

# SUPREMAX® 33

## Multifunctional rolled borosilicate glass for unlimited applications

SUPREMAX® 33 is a rolled borosilicate glass available in sheet form with a chemical composition identical to SCHOTT's floated borosilicate glass BOROFLOAT® 33.

The outstanding physical and chemical properties of SUPREMAX® 33 offer the benefits of low thermal expansion, high thermal resistance, excellent light transmission and impressive chemical durability. SUPREMAX® 33 is also a low density glass that is 12 % lighter than soda lime glass. This, in combination with the availability of a broad thickness range (up to 57.2 mm), makes SUPREMAX® 33 a highly versatile material suitable for an unlimited array of applications.

SUPREMAX® 33 is a borosilicate glass type 3.3 as specified in the international standard ISO 3585. The quality of SUPREMAX® 33 is guaranteed by our ISO 9001 certified quality assurance system.

SUPREMAX® 33 is environmentally friendly and made of non-hazardous inorganic and natural raw materials. The glass can be recycled several times and disposed of without difficulties.

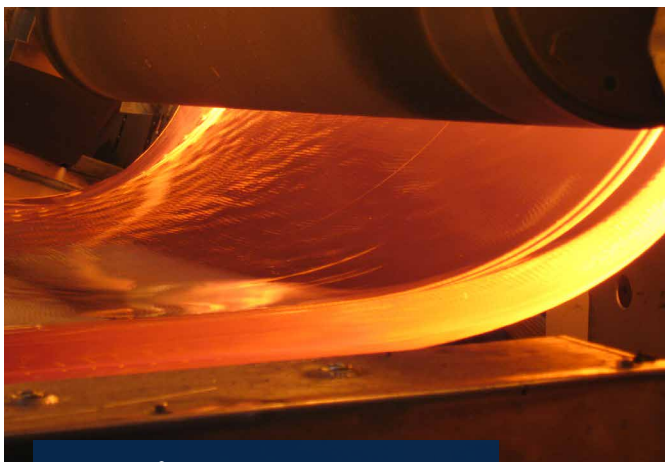
### Sheet sizes and tolerances

#### Standard sheet size

Dimensions	in mm (inch)
Gross dimensions	1.200 x 1.500 (47.24 x 59.06)
Net dimensions	1.000 x 1.500 (39.37 x 59.06)

#### Available thicknesses

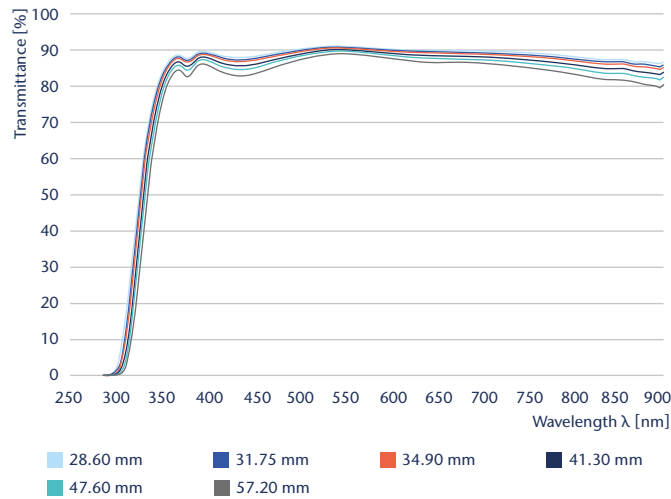
Thicknesses in mm (inch)	Tolerances in mm (inch)
31.75 (1 1/4)	± 1.0 (± 0.040)
34.90 (1 3/8)	± 1.6 (± 0.064)
41.30 (1 5/8)	± 1.6 (± 0.064)
47.60 (1 7/8)	± 3.2 (± 0.125)
57.20 (2 1/4)	± 6.4 (± 0.250)



SUPREMAX® 33 ultra thick borosilicate glass.

# Technical properties

## Transmission



SUPREMAX® 33 is available in large sheet sizes.

### Optical properties

Refractive index $n_d$ [ $\lambda$ 587.6 nm]	1.472
Stress optical coefficient [K]	$4.0 \cdot 10^{-6} \text{ mm}^2 \text{ N}^{-1}$
Dispersion ( $n_f - n_c$ )	$71.9 \cdot 10^{-4}$

### Thermal properties

Coefficient of linear thermal expansion $\alpha$ [20-300 °C/68-572 °F]	$3.25 \cdot 10^{-6} \text{ K}^{-1}$
Specific heat capacity $C_p$ [20-100 °C/68-212 °F]	0.83 kJ/(kg·K)
Thermal conductivity $\lambda$ [90 °C/194 °F]	1.2 W/(m·K)
Softening point ( $10^{7.6}$ dPas)	820 °C/1508 °F
Annealing point ( $10^{13}$ dPas)	560 °C/1040 °F
Strain point ( $10^{14.5}$ dPas)	518 °C/964 °F
Transformation temperature $T_g$	530 °C/986 °F

### Optical index of refraction

Dielectric constant $\epsilon_r$ [at 25 °C and 1MHz]	4.6
Loss tangent $\tan \delta$ [at 25 °C and 1MHz]	$27 \cdot 10^{-4}$

### Specific electric volume resistivity

$\lg p$ 250 °C	$8.0 \Omega \cdot \text{cm}$
$\lg p$ 350 °C	$6.5 \Omega \cdot \text{cm}$
$t_{k100}$	250 °C/482 °F

### Chemical durability

Acid resistance [ISO 1776]	1
Alkali resistance [ISO 695]	A 2
Hydrolytic class [ISO 719] [ISO 720]	HGB 1 HGA 1

### Mechanical properties

Density $\rho$	2.23 g/cm <sup>3</sup>
Young's modulus [E]	64 GPa
Poisson's ratio $\mu$	0.2
Shear modulus	27 GPa
Vickers hardness [0.2/15]	568
Knoop hardness [0.1/20]	480

[schott.com/supremax](http://schott.com/supremax)

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**SCHOTT**  
glass made of ideas