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, 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>
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</thead>
<tbody>
<tr>
<td><strong>Gross Dimensions</strong>: 1,200 x 1,500 (47.24 x 59.06)</td>
<td><strong>Thicknesses</strong></td>
</tr>
<tr>
<td><strong>Net Dimensions</strong>: 1,000 x 1,500 (39.37 x 59.06)</td>
<td><strong>Tolerances</strong></td>
</tr>
<tr>
<td>28.60 (1 1/8)</td>
<td>± 1.0 (± 0.040)</td>
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<tr>
<td>31.75 (1 1/4)</td>
<td>± 1.0 (± 0.040)</td>
</tr>
<tr>
<td>34.90 (1 3/8)</td>
<td>± 1.6 (± 0.064)</td>
</tr>
<tr>
<td>41.30 (1 5/8)</td>
<td>± 1.6 (± 0.064)</td>
</tr>
<tr>
<td>47.60 (1 7/8)</td>
<td>± 3.2 (± 1.125)</td>
</tr>
<tr>
<td>57.20 (2 1/4)</td>
<td>± 6.4 (± 0.250)</td>
</tr>
</tbody>
</table>

SUPREMAX® 33 rolled borosilicate glass can be cut to size within the standard sizes.
Density 2.23 g/cm³
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

Coefficient of Thermal Expansion
\[ a \text{ [20-300 °C/68-572 °F]} = 3.25 \times 10^{-6} \text{ K}^{-1} \]
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

Optical Properties
Refractive Index \( n_d \) [λ 587.6 nm] 1.472
Stress Optical Coefficient [K] 4.0 \( \times 10^{-6} \text{ mm}^2 \text{ N}^{-1} \)
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 \( \times 10^{-6} \text{ K}^{-1} \)
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
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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 Ω x cm
\( \lg \rho \) 350 °C 6.5 Ω x cm
\( T_{\text{K100}} \) 250°C/482 °F

Chemical Durability
Acid Resistance [ISO 1776] 1
Alkali Resistance [ISO 695] A2
Hydrolytic Class [ISO 719] HGB 1
[ISO 720] HGA 1

Mechanical Properties
Density 2.23 g/cm³
Young's Modulus [E] 64 GPa
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Shear Modulus 27 GPa
Vickers Hardness [0.2/15] 568
Knoop Hardness [0.1/20] 480