CORNING

Specialty Materials Division
Optical Materials
Product Information
Glass Codes 7978 and 7979

Glass codes 7978 and 7979 are high purity, noncrystalline silica glasses that combine a very low thermal expansion coefficient with excellent optical qualities and exceptional transmittance. Characteristics include homogeneity, low birefringence and outstanding transmittance in the DUV, UV, visible, and infrared ranges.

Different forms and grades of each glass code are available as indicated below.

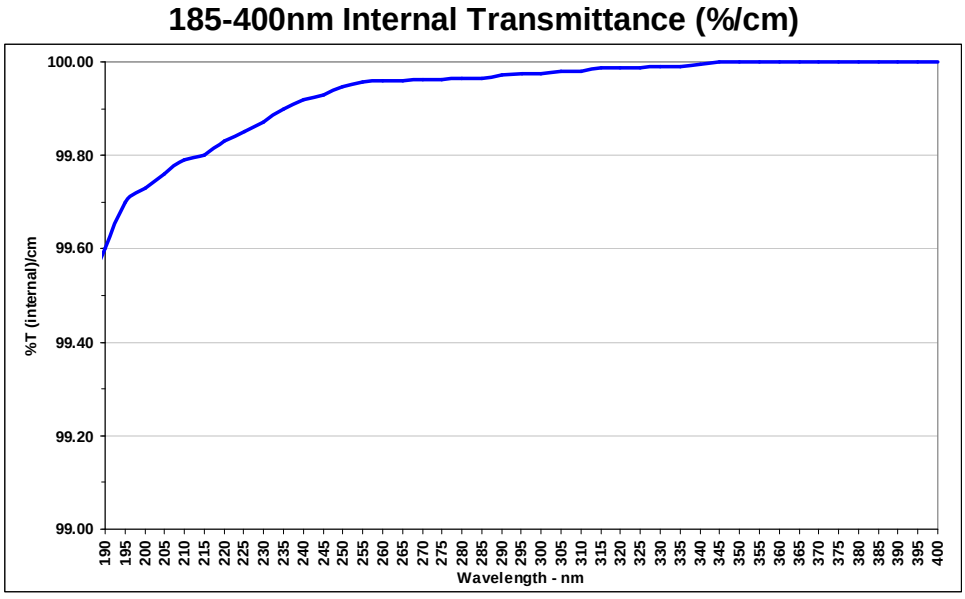
Quality Grade Selection Chart

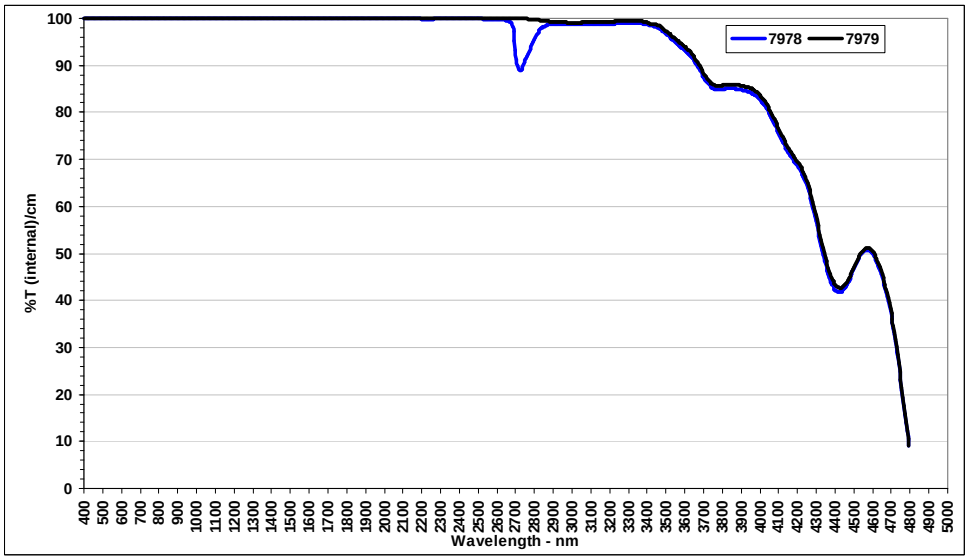
	HPFS® 7978 UV	HPFS® 7978 Infrared	7978 Non-UV	HPFS® 7979 UV	HPFS® 7979 Infrared	7979 Non-UV
Maximum Visible Transmittance	■	■	■	■	■	■
Maximum UV Transmittance	■			■		
Maximum Infrared Transmittance					■	
Homogeneity: AA,A,C,F (By Size)	■	■		■	■	
Inclusion Class: 0,1,2,5	■	■		■	■	
Economical (No certification of any properties except visible transmission)			■			■
No Striae in Use-Axis	■	■		■	■	
Homogeneity Certified in Off-Axis: A, C, F (By Size)	■			■		
Minimum Birefringence	■			■		
Minimum Fluorescence	■	■		■	■	
UV Laser Resistance	■			■		

Inclusion Class			Homogeneity [3,4,5] ppm				
Class	Total Inclusions[1] Cross Section [mm^2]	Maximum[2] Size [mm]	A ≤0.5	A ≤1	C ≤2	F ≤5	G NS
0	≤0.03	0.10	■	■	■	■	■
1	≤0.10	0.28		■	■	■	■
2	≤0.25	0.50			■	■	■
5	≤2.00	1.27			■	■	■

Notes:

1. Defines the sum of the cross section in mm^2 of inclusions per 100 cm^3 of glass. Inclusions with a diameter ≤ 0.10 mm are disregarded.
2. Refers to the diameter of the largest single inclusion.
3. Index homogeneity: the maximum index variation (relative), measured over the clear aperture of the blank.
4. Index homogeneity is certified using an interferometer at 632.8 nm. The numerical homogeneity is reported as the average through the piece thickness. The maximum thickness for index homogeneity verification is 20 mm. For thinner parts, the parent piece is certified.
5. NS (not specified)





Refractive Index and Dispersion

Data in 22ºC in 760mm Hg dry nitrogen gas

Wavelength [air] λ [nm]	Refractive Index *2 n	Thermal Coefficient $\Delta n/\Delta T$*[3] (ppm/K)
1813.08	1.440791	9.8
1529.58	1.44352	9.5
1128.64	1.448944	9.8
1013.98 n_t	1.450317	9.8
852.11 n_s	1.452538	9.7
780.02	1.453742	9.9
643.85 $n_{C'}$	1.456775	10.1
546.07 n_e	1.460148	10.3
479.99 $n_{F'}$	1.463572	10.5
404.66 n_h	1.469686	11.0
340.36	1.478656	11.8
312.57	1.484564	12.3
289.36	1.491067	12.8
253.65	1.505595	14.2
288.80	1.521228	15.7
214.44	1.533799	17.1
206.20	1.542744	18.2
194.17	1.588999	20.3
184.89	1.575106	22.6

Polynomial Dispersion Equation Constants, 20ºC[1]	
A_0	2.104229389E+00
A_1	-1.002155533E-04
A_2	-9121749105E-03
A_3	8.782635767E-03
A_4	8.780464839E-05
A_5	1.307069116E-06
A_6	5.398453121E-09
A_7	1.786158843E-10
A_8	7.514786588E-12
Sellmeier Dispersion Equation Constants, 20ºC[2]	
B_1	1.589275328E-01
B_2	6.229767186E-01
B_3	3.223549560E-01
B_4	9.122465810E-01
C_1	8.861164451E-04
C_2	6.595885054E-03
C_3	1.401773626E-02
C_4	9.972998819E+01
$\Delta n/\Delta T$ Dispersion Equation Constants, 20-25ºC[3]	
C_0	9.4950
C_1	0.2622
C_2	-0.00231
C_3	0.0002944
Other Optical Properties	
V_e	67.70
n_F-$n_{C'}$	0.006797
Stress Coefficent	35.0 nm/cm MP_a
Striae	ISO 10110-4 Class 5
Birefringence	≤ 1nm/cm, lower specifications available

1 Polynomial Equation: $n^2 = A_0 + A_1 \lambda^4 + A_2 \lambda^2 + A_3 \lambda^{-2} + A_4 \lambda^{-4} + A_5 \lambda^{-6} + A_6 \lambda^{-8} + A^7 \lambda^{-10} + A_8 \lambda^{-12}$ with λ in µm

2 Sellmeier Equation: $n^2 - 1 = B_1 \lambda^2/(\lambda^2 - C_1) + B_2 \lambda^2/(\lambda^2 - C_2) + B_3 \lambda^2/(\lambda^2 - C_3) + B_4 \lambda^2/(\lambda^2 - C_4)$ with λ in µm

3 $\Delta n/\Delta T$ Equation: $\Delta N/\Delta T$ [ppm/K] $= C_0 + C_1 \lambda^{-2} + C_2 \lambda^{-4} + C_3 \lambda^{-6}$ with λ in µm

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

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