SCHOTT SUPREMAX® 33
Multifunctional rolled borosilicate glass for unlimited applications
SUPREMAX® 33
Rolled Borosilicate Glass

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 66.7 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

<table>
<thead>
<tr>
<th>Standard Sheet size</th>
<th>Available Thicknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Dimensions</strong></td>
<td><strong>Thicknes</strong>s</td>
</tr>
<tr>
<td>1,200 x 1,500 (47.24 x 59.06)</td>
<td>mm (inch)</td>
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<tr>
<td>1,000 x 1,500 (39.37 x 59.06)</td>
<td></td>
</tr>
<tr>
<td><strong>Available Thicknesses</strong></td>
<td>28.60 (1 1/8)</td>
</tr>
<tr>
<td></td>
<td>31.75 (1 1/4)</td>
</tr>
<tr>
<td></td>
<td>34.90 (1 3/8)</td>
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<tr>
<td></td>
<td>41.30 (1 5/8)</td>
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<tr>
<td></td>
<td>47.60 (1 7/8)</td>
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<tr>
<td></td>
<td>57.20 (2 1/4)</td>
</tr>
<tr>
<td></td>
<td>66.70 (2 5/8)</td>
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</tbody>
</table>

SUPREMAX® 33 rolled borosilicate glass can be cut to size within the standard sizes.
Technical Properties

Optical Properties

- Refractive Index $n_d$ [$\lambda$ 587.6 nm] = 1.472
- Stress Optical Coefficient [K] = $4.0 \times 10^{-6}$ mm$^2$ N$^{-1}$
- Dispersion ($n_f - n_c$) = $71.9 \times 10^{-4}$

Thermal Properties

- Coefficient of Thermal Expansion $\alpha$ [20-300°C/68-572°F] = $3.25 \times 10^{-6}$ K$^{-1}$
- Specific Heat Capacity $C_p$ [20-100°C/68-212°F] = 0.83 kJ/(kg x K)
- Thermal Conductivity $\lambda$ [90°C/194°F] = 1.2 W/(m x K)
- Softening Point [107.6 dPas] = 820°C/1508°F
- Annealing Point [1013 dPas] = 560°C/1040°F
- Strain Point [1014.5 dPas] = 518°C/964°F
- Transformation Temperature $T_g$ = 530°C/986°F

Electrical Properties

- Dielectric Constant $\varepsilon_r$ [at 25°C and 1MHz] = 4.6
- Loss Tangent $\tan \delta$ [at 25°C and 1MHz] = $37 \times 10^{-4}$
- Specific Electric Volume Resistivity
  - $\lg \rho$ 250°C = 8.0 $\Omega$ x cm
  - $\lg \rho$ 350°C = 6.5 $\Omega$ x cm
  - $\lg \rho_{100}$ = 250°C/482°C

Chemical Durability

- Acid Resistance [ISO 1776] = 1
- Hydrolytic Class [ISO 719] = HGB 1
  [ISO 720] = HGA 1

Mechanical Properties

- Density = 2.23 g/cm$^3$
- 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