

Non-imaging Optics Antireflective Glass Characteristics And contribution to Design

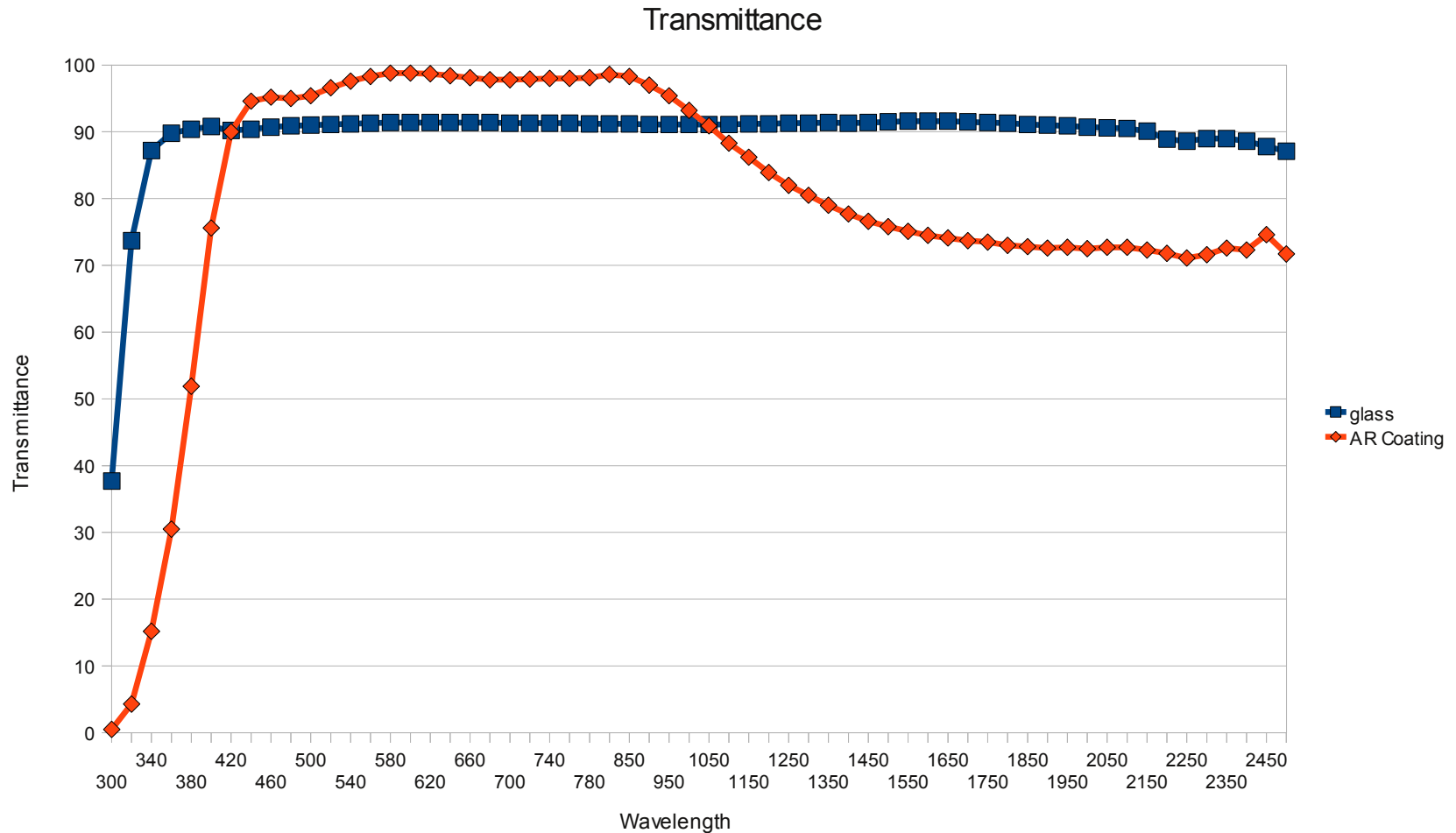
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PSIDA GR LLC

Durability Testing.

- Meets IEC 61215 protocol for 1000 hours of damp heat exposure (85°C/85%RH) and 10 cycles of humidity freeze testing.
 - Over 1 year of damp heat exposure, 60 cycles of humidity-freeze testing.
 - 17 weeks in ASTM B-117 salt fog testing.
- Overall decrease in transmittance (ISO 9050, 400-1100nm) for each test was less than 0.5 percent.
- Transmittance done at 90 degree incident using a Gaertner Spectrometer.

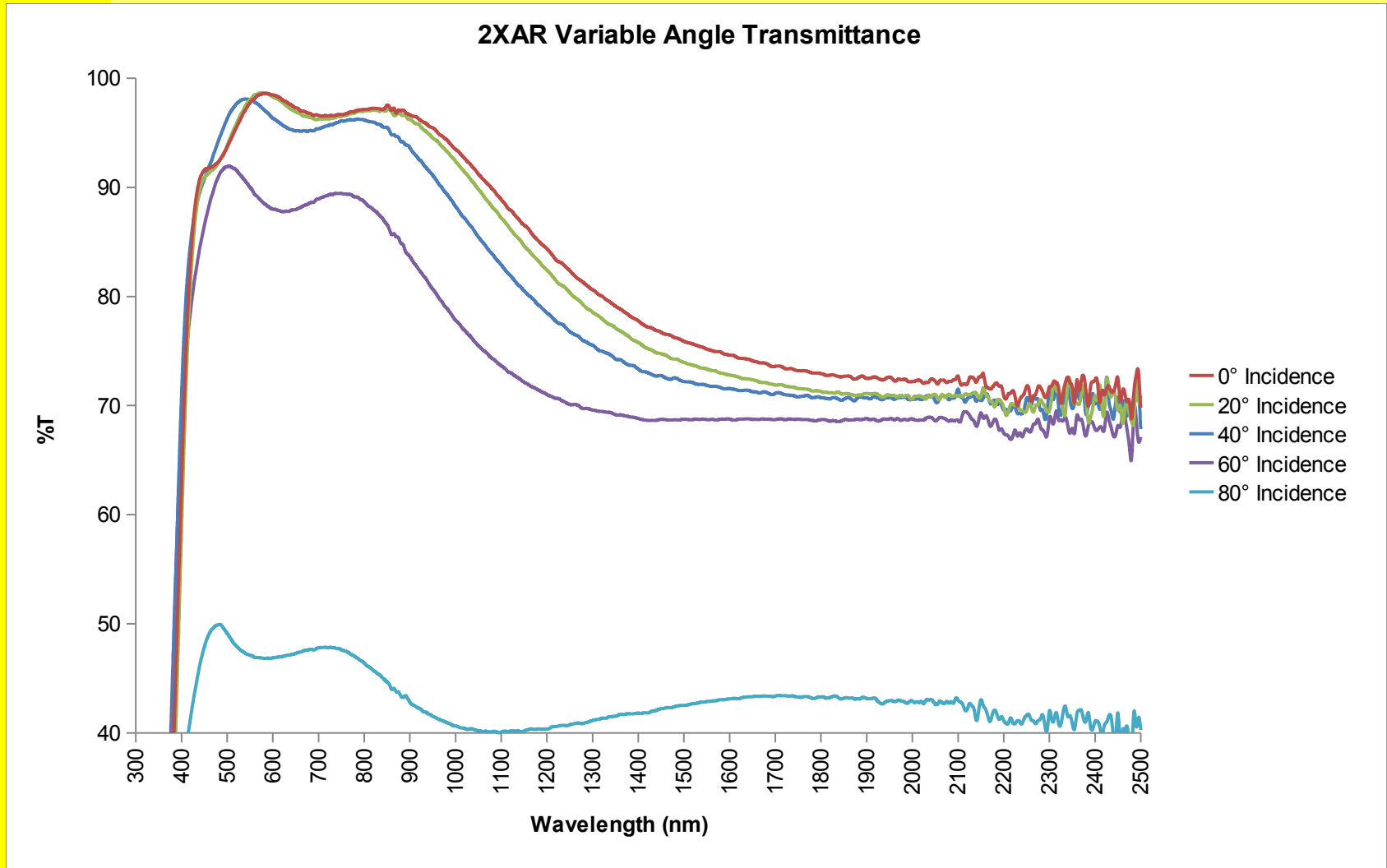
Transmittance



Tempered Glass, equivalent to auto or airplane windshield. Protects solar panels.

UV and IR transmittance reduced. Lower rate of heat build up in solar cell which improves power production.. High Match to Silicon absorption of Solar spectra. Applicable to single and multi-junction solar cells.

Transmittance at Variable angle



Combined with non-imaging reflective optics, total insolation to panels increased due to additional transmittance of useable solar spectra.

MSVD (magnetic sputtered vacuum deposited) AR coating on Front and back of glass.

Knoop Hardness factor

- Indent load – 500 gm
- 470 kgf/mm²

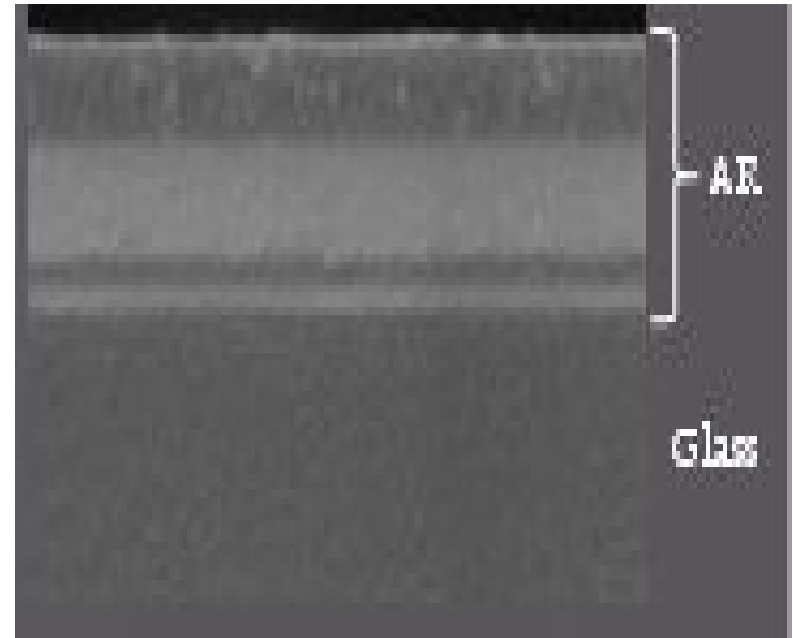
Poisson's ratio – 0.22

Modulus of Elasticity – 73.1GPa

- 10,600,000 psi

Tensile rupture strength

- 2.51 g/cm³
- 157 lb/ft³



Summary

Double sided tempered AR glass used over the solar panels to add physical protection and increase power output.

The protective glass reduces damage to the solar panels due to sand, hail, rocks, vandalism and devitrification or fogging.

The double sided AR coating is part of PSIDA'S non-imaging optical design to increase useable solar irradiance to the solar cell junction thus increasing power output.