments
- **Connections:** Ground glass joints, flanges, specialized fittings
- **Engineering Support:** Technical consultation, CAD design assistance



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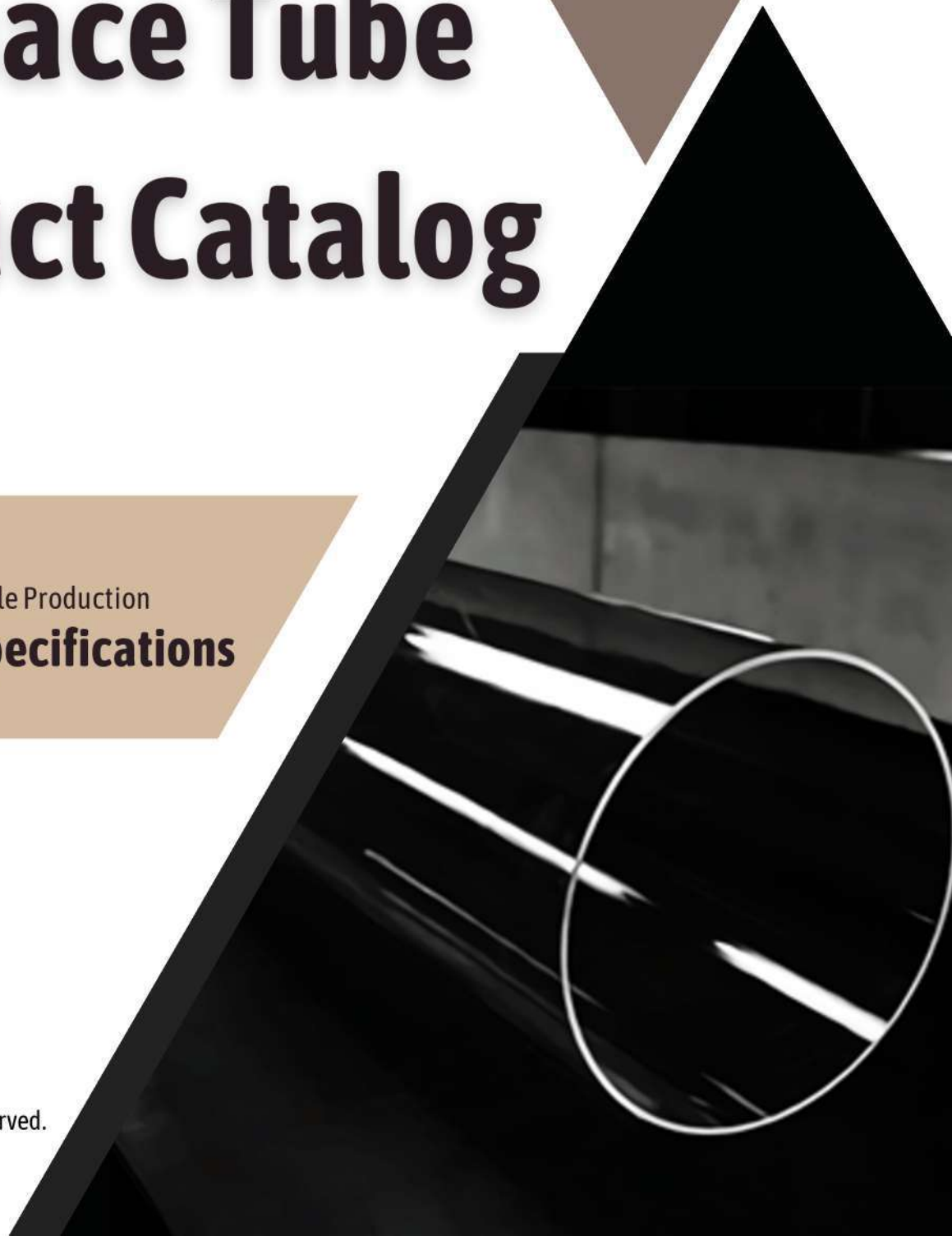
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TOQUARTZ®  
Tech Specifications

# Quartz Diffusion Furnace Tube Product Catalog

Integrated Engineering & Agile Production  
**for Demanded Specifications**





# TOQUARTZ® QUARTZ DIFFUSION FURNACE TUBE

TOQUARTZ® is a specialized manufacturer of high-purity quartz products based in China, serving global B2B clients in laboratory instrumentation, biomedical research, and environmental monitoring. With in-house engineering support and flexible production capabilities, we offer both standard and custom TOQUARTZ® Quartz Diffusion Furnace Tube with fast delivery and consistent quality.



# TOQUARTZ® QUARTZ DIFFUSION FURNACE TUBE



## Key Features

- **Ultra-High Purity:** 99.99% SiO<sub>2</sub> content minimizes contamination in critical processes
- **Exceptional Thermal Stability:** Withstands rapid temperature changes with minimal deformation
- **Superior Chemical Resistance:** Maintains integrity in aggressive chemical environments
- **Precision Dimensional Control:** Standard tolerance of  $\pm 0.2\text{mm}$  with enhanced precision available
- **Excellent Optical Transparency:** Allows visual monitoring of internal processes
- **High Electrical Insulation:** Prevents current leakage in sensitive manufacturing processes



# TOQUARTZ® QUARTZ DIFFUSION FURNACE TUBE



## Applications

- Semiconductor Diffusion Processes
- Solar Cell Manufacturing
- Thermal Processing Equipment
- Laboratory Furnaces
- High-Temperature Annealing
- CVD Processing



# TECHNICAL SPECIFICATIONS

## Physical Properties

- **Density:** 2.2 g/cm<sup>3</sup>
- **Flexure Strength:** 48 MPa
- **Elastic Modulus:** 72 GPa
- **Poisson's Ratio:** 0.14-0.17
- **Compressive Strength:** 1100 MPa
- **Bending Strength:** 67 MPa
- **Moh's Hardness:** 5.5-6.5

## Thermal & Optical Properties

- **Maximum Working Temperature (long-term):** 1100°C
- **Maximum Working Temperature (short-term):** 1350°C
- **Thermal Conductivity:** 1.4 W/m·K
- **Thermal Expansion Coefficient:**  $5.5 \times 10^{-7}$  /°C
- **Refractive Index:** 1.4585
- **Specific Resistance:**  $7 \times 10^7$  Ω·cm
- **Transmission (280-780nm):** ≥93% (1mm thickness)





# CUSTOMIZATION OPTIONS

- **End Finishing:** Flanged ends, ground joints, fire-polished ends, beaded ends, sealed ends with inlets
- **Structural Modifications:** Multiple gas inlets, thermocouple ports, internal baffles, multi-zone configurations
- **Surface Treatments:** Ground/frosted surfaces, high-polish internal surfaces, opaque sections



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