

# HPFS® Fused Silica Industrial Grade Semiconductor Optics



*Corning Industrial Grade Fused Silica is a synthetic amorphous silicon dioxide manufactured by flame deposition. 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.

CORNING

## Mechanical and Thermal Properties:

Unless otherwise stated, all values @ 25°C

Elastic (Young's) Modulus	72.7 GPa	Softening Point	1585°C (10 <sup>7.6</sup> poises)
Shear Modulus	31.4 GPa	Annealing Point	1042°C (10 <sup>13</sup> poises)
Modulus of Rupture, abraded	52.4 MPa	Strain Point	893°C (10 <sup>14.5</sup> poises)
Bulk Modulus	35.4 GPa	Thermal Conductivity	1.30 W/m K
Poisson's Ratio	0.16	Thermal Diffusivity	0.0075 cm <sup>2</sup> /s
Density	2.201 g/cm <sup>3</sup>	Average C.T.E.	0.52 ppm/K
Knoop Hardness (100 g load)	522 kg/mm <sup>2</sup>		0.57 ppm/K
			0.48 ppm/K

## Optical Properties:

Birefringence constant

35.0 nm/cm MPa	Abbe Number = 67.8
	Glass type no. 458/678 (Mil-G-174)

## 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 <sub>C</sub>	1.456370	486.13 n <sub>F</sub>	1.463132
1064.00	1.449633	643.85 n <sub>C'</sub>	1.456707	479.99 n <sub>F'</sub>	1.463509
1060.00	1.449681	632.80 n <sub>He-Ne</sub>	1.457021	435.83 n <sub>g</sub>	1.466701
1013.98 n <sub>t</sub>	1.450245	589.29 n <sub>D</sub>	1.458406	404.66 n <sub>h</sub>	1.469628
852.11 n <sub>s</sub>	1.452469	587.56 n <sub>d</sub>	1.458467	365.01 n <sub>i</sub>	1.474555
706.52 n <sub>r</sub>	1.455149	546.07 n <sub>e</sub>	1.460082		

## Inclusions

Typical Inclusion Size	<1.27 mm
Maximum Average Inclusion Size*	<0.6 / 100cm <sup>3</sup>
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



*We are here to help you specify the best product for your application.  
For further information, please contact:*

#### **Worldwide Accessibility**

##### **United States/Canada Sales Office**

Corning Incorporated  
Semiconductor Optics Business  
334 County Route 16  
Canton, NY 13617

t: 315.379.3600  
f: 315.379.3317  
e-mail: hpfs@corning.com

##### **European Sales Office**

Corning GmbH  
Corning International  
Abraham-Lincoln-Strasse 30  
D-65189 Wiesbaden, Germany

t: 49.611.7366.100  
f: 49.611.7366.143  
e-mail: CIgermany@corning.com

##### **Asia Sales Offices**

Corning International K.K.  
No. 35 Kowa Building, 3F  
14-14, Akasaka 1-chome  
Minato-Ku, Tokyo 107-0052  
Japan

t: 81.3.3586.1052  
f: 81.3.3587.0906

Corning International  
1 Kim Seng Promenade  
#12-12  
GreatWorld City  
West Tower  
Singapore 237994  
Republic of Singapore

t: 65.733.6511  
f: 65.861.7310

Corning Korea Company Ltd.  
10th Floor, Kukje Center Bldg.  
191, Hangangro 2-Ka  
Yongsan-Ku  
Seoul, Korea 140-702

t: 82.2.796.9500  
f: 82.2.796.9300

Corning Glass Taiwan Co. Ltd.  
Room # 1023, 12F  
No. 205 Tun Hua North Road  
Taipei, Taiwan

t: 886.2.2716.0338  
f: 886.2.2716.0339

##### **Australia Sales Office**

Corning International Australia  
Suite 18 12, Tryon Road  
Lindfield, NSW 2070  
Australia

t: 61.2.9416.0492  
f: 61.2.9416.0493

##### **World Headquarters**

Corning Incorporated  
One Riverfront Plaza  
Corning, New York 14831-0001

t: 607.974.9000

*The information contained herein is based upon data considered to be accurate. However, no warranty is expressed or implied regarding the performance of this product. The only applicable warranties are those that are set out in a contract or purchase.*

**Corning Incorporated**

One Riverfront Plaza  
Corning, NY 14831

607.974.9000

© 2008 Corning Incorporated  
HPFS® is a registered trademark  
of Corning Incorporated.

[www.corning.com](http://www.corning.com)

October 2008