

# Precision Glass & Optics

## Product Information

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### Product Name: **Supremax® 33**

**Description:**

Supremax® 33 is a rolled borosilicate glass utilizing the unique Schott rolled sheet glass process. This manufacturing technique offers a wide range of glass thicknesses with appealing surface quality. This glass composition is identical to Borofloat® 33 and provides unique chemical, thermal, mechanical and optical properties. Because of its composition, Supremax® 33 glass has excellent chemical durability. The low coefficient of thermal expansion of Supremax® 33 glass allows it to withstand higher temperatures and temperature excursions than ordinary window glass. It has higher transmission than ordinary soda-lime glass, particularly in the infrared and ultraviolet regions. These properties enable it to provide long service and fulfill requirements which common window glass cannot meet. Available sheet size is 47.24" x 59.06" (1200mm x 1500mm).

**Available Thicknesses:**

1.125" ± .040" (28.60mm ± 1.0mm)	1.250" ± .040" (31.75mm ± 1.0mm)
1.375" ± .064" (34.90mm ± 1.6mm)	1.625" ± .064" (41.30mm ± 1.6mm)
1.875" ± .125" (47.60mm ± 3.2mm)	2.250" ± .250" (57.20mm ± 6.4mm)

*\*\*PG&O has the capability to grind and polish the above rolled materials to any thickness desired in the above range or thinner, to a tolerance of ± .001".*

**Properties:**

**Optical:**

Refractive Index nd [• 587.6nm]	1.472
Stress Optical Coefficient [K]	$4.0 \times 10^{-6} \text{ mm}^2 \text{ N}^{-1}$

**Mechanical:**

Density	2.23 g/cm <sup>3</sup>
Young's Modulus [E]	64 GPa
Poisson's Ratio	0.2
Shear Modulus	27 GPa
Vickers Hardness [0.2/15]	568
Knoop Hardness [0.1/20]	480

**Thermal:**

Coefficient of Thermal Expansion • [20-300°C]	$3.25 \times 10^{-6} \text{ K}^{-1}$
Heat Capacity Cp [20-100°C]	$0.83 \times 10^3 \text{ J / (kg x K)}$
Thermal Conductivity • [90°C]	$1.2 \text{ W / (m x K)}$
Softening Point [10 <sup>7.6</sup> dPas]	820° C
Annealing Point [10 <sup>13</sup> dPas]	560° C
Strain Point [10 <sup>14.5</sup> dPas]	518° C

**Chemical:**

Acid Resistance	[ISO 1776 / DIN 12116]	1
Alkaline Resistance	[ISO 695 / DIN 52322]	A2
Hydrolytic Class	[ISO 719 / DIN 12111]	HGB 1
	[ISO 720]	HGA 1

**Electrical:**

**Dielectric Constants •r [at 25° C and 1MHz]**

**4.6**

**Loss Tangent tan • [at 25 °C and 1MHz]**

**$37 \times 10^{-4}$**

**Specific Electric Volume Resistivity**

**lg • 250° C**

**8.0 • x cm**

**lg • 350° C**

**6.5 • x cm**

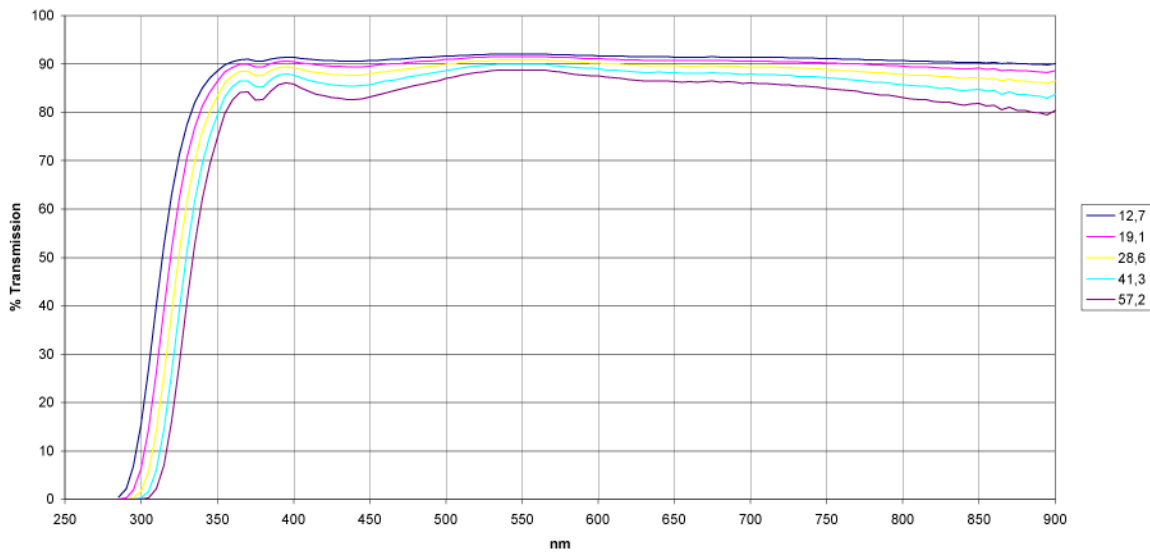
**t<sub>k100</sub>**

**250° C**

**Applications:**

Supremax<sup>®</sup> 33 can be used as a neutron absorber in poison rods and raschig rings. Tempering Supremax<sup>®</sup> 33 glass enables it to withstand tension stresses of 3000 psi and increases its thermal shock resistance as well.

Flatness, parallelism, cutting tolerances, roughness, cosmetic defects and visual inspection all conform to the specifications to be agreed upon by Precision Glass & Optics and the Customer.



SUPREMAX<sup>®</sup> glass – transmission for different glass thickness