SCHOTT® Solar Glass 0787

Product Information

SCHOTT® Solar Glass 0787 is a technical glass designed for use as a highly transparent and ultra-thin protective cover for Space PV cells and Optical Solar Reflectors (OSR). The Cerium doping enables an enhanced solarisation stability, maintaining a stable, high optical transmission rate even after submission to hard UV, proton or electron radiation. SCHOTT® Solar Glass 0787 is produced with SCHOTT down-draw process. This process, developed exclusively by SCHOTT, offers a non-porous, ultra-flat fire-polished surface quality on both sides without polishing or slimming. Standard thicknesses range between 0.075 mm and 0.15 mm, but can extend from 0.03 mm to 1.0 mm on request. SCHOTT® Solar Glass 0787 is a toughenable glass with high mechanical strength, and can be supplied with space-qualified anti-reflective or other coatings (upon request).

Application

SCHOTT developed Solar Glass 0787 to meet the demands of space exploration and research, combining protection and function to enable a range of applications. With the option of additional coatings plus a range of sizes and thicknesses, SCHOTT® Solar Glass 0787 is versatile, reliable and highly effective.

Features & Benefits

SCHOTT® Solar Glass 0787 is flexible in design. It is available in sheet format or cut to size substrates in customer individual design. On request it is available according to ECSS qualification.

Made to withstand solarization
High transmittance in VIS and NIR, even after a long exposure of UV or high-energy particle radiation.

Outstanding transmission
Consistently stable transmission from UV-A into NIR range.

High absorption of UV radiation
Absorbs the majority of harmful UV-B and UV-C radiation.

Protection against particle radiation
Acts as a barrier layer, preventing damage from several types of particle radiation.

Fire-polished surface
High quality of the surface and geometry of the glass without further surface processing.

High edge strength
Advanced cutting technologies enable our glass to withstand mechanical stress without breakage.

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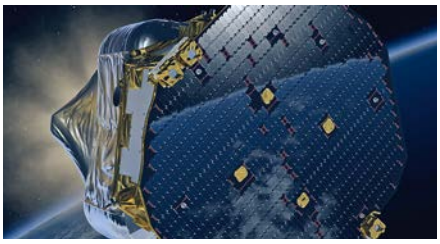
Geometrical Properties		
Thickness	**Thickness Tolerance**	**Thickness Variation (TTV)**
0.075 mm	± 0.015 mm	≤ 0.030 mm
0.100 mm	± 0.015 mm	≤ 0.030 mm
0.125 mm	± 0.015 mm	≤ 0.030 mm
0.150 mm	± 0.015 mm	≤ 0.030 mm

Other thickness on request



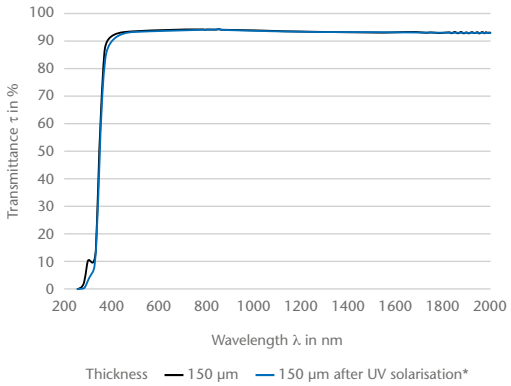
Optical Properties	
Refractive index n_d for cover glass (as drawn)	1.5080 ± 0.003
Total normal emittance ε_n of cover glass top surface at 25 °C	≤ 0.86

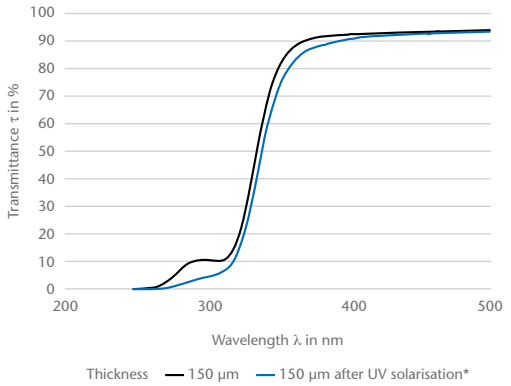
Thermal Properties	
Transformation temperature T_g	568 °C
CTE (coefficient of thermal expansion) α	$8.5 \cdot 10^{-6}$/K (20 °C; 300 °C)
	$7.9 \cdot 10^{-6}$/K (20 °C; 150 °C)

Mechanical Properties	
Density ρ (annealed at 40 °C)	2.51 ± 0.05 g/cm³
Young's Modulus E	70.0 kN/mm²
Poisson's ratio μ	0.216
Breaking Strength	Strength-optimized cutting process, details available on request

Electrical Properties	
Bulk resistivity ρ_D	$> 1 \cdot 10^{11}$ Ω m (ν = 20 °C)

Spectral Transmittance of Glass with Single Side Anti-Reflex Coating





* Exposure to a UV light source with an integrated intensity equal to 2000 Sun-hours in vacuum ($1 \cdot 10^{-3}$ Pa), solarisation properties after high-energy particle radiation on request

Transmittance Values for Glass Thickness 150 µm

	τ (λ) – individual values in %				τ in % arithmetic mean for the given λ range				
	τ_{400}	τ_{450}	τ_{500}	τ_{600}	$\tau_{300-320}$	$\tau_{400-450}$	$\tau_{600-800}$	$\tau_{450-1100}$	$\tau_{900-1800}$
Uncoated glass	91.3	91.7	91.8	92.0	11.4	91.5	92.2	92.2	92.3
Coated glass, single side anti-reflex	92.3	93.4	94.0	94.4	11.5	92.9	94.3	94.0	93.3
Coated glass, single side anti-reflex, τ into adhesive	95.8	97.0	97.5	98.0	–	96.5	97.9	97.7	96.7

Non-toleranced numerical values are reference values of a typical production quality

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