# Fused Quartz Filament

Fused quartz filament with thermal stability, low expansion, and chemical inertness for optical/electronic/thermal uses. Employed in transmissive elements, hermetic seals, and as feedstock for laser?assisted 3D printing of transparent, heat?resistant components. **SKU:** 1000110979-group
**Product Code:** SI61-MT-000110

## Material Properties for Ceramics

### Chemical Resistance

| Element | Value |
|---|---|
| Acids - concentrated | Good |
| Acids - dilute | Good |
| Alkalis | Fair |
| Halogens | Good |
| Metals | Fair |

### Electrical Properties

| Element | Value |
|---|---|
| Dielectric constant | 3.8 |
| Dielectric strength( kV mm?¹ ) | 25-40 |
| Volume resistivity( Ohmcm ) | 10¹?@25 |

### Physical Properties

| Element | Value |
|---|---|
| Refractive index | 1.46 |
| Useful optical transmission range | 180-2500nm |
| Apparent porosity( % ) | 0 |
| Water absorption - saturation( % ) | 0 |
| Density( gcm?³ ) | 2.2 |

### Thermal Properties

| Element | Value |
|---|---|
| Melting point( C ) | 1715 |

| Element | Value |
| --- | --- |
| Upper continuous use temperature( C ) | 1100-1400 |
| Specific heat( J K?¹ kg?¹ ) | 670-740@25°C |
| Thermal conductivity( W m?¹ K?¹ ) | 1.46@20°C |
| Coefficient of thermal expansion( x10?? K?¹ ) | 0.54@20-1000 |

## Mechanical Properties

| Element | Value |
| --- | --- |
| Tensile modulus( GPa ) | 72-74 |
| Hardness - Knoop( kgf mm?² ) | 820 |
| Hardness - Vickers( kgf mm?² ) | 1000 |
| Shear strength( MPa ) | 70 |
| Tensile strength( MPa ) | 48 |

## Pultrusions

| Element | Value |
| --- | --- |
| Compressive strength( MPa ) | 1100 |