

Optical Solar Reflectors

Designed and manufactured for thermal control

Qioptiq

- Design and manufacture of radiation-stable Optical Solar Reflectors (OSR's)
- Over 35 years of Space Heritage
- Space Qualified
- Choice of glass types (CMX, CMO)
- Worlds leading supplier
- Bespoke solutions

Typical Optical Solar Reflector Specifications with 0.10mm thick CMX and CMO glass types

	Specification	Maximum Alpha	Emittance	Front Surface Sheet Resistance	Front to Back Conductivity
Standard OSR (CMX)	PS 343	0.100	0.86	N/A	N/A
Conductive Coated OSR (CMX)	PS 344	0.100	0.83	<5 K Ohms/Square	<200k Ohms
UVS Coated OSR (CMX)*	PS 347	0.060	0.83	N/A	N/A
UVS/CC/OSR (CMX)	PS 349	0.060	0.83	<5 K Ohms/Square	<200k Ohms
Conductive Coated OSR CMO Glass	PS 613	0.085	0.83	<5 K Ohms/Square	<200k Ohms
Plain OSR (CMO)	PS 614	0.085	0.87	N/A	N/A

Alpha - Solar absorptance measurements calculated between 250 and 2500nm

Emittance - Normal emittance calculated between 5 and 50 microns

*UV Reflective coating designed to operate from 0 – 66° angle of incidence

Mechanical Properties

Thickness:	0.050mm to 0.50mm / 0.002" to 0.02" Special thicknesses on request
Tolerancing:	LxW ±0.05mm / 0.002"
Surface Finish:	As drawn to: MIL-PRF-13830B, 80/50 scratch dig
Parallelism:	0.05mm per 20mm
Perpendicularity:	90° ± 0° 30'
Coating:	Uncoated area, masked by coating tooling, shall not exceed 1% of the total coverglass area
Edge Quality:	Chemically etched for strength enhancement
Humidity Resistance:	98% ± 2% relative humidity for 72 hours @ 50°C ± 20°C
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

Physical Properties

	CMX	CMO
Density:	2.60 ± 0.02g cm ³	2.54 ± 0.02g cm ³
Thermal Expansion Coefficient:		
Average over range -100°C to 100°C	6.0 ± 0.75 x 10 ⁻⁶ /°C	5.5 ± 0.75 x 10 ⁻⁶ /°C
Average over range -100°C to 200°C	6.5 ± 0.75 x 10 ⁻⁶ /°C	6.0 ± 0.75 x 10 ⁻⁶ /°C
Average over range +30°C to 200°C	7.0 ± 0.75 x 10 ⁻⁶ /°C	6.5 ± 0.75 x 10 ⁻⁶ /°C
Youngs Modulus:	75.0 ± 2 GNm ⁻²	70 ± 2 GNm ⁻²
Poissons Ratio:	0.21 ± 0.05	0.22 ± 0.05
Bulk Resistivity:		
At 20°C	11.5 ± 1 log ohm meter	16.0 ± 1 log ohm meter
At 60°C	10.0 ± 1 log ohm meter	14.0 ± 1 log ohm meter
Refractive Index:	1.524 – 1.530	1.510 – 1.516

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