

Corning Industrial Grade Fused Silica is a synthetic amorphous silicon dioxide manufactured by flame hydrolysis. The noncrystalline, transparent, silica glass is an excellent choice for many optical applications in the visible wavelength range as well as tooling applications.

Corning Industrial Grade Fused Silica is available in large bulk forms or can be cut to specific size requirements upon request. Please call one of our sales offices for more information.

Forms Available

- Round boules: top surface fire polished, bottom surface 60 grit ground flat or as cast, edges as cast.
- Remnant.
- Cut parts; discs and rectangles.

Mechanical and Thermal Properties

| | | | |
|-------------------------------------|-------------------------|----------------------|-----------------------------------|
| Elastic (Young's) Modulus | 72.7 GPa | Softening Point | 1585°C (10 ^{7.6} poises) |
| Shear Modulus | 31.4 GPa | Annealing Point | 1042°C (10 ¹³ poises) |
| Average Modulus of Rupture, abraded | 52.4 MPa | Strain Point | 893°C (10 ^{14.5} poises) |
| Bulk Modulus | 35.4 GPa | Specific Heat | 0.770 J/g K |
| Poisson's Ratio | 0.16 | Thermal Conductivity | 1.30 W/m K |
| Density | 2.201 g/cm ³ | Thermal Diffusivity | 0.0075 cm ² /s |
| Knoop Hardness (100 g load) | 522 kg/mm ² | Average C.T.E. | 0.52 ppm/K 5°C-35°C |
| Compressive Strength | 1.14 GPa | | 0.57 ppm/K 0°C-200°C |
| Tensile Strength | 54 MPa | | 0.48 ppm/K -100°C-200°C |

Refractive Index and Dispersion

Data in 22°C in 760mm Hg Dry Nitrogen Gas

| Wavelength [air] λ [nm] | Refractive Index n | Wavelength [air] λ [nm] | Refractive Index n | Wavelength [air] λ [nm] | Refractive Index n |
|-------------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|--------------------------|
| 1128.64 | 1.448870 | 656.27 n _C | 1.456370 | 486.13 n _F | 1.463132 |
| 1064.00 | 1.449633 | 643.85 n _{C'} | 1.456707 | 479.99 n _{F'} | 1.463509 |
| 1060.00 | 1.449681 | 632.80 n _{He-Ne} | 1.457021 | 435.83 n _G | 1.466701 |
| 1013.98 n _t | 1.450245 | 589.29 n _D | 1.458406 | 404.66 n _H | 1.469628 |
| 852.11 n _s | 1.452469 | 587.56 n _d | 1.458467 | 365.01 n _i | 1.474555 |
| 706.52 n _r | 1.455149 | 546.07 n _e | 1.460082 | | |

Optical Properties

| | | |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Birefringence constant (nm/cm/Kg/cm ²) 3.45 | Refractive index and dispersion, 25° n _F (486nm) 1.46313 n _D (589nm) 1.45840 n _C (656nm) 1.45937 | Abbe Number, $\nu = \frac{n_D - 1}{n_F - n_C} = 67.8$ Glass Type No. 458/678 (Mil-G-174) |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|

Inclusions

| | |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Typical Inclusion Size | <1.27 mm |
| Maximum Average Inclusion | <0.6 / 100cm ³ * |
| Maximum Inclusion Size | 2.5 mm** |
| * There may be some gaseous inclusion clusters. ** There may be a few gaseous inclusions exceeding this limit. | |

Impurities

| | |
|--------------------|----------------|
| Typical OH Content | 800 - 1000 ppm |
|--------------------|----------------|

NOTE: Unless otherwise stated, all values represent typical data @ 25°C