Solar Cell Cover Glasses

Qioptiq Space Technology

- Design and manufacture of radiation-stable Coverglasses
- 35 years of Space Heritage
- Space Qualified
- Supply 80% of the world's Coverglasses

QIOPTIQ
Optics with Intelligence

Solar Cell Cover Glasses

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Minimum Coverglass Transmission specifications with 0.10mm thick Pilkington CMX, CMG and CMO glass types

		350 - 400nm	400 - 450nm	450 - 700nm	600 - 800nm	650 - 900nm	450 - 1100nm	900 - 1800nm	IR Cut-off	Min Emittance	Front Surface Resistance
CMX CMG CMO	Uncoated	73.5 83.5 88.0	91.5 92.5 94.0	94.0 94.5 94.5	95.0 95.0 95.0	95.0 95.0 95.0	95.0 95.0 95.0	95.0 95.0 95.0		0.88 0.88 0.88	
CMX CMG CMO	AR	73.5 83.5 88.0	93.0 94.0 95.5	96.5 97.0 97.0	97.5 97.5 97.5	97.5 97.5 97.5	96.5 96.5 96.5	96.5 96.5 96.5		0.88 0.88 0.88	
CMX CMG CMO	Conductive AR	73.5 83.5 88.0	94.0 95.0 96.0	96.5 97.0 97.0	97.0 97.0 97.0	97.0 97.0 97.0	96.5 96.5 96.5	96.0 96.0 96.0		0.86 0.86 0.86	<10M Ohms <10M Ohms <10M Ohms
CMX CMG CMO	Conductive	71.0 80.0 80.0	89.0 89.0 89.0	94.0 94.0 94.0	95.0 95.0 95.0	95.0 95.0 95.0	94.5 94.5 94.5	94.5 94.5 94.5		0.84 0.84 0.84	<5K Ohms <5K Ohms <5K Ohms
CMX CMG CMO	UV Reflector	73.5 83.5 88.0	92.0 93.0 94.5	96.0 96.5 96.5	96.5 96.5 96.5	96.5 96.5 96.5	96.0 96.0 96.0	94.0 94.0 94.0		0.86 0.86 0.86	
CMX CMG CMO	AR/IRR Silicon Blue Red Silicon	73.5 83.5 88.0	89.0 90.0 92.0	96.0 96.0 96.0	96.0 96.0 96.0	96.0 96.0 96.0	95.0 95.0 95.0		1165+/- 50nm	0.86 0.86 0.86	
CMX CMG CMO	UVR/IRR Triple Junction (PS 703)	73.5 83.5 88.0	92.0 93.0 88.0	96.5 96.5 96.5	96.5 96.5 96.5	96.5 96.5 96.5	95.0 95.0 95.0		1315+/- 35nm	0.86 0.86 0.86	

1. All spectral data measured at normal incidence in 1.43 matching index
2. Tolerances on specification values are available from relevant product specifications
3. Spectral data is for 0.10mm/0.004" coverglasses, please refer to relevant specification for spectral performance of other thicknesses.

Physical Properties

Property	CMX	CMG	CMO
Density	2.605 grams/cm^3	2.554 grams/cm^3	2.536 grams/cm^3
Refractive Index	1.5265	1.516	1.490
Youngs Modulus	75±1.0 GNm^{-2}	78.7±1.0 GNm^{-2}	69±1.0 GNm^{-2}
Poissons Ratio	0.22 ±0.01	0.175±0.01	0.22 ±0.01

Mechanical Properties

Thickness: 0.050mm TO 0.50mm / 0.002" TO 0.02"

Tolerancing: LxW ±0.05mm / 0.002"

Surface Finish: As drawn to MIL-PRF-13830B, 80/50 scratch/dig

Parallelism: 0.05mm per 20mm

Perpendicularity: 90º ± 0º 30'

Coating: Uncoated area, masked by coating tooling, shall not exceed 1% of the total coverglass area.

Edge Quality: Chemically etched for strength enhancement.

Toughening: CMX AND CMG glass can be chemically toughened if required

Durability

Humidity Resistance: 98% ± 2% relative humidity for 72 hours @ 50ºC ± 20ºC

Adhesion: Using Cellulose tape to MIL-M-13508

Abrasion: 20 strokes with 6mm pencil type eraser to MIL-E-12397 loaded to 10N

Radiation Resistance: UV exposure, electron, low energy proton, high energy proton - please refer to relevant specifications

Thermal Cycling: Details on request

Qioptiq Space Technology
Unit 2, Kinmel Park, Bodelwyddan, Rhyl, Denbighshire, LL18 5TY, United Kingdom
Tel: +44 (0)1745 589833, **Fax:** +44 (0)1745 584208, **Web:** www.qioptiq.co.uk

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