

# SCHOTT® Solar Cell Cover Glass

## SCHOTT® Solar Glass 0787 and SCHOTT® Solar Glass sphere

### Effective protection for space and terrestrial photovoltaics

As the world increases its reliance on solar power to generate electricity, the use of photovoltaics is becoming more widespread – not only on Earth but in space.

Due to the increasing number of satellites and spacecrafts, the demand for glass and the related material requirements are also rising. Photovoltaic cells convert solar energy into electricity throughout space missions, while thermo-optical reflectors enable an exchange of heat, releasing the potentially damaging heat generated by the sun's powerful radiation back into space.

Back on Earth, terrestrial photovoltaics are generating electricity for a wide range of applications, including electric vehicles, which require lightweight yet robust solar modules to provide a cost-effective and sustainable form of transport.

Whether on Earth or in space, photovoltaics require technical solar glass for protection from harsh environments, as well as precise transmittance properties that increase the efficiency of the cell while shielding against harmful radiation.

### SCHOTT® Solar Cell Cover Glass – a portfolio of products with highly specialized properties

The highly transparent and ultra-thin products within the SCHOTT® Solar Cell Cover Glass range offer a number of general and specific physical properties that suit a number of demanding environments. Discover which product is ideal for your application.

### General properties



Outstanding transmission



High absorption of UV radiation



Made to withstand UV solarization



High edge strength



Fire-polished surface

### Specific properties

#### SCHOTT® Solar Glass 0787

Designed for **special solar applications** in **high-radiation** environments:



Protection against high-energy particle radiation



Solarization stable against high-energy particle radiation

#### SCHOTT® Solar Glass sphere

A **commercial off-the-shelf** glass for cost-effective solar applications in **low-radiation environments**.



Available in large formats



Ultra-thin thicknesses



Commercial off-the-shelf

**SCHOTT**  
glass made of ideas

# SCHOTT® Solar Cell Cover Glass

## Applications

### Space photovoltaic

While photovoltaic solar cells are central to effective spacecraft function, radiation in space can gradually degrade those cells, reducing their efficiency. Solar Glass 0787 and Solar Glass sphere are the ideal cover glass for photovoltaic cells in high and low radiation environments, minimizing damage while maintaining high light transmission in the visible and near-infrared ranges. Anti-reflective coatings can also be applied to the glass, increasing transmission levels further.

### Optical solar reflectors

Thermal management in spacecraft is vital, with the temperature needing to be carefully regulated and heat exchange maintained. For effective heat exchange, a spacecraft requires efficient thermo-optical surfaces. When applied with a reflective coating, SCHOTT® Solar Glass 0787 is a highly effective thermo-optical surface, protecting against harmful solar radiation while facilitating heat exchange thanks to high emittance in the infrared range.

### Terrestrial photovoltaics

Turning our back on fossil-based energy sources creates opportunities for many new applications of specialty solar cells. To name just one example, the transition of the automotive industry from internal combustion engine to electric powertrains, creates a demand for photovoltaic cells able to produce electricity right where it's required. When attached to the surface of a vehicle, these cells require a light weight cover that is strong, flexible and highly transparent over the lifetime of the vehicle.

## Technical details

Geometrical properties		SCHOTT® Solar Glass 0787	SCHOTT® Solar Glass sphere
Thickness portfolio	in µm	150	150
		125	100
		100	70
		75	50
Formats up to	in mm	540 x 365	710 x 410

Other formats and thicknesses on request

Optical properties		SCHOTT® Solar Glass 0787	SCHOTT® Solar Glass sphere
Refractive index $n_d$		1.5080	1.5231
Edge wavelength $\lambda_c$ ( $\tau = 0.46$ )	in nm (thickness in mm)	332 (0.1)	308 (0.1)
Luminous transmittance $\tau_{vD65}$	in % (thickness in mm)	91.7 (0.1)	91.8 (0.1)

Thermal properties		SCHOTT® Solar Glass 0787	SCHOTT® Solar Glass sphere
Transformation temperature $T_g$	in °C	568	557
CTE (coefficient of thermal expansion) $\alpha$	in $10^{-6} \cdot K^{-1}$ (20 °C; 300 °C)	8.5	7.2

Mechanical properties		SCHOTT® Solar Glass 0787	SCHOTT® Solar Glass sphere
Density $\rho$	in g/cm <sup>3</sup>	2.51	2.51
Young's modulus E	in kN/mm <sup>2</sup>	70.0	72.9
Poisson's ratio $\mu$		0.22	0.21

Reference values of typical production quality

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