EFG™ Sapphire Tubes

Sapphire is increasingly becoming the material of choice for engineers faced with the design challenges of extreme conditions such as those found in high-temperature, high pressure or harsh chemical environments. Its unique properties make it a cost-effective solution for those applications where long life and high performance are a must.

One of the hardest materials in existence, sapphire is virtually scratch proof. It has a melting point of over 2000°C, making it ideal for high temperature applications. It is chemically inert and easily withstands harsh chemicals such as fluorine plasma and other industrial gases and fluids with no particle generation. In addition, sapphire can transmit ultraviolet, visible and infrared light, as well as microwaves – a range broader than most materials.

Unlike materials grown by methods that require extensive post-growth machining, Saint-Gobain Crystals single crystal tubes are grown to "near-net" size, minimizing finishing costs.

Applications

Semiconductor Processing
Sapphire tubes are used as a superior alternative to quartz, alumina, and silicon carbide in semiconductor processing applications that include:

- Plasma containment tubes
- Process gas injectors
- Thermocouple protection assemblies

Test and Analytical
Sapphires tubes are used in various analytical instruments including:

- Nuclear magnetic resonance spectroscopy
- Thermo-optic temperature measurement
- Inline petroleum processing analysis
- Mass spectroscopy
- Biological and chemical sample analysis

Lamps and Lamp Envelopes
SGC tubes are used in lamp applications that transmit visible, infrared or ultraviolet light, often with high intensity at high temperatures and pressures, including:

- Electronic infrared countermeasures
- Ultraviolet sterilization
- Flashlamps
- High intensity lamps

A full range of sapphire tubes for any application:

- Open-end tubes: from 0.125″ to 3″ diameter, up to 65″ in length

- Plugged tubes: crystallographically plugged and bonded end caps

- Capillary tubes: tiny diameter tubes from 0.035″ to 0.060″ diameter, up to 55″ in length

- Shaped tubes: variety of tubes with angles, slots, holes and bonded shapes

ISO 9001:2008 Certified

Saint-Gobain Crystals' high-performance, durable and affordable sapphire tubes offer significant performance advantages over other materials.

CRYSTALS

SAINT-GOBAIN

Standard Tubes Sizes

Outer Diameter		Inner Diameter		Wall Thickness		Length (up to)	
inches	mm	inches	mm	inches	mm	inches	mm
1.713	43.5	1.555	39.5	0.79	2.0	18	457
1.550	39.37	1.380	35.05	0.085	2.16	18	457
1.218	30.94	1.040	26.42	0.089	2.26	18	457
1.000	25.40	0.880	22.35	0.060	1.52	30	762
1.000	25.40	0.900	22.86	0.050	1.27	30	762
0.394	10.00	0.315	8.00	0.040	1.00	65	1651
0.315	8.00	0.236	5.99	0.040	1.00	65	1651
0.217	5.51	0.137	3.48	0.040	1.02	65	1651
0.197	5.00	0.118	3.00	0.040	1.00	65	1651
0.157	3.99	0.079	2.01	0.039	0.99	65	1651
0.125	3.18	0.068	1.73	0.029	0.72	65	1651

All figures are as-grown. Custom OD sizes up to 3" and less than 0.06" available on special request.

Standard Tolerances

	Outer Diameter				Inner Diameter		Straightness	
	As Grown		Ground		As Grown		/ft	
inches	inches	mm	inches	mm	inches	mm	inches	mm
1.000-1.550	±0.020	0.50	±0.001	0.13	±0.015	0.38	0.020	0.51
0.197-0.394	±0.008	0.20	±0.001	0.13	±0.008	0.20	0.020	0.51

Available Features:
- End ground outer diameter
- Fully ground outer diameter
- Plugged tubes: sealed on one end
- Bonded angled tube
- Tubes with bonded caps
- Fabricated shapes including drilled holes, slots, tapers,chamfers, etc.

Custom Diameters
Custom diameters are available, and will be reviewed upon request.

Other Standard Tolerances
Length: ±0.02", ground finish
Holes: ±0.05"
Angles: ±1°
Chamfered ends: 45°±0.01"

Saint-Gobain Crystals

www.crystals.saint-gobain.com

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