

Helios Solar Control Exterior Window Films
Retrofit glazing optimisation





From 5 to
10
years limited
warranty*

Helios Solar Control Exterior Window Films



Your room at its **best.**

Window film is a smart retrofit solution for glazing optimisation.

Modern glazing systems are key to the performance of buildings. LLumar® window film is a retrofit solution for window performance challenges, even with existing glazing systems. Window film can upgrade performance for energy efficiency, occupant comfort, safety and security, UV protection, design and privacy. Completely replacing the glazing is an option, but this can be costly and disruptive. LLumar can help provide a more efficient solution.

LLumar window film upgrades glass. You can quickly and easily change the properties of existing glazing systems – for a fraction of the cost of new glass. By adding LLumar window film you can help to optimize performance and extend the life of your existing glazing at the same time.

- **Energy savings**
Helps reduce energy consumption for cooling in warmer months.
- **Comfort**
Temperature control helps improve occupant comfort which helps maintain productivity in warmer months***.
- **Glare reduction**
Excellent glare reduction makes computer and television screens easier to see.
- **UV protection**
Window film can help reduce fading** of furnishings, flooring and in-store merchandise by helping to block harmful UV rays from penetrating the glass.
- **Compatibility**
Window film is compatible with most existing low-e coatings or tinted and insulated systems.
- **Durability**
Outstanding durability proven with extensive accelerated weathering testing and backed by a manufacturer's limited warranty*.
- **Aesthetics**
Outstanding optical properties, from design upgrade to minimal impact on visual appearance to meet your project needs.

* Please refer to limited warranty documentation for specific details, limitations and restrictions.

** Films do not eliminate fading; they help reduce it. UV rays and heat are contributing factors to fading, but other factors exist.

*** Referring to the LLumar study at the University of Padua, Italy. Benefits vary depending on building size, glazing area, geography, etc. For more information please contact your sales representative.

Heat protection.

Achieved
**cooling
savings**

Why Helios Solar Control Exterior Window Films?

Glass is an important component of modern architecture, helping to create pleasantly light rooms and open vistas. In the warmer months it is common to see office buildings and private homes with closed blinds and shades. Even buildings with modern glazing systems can overheat from solar gain. In many cases air conditioning systems may not be sufficient to ensure a comfortable environment or require high energy consumption and costs.

LLumar® designed Helios, the special solar control window film series, to help maintain steady room temperatures, enhance comfort and reduce energy costs. Helios exterior window films are applied to the exterior of existing glazing and are more compatible to even modern glazing systems than interior installations as it intercepts the sun's energy before it enters the building.

LLumar Helios films are designed for commercial and residential applications where damaging UV rays, heat and glare are problems, energy efficiency is important or for a fresh, new look.

Exterior window film is exposed to the weather constantly. The Helios exterior coating technology is designed to help protect the integrity of the film against weathering. The film is scratch-resistant, repels water (hydrophobic), repels oil (oleophobic) and has a UV protection of 99%. In addition, extensive weather testing allows us to provide significantly longer manufacturer backed warranty* than our earlier generations of exterior window film technology.



(*Please refer to warranty documentation for specific details, limitations and restrictions.)

72" width – Expanded comprehensive protection.

With modern glazing systems becoming increasingly sophisticated, this can present a challenge for the installation of high performance window film. Frequently, films need to be applied in sections on wide windows resulting in unattractive seams and joins.

LLumar films are a solution to this problem, with a **72" (183 cm) width** version of our Helios external films.

The advantages are obvious: It's easier to apply a wider width window film to most pane sizes, with no unnecessary joins, leaving a perfect finish on the glass. Installation time is shortened and waste reduced, saving both money and resources.

This extra wide film comes with all the features you appreciate from the other Helios solar control and safety ranges; Comfort, glare reduction, UV protection and many more.

See all advantages of our extra wide Helios Sun Protection Window Film for yourself and enjoy comprehensive "widescreen" protection.

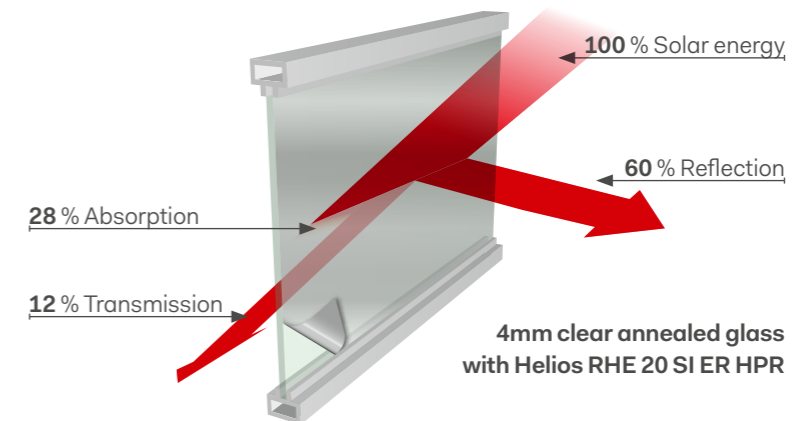


Change your view on solar protection.

Fast
payback
possible

What LLumar Helios Solar Control Window Film can do for you.

LLumar® Helios Energy Saving window films offer excellent heat protection, glare reduction and privacy protection.



- **Complete range of solar control films**
 - ▶ Options that meet a variety of project requirements
- **Helps to reduce solar heat gain**
 - ▶ Can help decrease energy costs for cooling, even on modern glazing
 - ▶ Helps improve thermal comfort – which can lead to better working conditions
- **Special technology polymeric scratch-resistant coating**
 - ▶ Increased durability and easy cleaning (patent granted)
- **Water repellent** (hydrophobic) and **oil repellent** (oleophobic)
 - ▶ Easier cleaning because dirt has lower adhesion to the Helios surface
- **UV protective** layers in the film construction
 - ▶ Enhances interior protection against UV for fittings and furnishings
 - ▶ Helps reduce fading of flooring and furnishings
- **No color in the adhesive**
 - ▶ Film color remains consistent over time
 - ▶ No damage to film color during installation
 - ▶ Moisture on the film surface will not change color or cause visual distortion
- **Helios window film durability** Outstanding durability proven with extensive accelerated weathering testing and backed by a manufacturer's limited warranty*.
- **External installation** for complete Helios window film line
 - ▶ Ideal for single, double, double low-E and triple insulating glazing
- **Manufacturer backed limited warranty**
 - ▶ Excellent limited* warranty for vertical applications (up to 10 years) and sloping (5 years) applications

(*Please refer to warranty documentation for specific details, limitations and restrictions.)

Let Helios **change** your view.

**The MG Tower is a recently constructed 9 storey building with over 1000 m² of modern solar control low E glazing, which rejects a large part of the solar energy back to the exterior environment. This creates a greater challenge for solar control window film to improve glazing performance, save energy, and improve environmental conditions.

Up to
5°C
reduction of internal temperature*

Cooling
42%
savings*

Simple
3.9 yrs
payback/
ROI*

Proven facts of Helios RHE 20 from University of Padua*

Eastman's Performance Films businesses commissioned Professor Michele De Carli and his research team at the University of Padua to conduct an independent study of the effects of using LLumar® Helios Solar Control Exterior Window Film RHE 20 SI ER HPR on a building in Padua, Italy: the MG Tower**.

The study was based on a comprehensive three year assessment of the building, including 450 days of consecutive monitoring of environmental conditions, investigation of the building's energy consumption over the three years, and analysis of the energy savings obtained.

A key method used to assess the impact of the installed solar control film was the development of sophisticated computer simulations for energy use and lighting conditions as well as economic benefits, CO² emissions reduction, thermal comfort, and visual comfort.

These were calibrated based on data collected from the monitoring phase and from measured local weather conditions.

Detailed calibration was vital to ensure simulations properly represented the behaviour of the building before and after film was applied. In addition to the quantitative analysis techniques used, occupant surveys were undertaken to identify the perceived impact of the film on the building occupants.

The study shows the significant benefits of LLumar Helios RHE 20 SI ER HPR for saving energy, reducing CO² emissions, improving thermal comfort, and controlling glare at the MG Building*.

Energy:

- 3.9 year simple payback / return on investment
- 42 % annual savings on electrical energy used for air conditioning cooling
- Savings of €125.800 on energy costs over operational lifetime of the film
- Reduction of 46 tonnes annual CO₂ emissions (according to EN 15603)
- Film was shown to be a better investment option than increasing HVAC capacity

Thermal Comfort:

- Reduction in indoor temperatures of up to 5 °C when HVAC cooling switched off
- Increased occupant satisfaction with the thermal environment
- Productivity savings estimated at €40 per employee per cooling month

Lighting and Glare:

- Significant reduction in glare conditions after film installation – comparable with blinds, but retaining view through the glazing to the outside
- Significant increase in useful daylighting conditions and in occupant satisfaction when glare conditions occur, but no negative impact during lower lighting levels of the year
- No measurable change in energy consumption from lighting use by occupants

* Referring to the LLumar study at the University of Padua, Italy. Benefits vary depending on building size, glazing area, geography, etc. For more information please contact your sales representative.

RHE

RHE 50 SI ER HPR
Reflective Film

VHE

VHE 14 SI ER HPR
Dual Reflective
Film

NHE

NHE 1035 ER HPR
Sputtered Film

THE

THE 80 BL ER HPR
Solar Control
Film

Selecting the right Helios Solar Control Exterior Window Film for your needs.

LLumar® Helios Solar Control Exterior Window Film is designed for demanding applications. Below you will find an overview of the benefits for the entire Helios solar control window film range.

Special technology polymeric scratch-resistant coating provides **increased durability and easier cleaning** (Patent granted).

Improve workers' perception of working conditions and enhance productivity with **reduction in solar heat gain and glare for temperature moderation and reduced eyestrain**.

Can help reduce air conditioning costs and energy costs. While payback periods may vary depending on a variety of factors, the MG Building was estimated to have achieved simple payback in 3.9 years*.

Excellent UV filtering **helps protect against fading of textiles, furniture and works of art.**

Extremely well-adapted for single, double and double low-E insulating glazing systems.

Limited warranty up to 10 years vertical** / 5 years sloping (slopes 20 degrees or more from horizontal)

** Please refer to warranty documentation for specific details, limitations and restrictions.

Helios RHE Reflective Series

Living in comfort and privacy.

An optimised solution for buildings with high solar heat gain and/or high cooling costs.

RHE = **Daylight privacy** – 'one way' mirror effect can be achieved under the correct lighting conditions.

* Referring to the LLumar study at the University of Padua, Italy. Benefits vary depending on building.

Helios NHE Sputtered Series

Keeps cool and can help lower energy costs.

An optimised solution if solar control is needed with lower reflection of visible light.

NHE = **Neutral appearance** – the pleasant and discreet look does not affect the aesthetics of the building or the room.

Helios VHE Dual Reflective Film

Ultimate protection meets privacy.

Solar control and privacy film – dual reflective. An optimised solution for buildings with high solar heat gain and cooling costs where privacy is needed.

VHE = **Superior one way privacy** – similar to mirror-glass: Lower reflection toward the interior allows improved vision to the outside while preserving privacy.

Helios THE Light Solar Control Film

Reduce heat not visibility.

Light solar control film helps reduce heat and retains with high visible light transmission – spectrally selective.

THE = **'Nearly clear' solar control exterior grade film** – very light blue tint complements natural blue/green color of standard glass.

About the Manufacturer

Eastman Chemical Company's Performance Films businesses are a leading manufacturer and marketer of high performance films for automotive and architectural applications with one of the largest and most integrated manufacturing sites in the world, located in Martinsville, Virginia.

Eastman, through its window film businesses, creates and manufactures products that improve the efficiency and performance of glass. The company offers one of the industry's widest arrays of film technologies, produced in a clean-room environment to ensure optimum quality.

With more than 60 years of experience in film production and technology, the company is dedicated to continuously investing in machinery, technology, and employee training to remain at the forefront of the industry.

LLumar® window films are distributed to nearly 100 countries worldwide. Production capabilities include color dyeing, sputtering, metallizing, solution-coating, laminating and slitting. To help ensure our products are of the highest quality, we inspect our films using advanced testing equipment and procedures.

Limited Warranty

This European limited warranty is for professionally installed LLumar Exterior Scratch Resistant Architectural Window Films ① LLumar Helios RHE 20 SI ER HPR, RHE 35 SI ER HPR, RHE 50 SI ER HPR, NHE 1020 ER HPR, NHE 1035 ER HPR, VHE 14 SI ER HPR and ② LLumar Helios THE 80 BL ER HPR:

The limited warranty is for ① 10 years for installation to vertical glazing* and 5 years for installation to sloping glazing* of 20° or more from horizontal and ② 7 years for installation to vertical glazing* and 5 years for installation to sloping glazing* of 20° or more from horizontal and is valid for exterior installation only; limitations apply as shown below.**

①+② Edge sealing is required as part of the installation process in order to validate this limited warranty.

①+② This limited warranty covers cracking, crazing, peeling, corrosion and delamination. Manufacturing defects, although rare, are also covered by this limited warranty.

①+② The limited warranty covers installations with glass substrates only and is limited to the sales value of the film and exclude any costs associated with removal and replacement of the product. Changes in appearance during normal ageing are not included in this limited warranty. Eastman's Performance Films businesses' Terms and Conditions apply.

Note: Please contact the company for information regarding installation training, edge sealant, thermal stress compatibility, and cleaning & maintenance requirements.
E-mail: info@llumar.eu, telephone number +49 2173 9935110

*Vertical defined as up to 15 degrees from vertical; sloping defined as not less than 20 degrees and not more than 75 degrees from horizontal.
**Manufacturer warrants that the products shall conform to manufacturer's standard specifications. Manufacturer excludes any warranty of any kind, express or implied, with respect to the goods sold hereunder as to merchantability, fitness for a particular purpose or any other matter with respect to the goods whether used alone or in combination with other products. If buyer establishes a verified breach of this limited warranty within the warranty claim period (as defined above), then the manufacturer will, at its option and expense, either (A) replace the non-conforming products with conforming products or (B) issue a credit toward next purchase in the amount of the original price of the non-conforming products. Buyer's failure to notify manufacturer of its warranty claim within the warranty claim period will constitute a waiver of such claim regardless of whether the facts giving rise to such claim were discovered or were discovered during the warranty claim period. The "warranty claim period" means thirty days after buyer becomes aware, or reasonably should have become aware of the product's failure to conform to manufacturer's standard specifications.

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