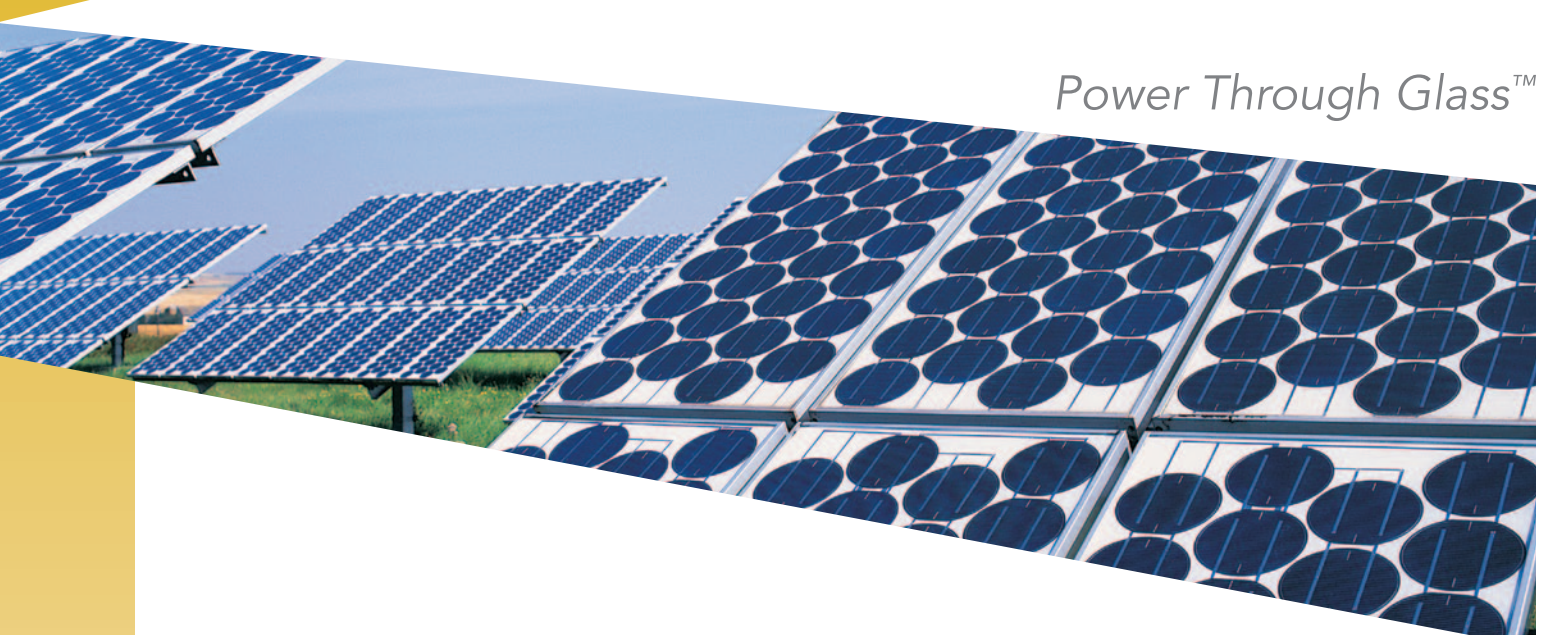




GUARDIAN
ECOGUARD® PATTERN

Power Through Glass™



Your Energy Investment Optimized

Low-Iron Pattern Glass

Standing behind excellence in your solar energy solutions is a company committed to providing you with glass innovation. Guardian has been manufacturing high-quality glass solutions for more than 75 years, with a comprehensive product line that includes glass for solar energy applications. EcoGuard Pattern is specially designed to maximize solar energy transmission and to enhance photovoltaic module performance while being easy to process to meet your requirements. Guardian operates state of the art manufacturing centers around the world so we are always nearby when you need us.

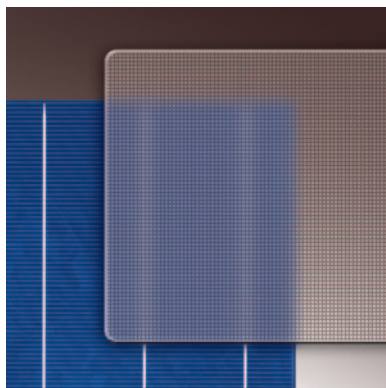
Features

EcoGuard Pattern is a low-iron annealed, heat strengthened or tempered pattern glass designed to maximize solar energy transmission, and is available in several textures and a variety of glass thicknesses.

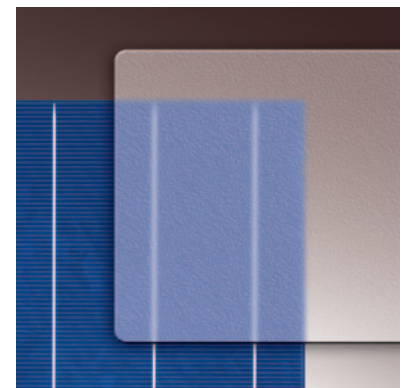
Applications

EcoGuard Pattern offers superior light and energy transmission for photovoltaic energy systems. It can also be used for solar thermal collectors, greenhouses, lighting and other applications requiring high solar transmission.

EcoGuard Pattern
with prismatic/matte finish

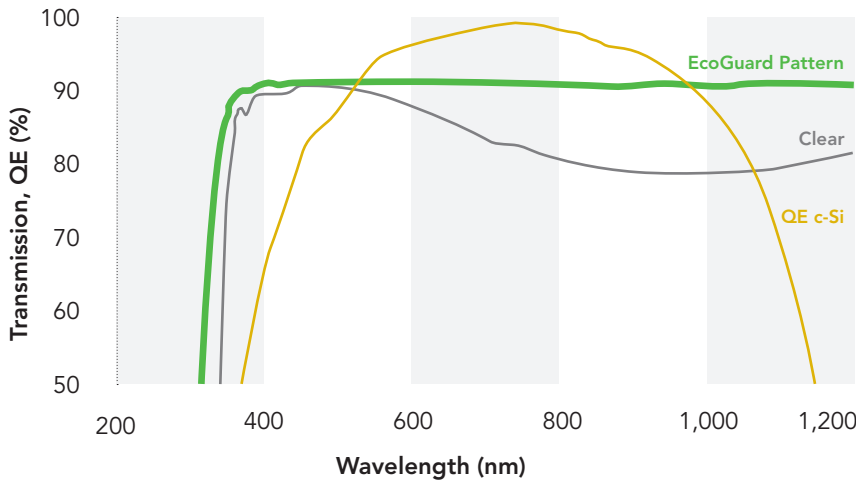


EcoGuard Pattern
with matte/matte finish



ECO GUARD[®] PATTERN

EcoGuard Pattern Transmission vs. Clear Glass



EcoGuard Pattern offers a significantly higher energy transmission than normal "clear glass" over the wavelength range critical to photovoltaic modules.



Advantages: Manufacturing

- Pattern uniformity
- Solar transmission (Te) consistency
- Single source for annealed, heat strengthened and tempered glass
- Cut size tolerance control
- Variety of edge treatments

Advantages: Performance

- IEC validated
- Tested and Certified by SPF Solartech Institute (Class U1)
- No solarization effects (No CeO₂)
- Continuous product improvement for Te and defect reduction

Advantages: Guardian

- Track record of optimizing customers' energy costs
- Global solar asset base
- Stable, privately held company with clear focus
- Tradition of glass innovation backed by broad solar R&D
- Advanced and proprietary manufacturing capabilities
- Rich, diverse product and technology pipelines

Transmission Values

Thickness ¹	Solar Transmission (Te) ²	Photovoltaic Transmission (Tpv) ³	Visible Light Transmission (Tvis) ⁴
3.2 +/- .2 mm	91.3%	91.6%	91.8%
4.0 +/- .2 mm	91.2%	91.5%	91.6%

Notes:

1. Other thicknesses are available. Please contact us for more detailed inquiries.
2. Te: solar transmission @ AM 1.5 (ISO 9050) over 300–2500 nm.
3. Tpv: solar transmission is weighted with AM 1:5 solar spectrum and Quantum Efficiency (QE) of a typical c-Si PV module.
4. Tvis: visible transmission for illuminant C over 380–780 nm.

Common Product Configurations

Product No.	Description
ECO-PM-T-3.2	EcoGuard Pattern with a prismatic finish on one side and a matte finish on one side. 3.2 mm and 4.0 mm thicknesses tempered or annealed.
ECO-PM-A-3.2	
ECO-PM-T-4.0	
ECO-PM-A-4.0	
ECO-MM-T-3.2	EcoGuard Pattern with a matte finish on both sides. 3.2 mm and 4.0 mm thicknesses tempered or annealed.
ECO-MM-A-3.2	
ECO-MM-T-4.0	
ECO-MM-A-4.0	

Guardian Industries Corp.

EcoGuard Solar Glass
14511 Romine Road
Carleton, MI 48117
+1.800.521.9439
solarglass@guardian.com

Guardian Europe S.à r.l.

Zone Industrielle Wolser
L-3452 Dudelange
Grande-Duche de Luxembourg
+352.52.11.15.01
solarglass.europe@guardian.com

www.guardian.com/solarenergy