

Helios® [exterior films]

About the manufacturer of LLumar High Performance Window Film.

Solutia's Performance Films division, CPFilms, draws on over 50 years experience in film production and technology to maximize efficiency and produce precise film solutions to meet our customers' exacting requirements. Solutia's Performance Films division is the global leader in the manufacturing and marketing of branded window films, with a complete line of automotive window tint, commercial and residential architectural window films, safety & security, anti-graffiti, and decorative films.



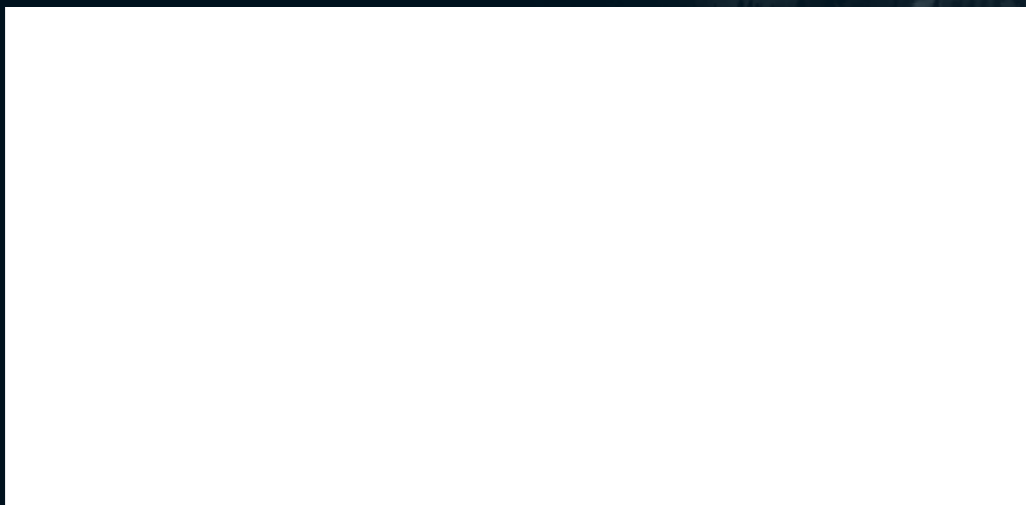
With its headquarters in St. Louis, Missouri, USA, the company operates globally with approximately 3,300 employees in more than 50 worldwide locations.



Solutia's Performance Films division, CPFilms, manufactures films that provide **comfort, aesthetics, energy savings, safety and security** when applied to glass, as well as high-value precision coated films and film components sold for advanced technology and performance products.

We work directly with a variety of designers, manufacturers and customers to develop products that **improve efficiency and performance and offer the industry's widest array of film technologies**, produced in a clean-room environment to ensure optimum quality.

In Europe Solutia / CPFilms is certified by SGS United Kingdom Ltd. (Société Générale de Surveillance) according to **ISO 9001:2008, certificate No. GB95/5381.**



Your authorised LLumar dealer - www.LLumar.com

The **Smarter Answer** for extreme climates.
Helios High Performance Exterior Window Film



Wherever you are: Just enjoy the view. Helios® [exterior films]

Helios: Rough Climate, Tough Answer.

Sometimes standard solar control films are not the right answer for your needs. This can be when interior installation is too difficult or prohibited. Therefore we have invented special films for exterior installation.

LLumar High Performance Exterior Window Films are the right solution for your needs:



Extreme climate: Helios works in hot climate zones



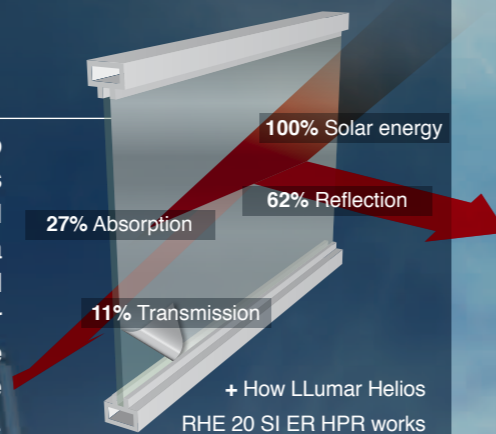
Extreme climate: Helios works in cold climate zones

The smart solution.

- Helios films are extremely well adapted for many types of glazing systems including modern insulating glazing. You can be certain that Helios films will provide excellent performance regardless of the glazing the film is installed on.
- Helios exterior films are especially beneficial for buildings where indoor accessibility is limited or unavailable, or where interior installation could disturb occupants.

Save money. Protect the environment.

All LLumar High Performance Exterior Films help to reduce your energy costs. The films reject the sun's energy transmitted through a window and cut internal room temperatures by up to 8°C. This allows a significant reduction of air-conditioning costs and a potential payback in as little as 3 years. Another positive effect is that LLumar High Performance Exterior Films help to protect the environment because they can reduce CO₂ emissions by tens of tonnes.



Trusted quality.

We have tested our product extensively for resistance to weathering and trust its durability, so we give a very high warranty for exterior scratch resistance films - **7 years warranty on vertical glazing and 5 years warranty on sloping glazing of 20° or more from horizontal. Helios is warranted against manufacturing defects and other defects, including peeling, cracking, crazing, demetallisation and delamination.** Reduce your risk and build on Helios longevity.

Warranty 7 years vertical.
Guaranteed
Warranty 5 years sloping.

The Helios advance.

LLumar High Performance Exterior Window Films are specially designed to resist rough exterior climates and areas that are subjected to industrial pollution. Because of the external environment the films are subject to an unpredictable weather and atmospheric conditions. Therefore other exterior films carry a reduced warranty. But LLumar stands for quality products and we offer long warranties for our Helios films. We stand up for any comparison with competitive products. Compare for yourself.

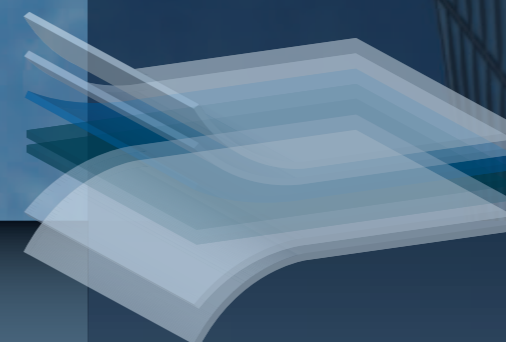
Warranty Comparison.



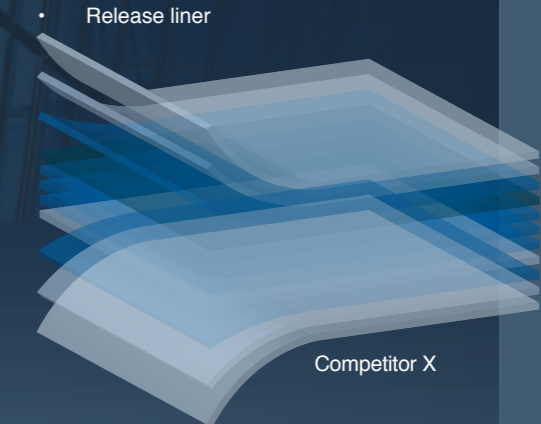
The Helios secret.

Helios films, with UV protection throughout the structure, has a **simpler structure than many competitive products**, so there is a lot less that can go wrong. They provide **long term performance and strong UV stability** and offer **very easy installation**.

- | | |
|---|--|
| <ul style="list-style-type: none"> • UV protected scratch resistant coating • Clear polyester with UV absorbers • Laminating adhesive with UV absorbers • Metallised aluminium • UV protected scratch resistant coating • HPR adhesive with UV absorbers • Release liner | <ul style="list-style-type: none"> • Scratch resistant coating #1 • Scratch resistant coating #2 • Undefined layer • Clear polyester • Undefined layer • Laminating adhesive with UV absorbers • Metallised aluminium • Clear polyester • PS adhesive with UV absorbers • Undefined layer • Release liner |
|---|--|



LLumar RHE 20 SI ER HPR



Competitor X

A completely different technology.

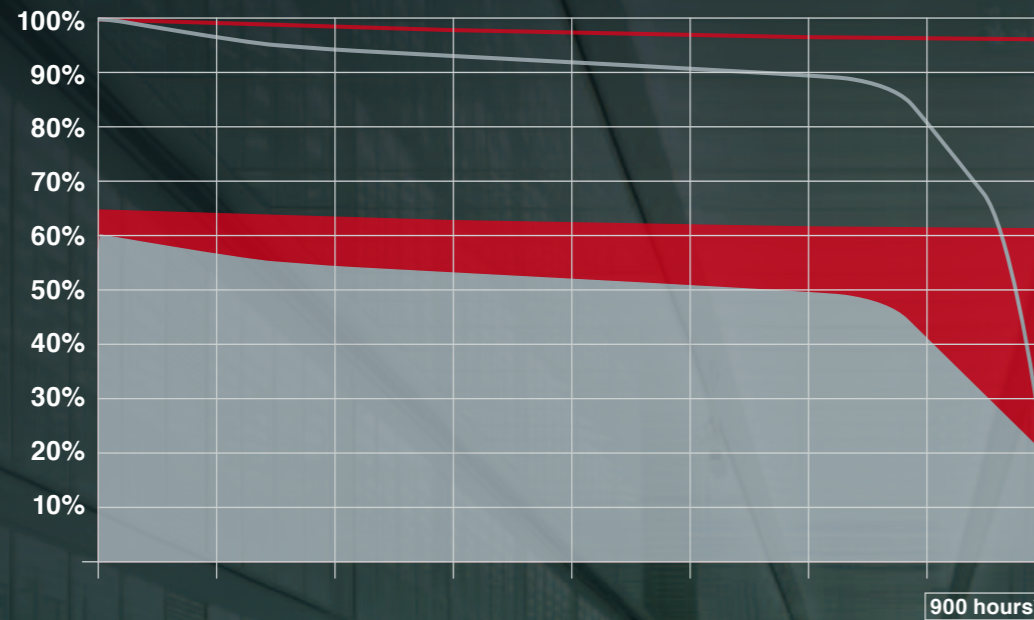
Helios [exterior films]

Sustainable Performance, even in rough Climates.



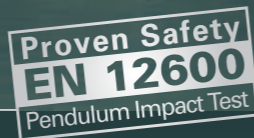
The durability of the film has been proved by an extensive testing, the result: **A better durability than any standard exterior film.**

Performance / Total Solar Energy Reflection after 900 hours application (1.5 years)¹.



Total Solar Energy Reflection: ■ Competitor X ■ LLumar RHE 20 SI ER HPR
Performance Stability: ▬ Competitor X ▬ LLumar RHE 20 SI ER HPR

- The superior scratch resistant coating resists almost all climatic conditions.
- The special film construction and excellent UV filtering integral to the polyester, scratch resistant coating and adhesive achieves an intensive way of ensuring product durability, compared to competitive products, where the UV-Absorber exists only in the adhesive. The Competitor X film has lost appr. 75% of solar control after appr. 900 hours compared to the high solar control maintained by Helios film.
- LLumar's outstanding longevity is confirmed by a long accelerated weathering test. Even after 3.000 hours² of testing, the performance of the film did not decline significantly. At the end of the test, LLumar's film still showed a reflection of solar energy of 59%. Even after 3.000 hours², the performance stability of the LLumar film was still above 90%.



Safe glass breakage.

The LLumar Helios RHE- & NHE-Series increase safety. They have passed the test requirements of EN 12600 "Glass in Building - Pendulum Test - Impact Test Method and Classification for Flat Glass" and is classified at impact resistance level 2B2 (film side)³.

¹ 900 hours accelerated weathering test is nearly similar to 1.5 years exposure in especially hot and humid conditions such as in South Florida, USA. The result may vary according to the region and utilisation.
² 3.000 hours accelerated weathering test is nearly similar to 5 years exposure in especially hot and humid conditions such as in South Florida, USA. The result may vary according to the region and utilisation.
³ Tested by Stazione Sperimentale del Vetro, Venezia, Italy according to EN 12600:2002 Class 2B2 (film side), Test Report No. 94977 REV001, 31.08.2010.

The Surface makes the Difference.

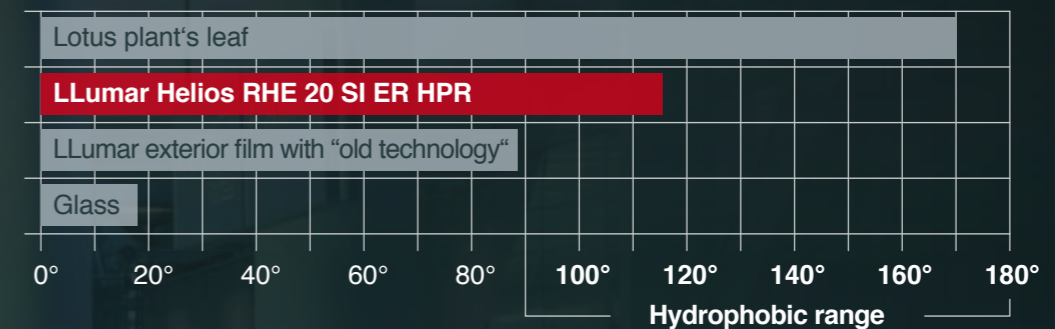
The unique Helios-Technology offers more than Solar Control. Its unique surface **behaves similar to a lotus flower**: water forms drops on the surface of the film. This ensures that LLumar Helios Films are **easier to clean** than a standard exterior film. Better still, the Helios technology is also oil repellent, so resists dirt sticking to the film surface.



Dirty water does not easily wet the LLumar Helios film. LLumar surface with "old technology".

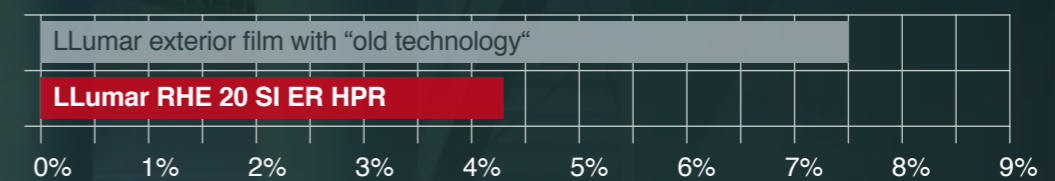
Tests have proven that LLumar Helios Exterior Window Films offer a special **antigraffiti performance that protect against deliberate attacks with paint and ink**. Because of its unique surface the **paint simply does not stick on the film** and the attacker is deprived of his sense of achievement.

Contact Angle Measurement (Estimation)⁴.

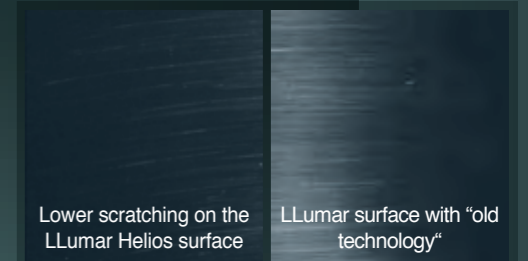


- The unique non-stick coating is both water and oil repellent.
- Low-maintenance due to the easy-to-clean surface.
- Extends the cleaning interval, less cleaning materials are needed, and therefore protects the environment.
- Protects the glass surface from deliberate damage, such as graffiti or vandalism.

Abrasion test⁵. (Lower value: Better scratch resistance)



- Less scratching and diffusion of light, therefore enhanced durability for clear vision / view through the glass, even in rough climates.



Lower scratching on the LLumar Helios surface. LLumar surface with "old technology".

⁴ Contact angle measurement (Estimation) passed by the independent institute Intertek Measurement Science Group, UK, Test Report No.: SFEw45 "SFE estimation from contact angle measurement on films"
⁵ "Taber haze" abrasion test (the lower the value, the better the scratch resistance) / Increase of diffused light in % (Haze of the surface, decreased vision/view by increased scratch marks).

The LLumar Helios RHE Series: The smart answer for your needs.

Living in Comfort & Privacy.

An optimised solution for buildings which have to deal with high solar heat gain and therefore high cooling costs.

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

Special technology polymeric scratch resistant coating provides increased durability and easier cleaning – patent applied for.

Significant improvement of working conditions – high reduction in solar heat gain.

Reduction in air-conditioning costs and hence a reduction in energy costs with potential payback of less than 3 years.

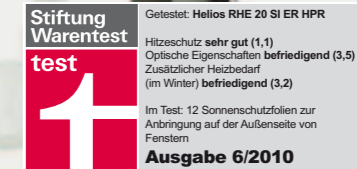
Potential to reduce CO₂ emissions by tens of tonnes per year.

Excellent glare reduction for reduced eyestrain and easier working with computer screens.

Excellent UV filtering integral to the polyester – helps to reduce fading textiles, furniture, and works of art.

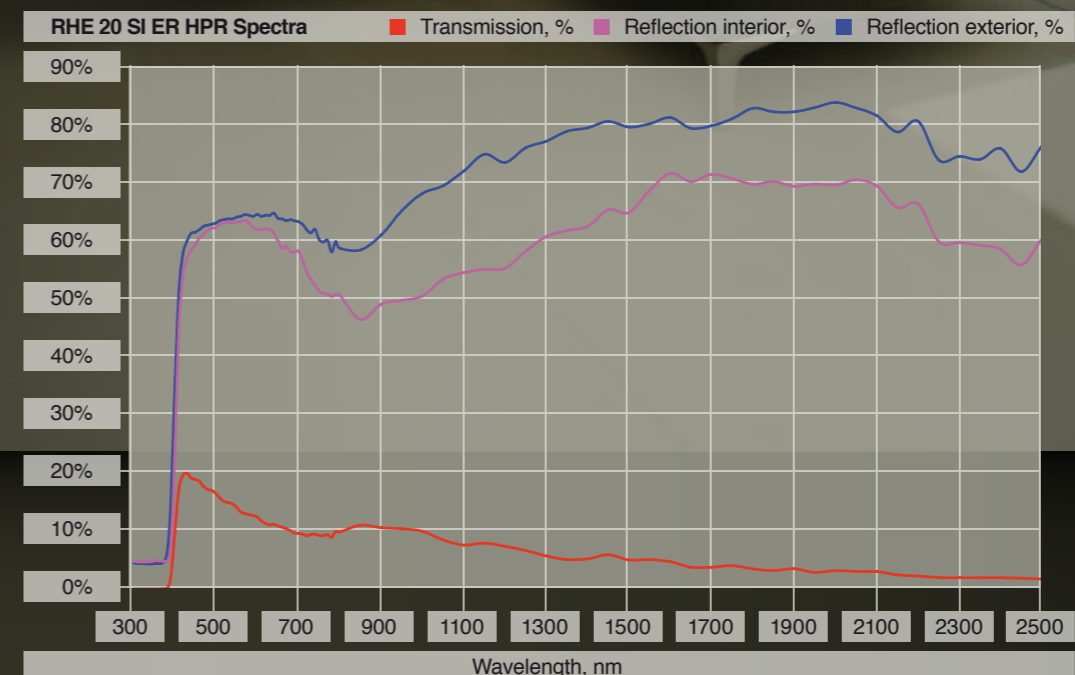
Extremely well adapted to single, double and double low-E insulating glazing systems.

Manufacturer-backed warranty: 7 years on vertical and 5 years on sloping glazing of 20° or more from horizontal ¹.



Technical Specification ²	RHE 20 SI ER HPR		RHE 35 SI ER HPR		RHE 50 SI ER HPR	
Film Colour	Silver / Silver		Silver / Silver		Silver / Silver	
Glass type	Single ³	Double ⁴	Single ³	Double ⁴	Single ³	Double ⁴
Solar Energy Transmission	10%	9%	18%	16%	33%	28%
Solar Energy Reflection (Exterior)	62%	62%	51%	52%	32%	33%
Solar Energy Absorption	28%	29%	30%	32%	35%	39%
Visible Light Transmission	14%	13%	25%	23%	45%	41%
Visible Light Reflection (Exterior)	65%	65%	52%	52%	30%	32%
Visible Light Reflection (Interior)	61%	59%	47%	48%	27%	30%
UV Transmission	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Shading Coefficient	0.20	0.16	0.30	0.25	0.48	0.41
Emissivity	0.70		0.68		0.69	
U-Value (EN 673 W/m ² K)	5.8	2.8	5.8	2.8	5.8	2.8
Glare Reduction	85%	86%	72%	74%	47%	53%
g Value (Coefficient of Total Energy Transmission)	0.17	0.14	0.26	0.22	0.42	0.35
Total Solar Energy Rejected	83%	86%	74%	78%	58%	65%
Thickness (without Liner)	60µ		60µ		60µ	

¹ Further information on request. - ² All data determined according to EN 410 and EN 673 - ³ 4 mm clear single glazing - ⁴ 4/16/4 mm clear double glazing



The LLumar Helios NHESeries: The smart answer for your needs.

Keep cool & lower energy costs.

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

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

Special technology polymeric scratch resistant coating provides increased durability and easier cleaning – patent applied for.

Significant improvement of working conditions – high reduction in solar heat gain.

Reduction in air-conditioning costs and hence a reduction in energy costs with potential payback of less than 5 years.

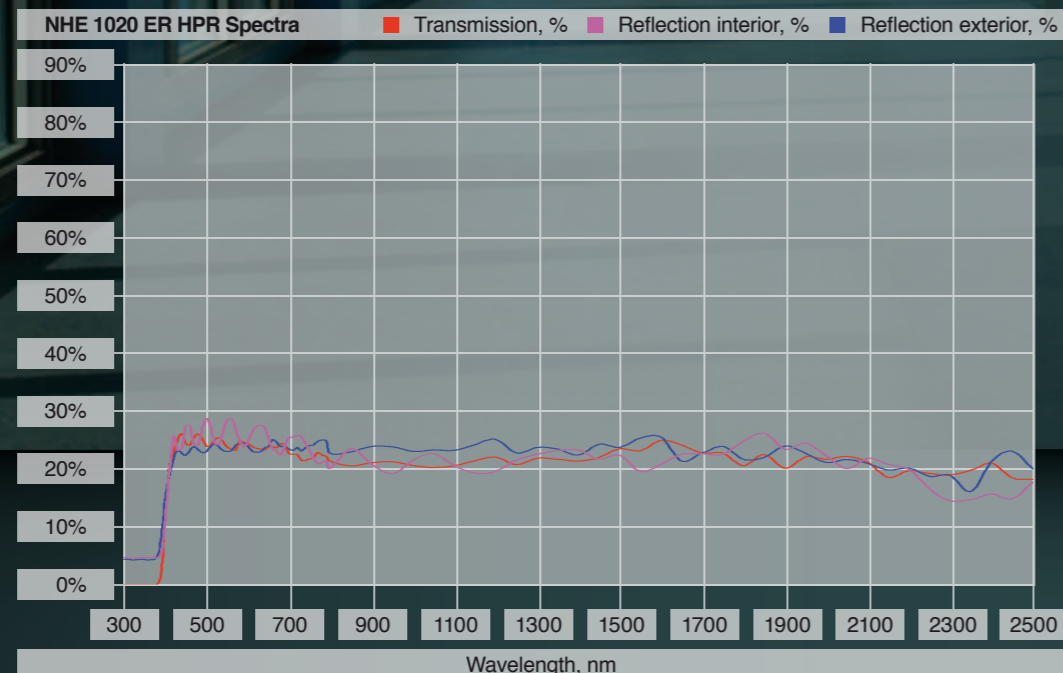
Potential to reduce CO₂ emissions by tens of tonnes per year.

Excellent glare reduction for reduced eyestrain and easier working with computer screens.

Excellent UV filtering integral to the polyester – helps to reduce fading textiles, furniture, and works of art.

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

Manufacturer-backed warranty: 7 years on vertical and 5 years on sloping glazing of 20° or more from horizontal ¹.



Technical Specification ²	NHE 1020 ER HPR		NHE 1035 ER HPR	
	Neutral		Neutral	
Film Colour				
Glass type	Single ³	Double ⁴	Single ³	Double ⁴
Solar Energy Transmission	22%	18%	32%	27%
Solar Energy Reflection (Exterior)	23%	23%	17%	18%
Solar Energy Absorption	56%	59%	51%	55%
Visible Light Transmission	25%	22%	38%	34%
Visible Light Reflection (Exterior)	24%	24%	19%	20%
Visible Light Reflection (Interior)	27%	30%	15%	20%
UV Transmission	< 1%	< 1%	< 1%	< 1%
Shading Coefficient	0.41	0.30	0.52	0.41
Emissivity	0.74		0.83	
U-Value (EN 673 W/m ² K)	5.8	2.8	5.8	2.8
Glare Reduction	72%	74%	57%	61%
g Value (Coefficient of Total Energy Transmission)	0.36	0.26	0.45	0.36
Total Solar Energy Rejected	64%	74%	55%	64%
Thickness (without Liner)	60μ		60μ	

¹ Further information on request. - ² All data determined according to EN 410 and EN 673 - ³ 4 mm clear single glazing - ⁴ 4/16/4 mm clear double glazing



The LLumar **Helios VHE**Series: The smart answer for your needs.

Ultimate Protection meets Privacy.

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

VHE = Superior one way privacy – better than competitors including mirror-glass: Low reflection towards the interior allows improved vision to the outside whilst preserving privacy.

Special technology polymeric scratch resistant coating provides increased durability and easier cleaning – patent applied for.

Significant improvement of working conditions – high reduction in solar heat gain.

Reduction in air-conditioning costs and hence a reduction in energy costs with potential payback of less than 3 years.

Potential to reduce CO₂ emissions by tens of tonnes per year.

Excellent glare reduction for reduced eyestrain and easier working with computer screens.

Excellent UV filtering integral to the polyester – helps to reduce fading textiles, furniture, and works of art.

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

Manufacturer-backed warranty: 7 years on vertical and 5 years on sloping glazing of 20° or more from horizontal ¹.

Technical Specification ²	VHE 14 ER HPR	
Film Colour	Silver / Neutral	
Glass type	Single ³	Double ⁴
Solar Energy Transmission	7%	6%
Solar Energy Reflection (Exterior)	59%	59%
Solar Energy Absorption	34%	35%
Visible Light Transmission	9%	8%
Visible Light Reflection (Exterior)	61%	61%
Visible Light Reflection (Interior)	24%	28%
UV Transmission	< 1%	< 1%
Shading Coefficient	0.18	0.17
Emissivity	0.8	
U-Value (EN 673 W/m ² K)	5.8	2.7
Glare Reduction	90%	91%
g Value (Coefficient of Total Energy Transmission)	0.15	0.15
Total Solar Energy Rejected	85%	85%
Thickness (without Liner)	64μ	

¹ Further information on request. - ² All data determined according to EN 410 and EN 673 - ³ 4 mm clear single glazing - ⁴ 4/16/4 mm clear double glazing

