

UP TO 91% TOTAL SOLAR
ENERGY REJECTION

UV PROTECTION

HEAT REJECTION

VISIBLE LIGHT

The wavelength range of electromagnetic radiation that can be perceived by the human eye. It ranges from 390 to 750 nm



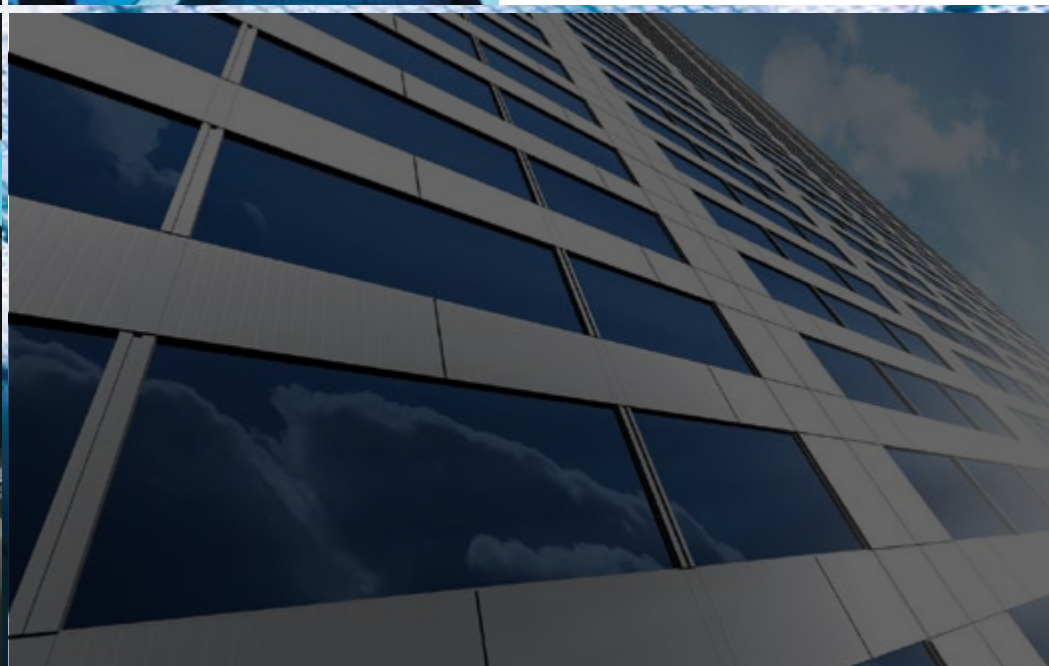
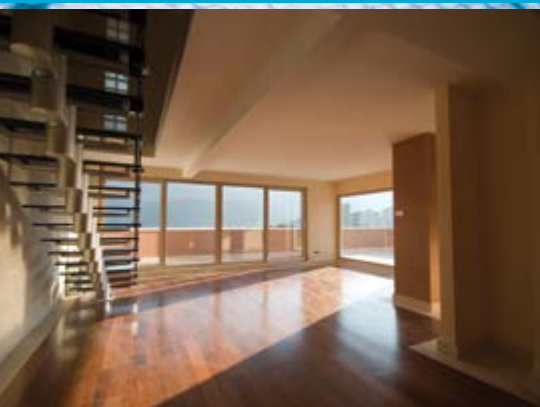
SKYFOL HEAT PROTECTION, SAFETY AND PRIVACY PROTECTION WINDOW FILMS

SOLAR SPECTRUM

It ranges from infrared through visible light to ultraviolet

GLASS

Amorphous material with certain characteristics similar to liquids. It is formed from a melt by cooling to rigidity without crystallization



INTRODUCTION

Welcome to the brochure presenting Skyfol architectural window films, whose aim is to allow you to get to know the functions of our products, and therefore be able to select the best solution for your glass surfaces. This booklet provides a thorough presentation of the functions of window films, and also of Skyfol products with highlight on specific requests that they provide a solution to.

The Hungarian Skyfol team

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SKYFOL ADVANTAGES



INTERNATIONAL SUPPLIERS

Skyfol films are supplied by world-leading manufacturers.



A UNIQUE PRODUCTS RANGE

We select our manufacturers in order to be able to offer window films most suitable for European glazing systems. We have a solution for all possibilities.



35 YEARS OF PROFESSIONAL EXPERIENCE

The founders of Skyfol first imported window films to Central-Eastern Europe in 1982. Since then, a lot of things have changed, but we are still working with window films and plan to do so in the next 35 years, too.



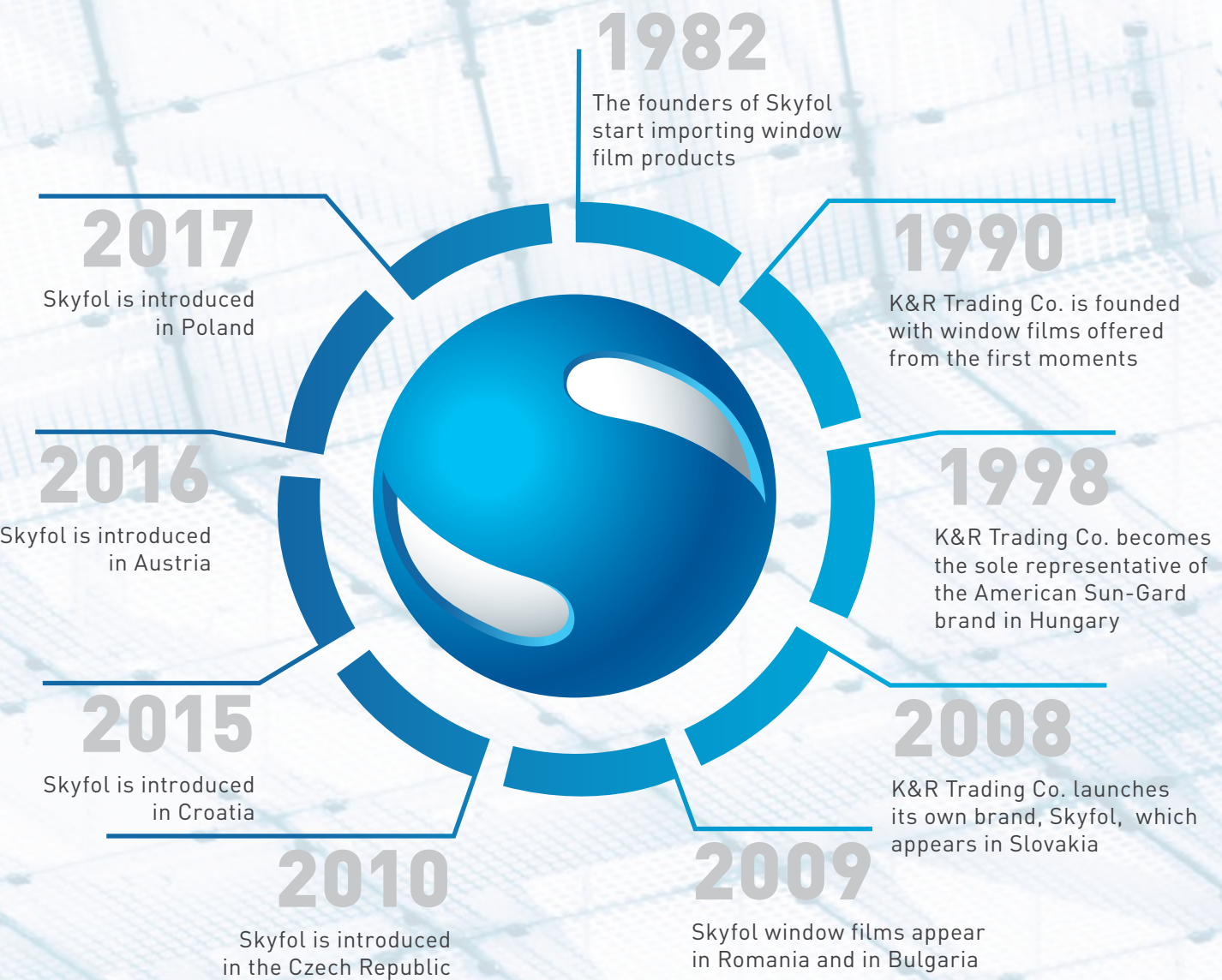
NETWORK OF CONTRACTED INSTALLERS

During the years we have built a network of installers so that high quality service can be provided everywhere. Beside good quality window films, professional application is also indispensable



MANUFACTURER WARRANTIES

Without exception, there are manufacturer warranties behind the warranty we provide. We have always guaranteed the quality of our products, and will continue to do so



THE WORKING PRINCIPLE OF WINDOW FILMS

SOLAR RADIATION

Electromagnetic radiation coming from the Sun has huge energy. Luckily, the Earth's atmosphere filters the major portion of dangerous radiation, so the one reaching the surface does not have the really harmful, life-threatening ranges. Originating from its structure, glass filters another range of radiation. The range that is transmitted by the glass corresponds to the solar spectrum, between approximately 280-2,500 nm. The aim of window films is to filter the unwanted part of radiation coming through the glass.

ULTRAVIOLET (UV) RADIATION

The part of UV radiation coming through the glass is between 280-400 nm, further divisible into UV-B (280-315 nm) and UV-A (315-400 nm) radiation. Energetically, UV radiation is negligible, but a major portion of it is harmful to the human body – it can cause the aging of the skin, the greying of the eye lenses and in extreme cases, skin cancer. All Skyfol architectural window films filter 99% of UV radiation.

VISIBLE LIGHT (VL)

Visible light falls between 400-750 nm. About 47% of the energy impacting the glass surface comes from visible light radiation, so it is energetically important. Its biological effect is considerable, so you should avoid filtering it too much. Visible light reflection is also an important factor, as it shows how reflective the film is.

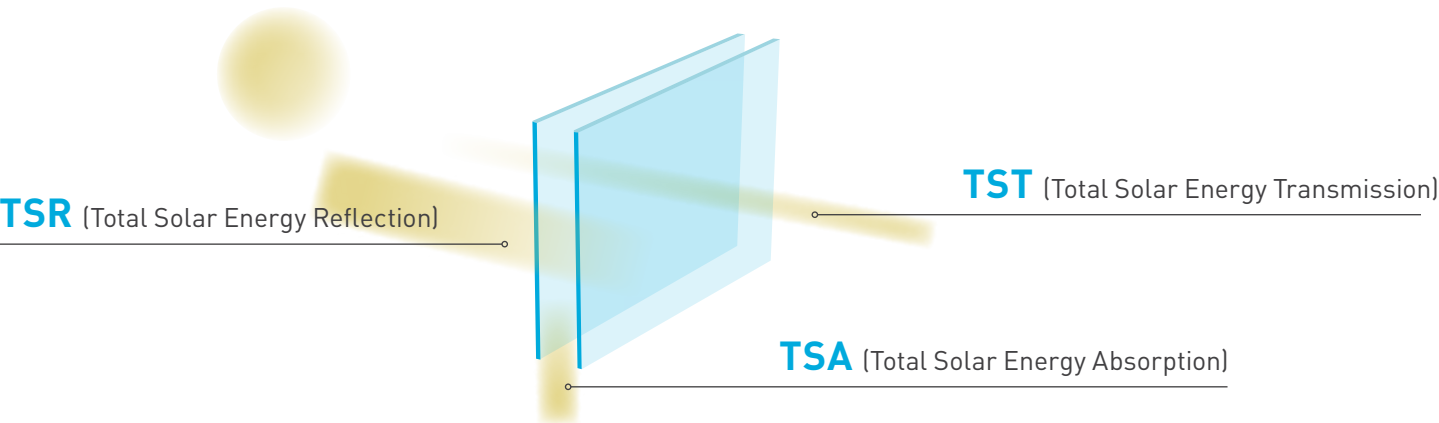
INFRARED (IR) RADIATION

Infrared radiation corresponds to 750-2500 nm in the solar spectrum. This is the most important segment energetically, since it makes up about 53% of the total energy falling on the surface. IR filtering is crucial from a heat protective point of view.



WHAT ARE WINDOW FILMS?

The base material of window films is polyester, which is a highly stable, durable and crystal clear substance. Further advantages are that it can easily be dyed, metallized and sputtered. A typical window film is made up of multiple layers kept together by a laminating adhesive. Each window film has a thicker, solvent-based, clear adhesive layer which fixes it to the glass. This pressure-sensitive adhesive is protected by thin film liner, which is removed before installation. The top layer of the other side of the film is protected by an anti-scratch layer – this makes sure the surface does not get scratched while in use.



The primary aim of applying an architectural window film is to provide heat protection and to save energy in the summer. The solar radiation hitting the glass surface can be divided into three parts:

The amount of energy which is reflected by the filmed window into the environment is called **Total Solar Energy Reflection (TSR)**. **Total Solar Energy Transmission (TST)** indicates part of the energy that enters the room through the window. The third part is **Total Solar Absorption (TSA)**, which is absorbed by the glazing system and then radiated into the environment at a completely different wavelength. **Total Solar Energy Rejected (TSER)** contains all of these factors, and this is the best indicator of the heat protective function of a window film.

WHAT GLAZING SYSTEM IS USED FOR MEASUREMENTS?

Energy absorption depends greatly on the glazing system. As an example, let's take a look at window films of different technologies installed on the same glass. With single-pane glass, Skyfol P35, Skyfol SI35 and Skyfol DR35 shows the following parameters.

Data measured on single-pane glass	TSER	TST	TSR	TSA
P35	71%	19%	42%	39%
SI35	68%	22%	43%	35%
N35	60%	27%	27%	46%

However, we get completely different results with the very same films, but when installed on dual-pane low-e glass:

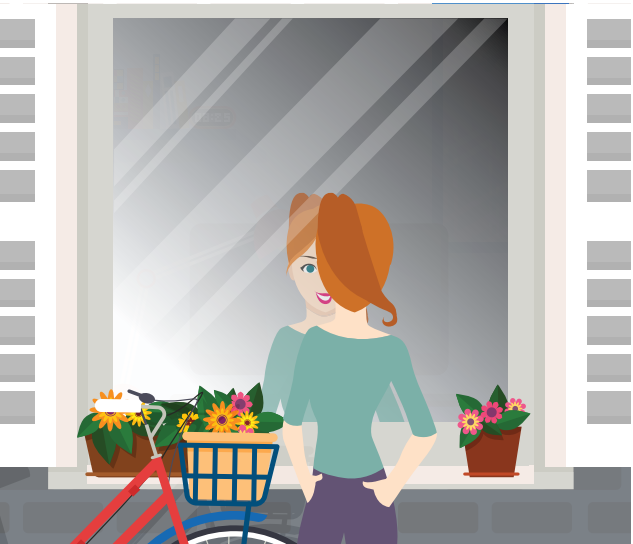
Data measured on dual-pane low-e glass	TSER	TST	TSR	TSA
P35	67%	15%	49%	36%
SI35	55%	19%	44%	36%
N35	38%	25%	27%	48%

For this reason, it is very important to select the window film most appropriate for the given glazing system. For developed glazings, we recommend only films with low heat absorption.

SPECTRALLY SELECTIVE WINDOW FILMS

Spectrally selective films reflect IR strongly, while they have high visible light transmission values. These films are capable of providing real heat protection without having to sacrifice light. Skyfol offers the following spectrally selective films: Skyfol P70, Skyfol XT80CV, Skyfol XT67CV and Skyfol XT47CV.

SILVER REFLECTIVE FILM DURING THE DAY



SILVER REFLECTIVE FILM AT NIGHT



Reflective films provide daylight insight protection. A lot of times customers have a misunderstanding and think that it is impossible to see through reflective films at night, too. It is important to highlight that the film is reflective in the direction where light is coming from. This means that with a silver reflective film, if in winter it is dark outside and we turn on the lights in the room, people will be able to look through the glass from the outside, but visibility from the inside will be limited. The rate of interior reflection is indicated on each data sheet – if one wishes to reduce it, select a dual reflective film. These are less reflective towards the inside; nevertheless, at night if the interior is light, it will be possible to look through the window, too. With daylight conditions, however, reflective films provide insight protection.

If you would like to have definite insight protection (e.g. for warehouses, showers or changing rooms), we recommend the Skyfol M2 film with a frosted effect. This film filters light only to a low extent, while it blocks visibility – naturally in both ways.



With window films, you can give a modern look to the building. Reflective surfaces always have a modern feel and also provide a uniform look, no matter what is behind each glass. Oxidised metallic coatings are often problematic as they look as though the building was run-down. Skyfol architectural window films have provided a solution and a modern, uniform appearance in many cases.

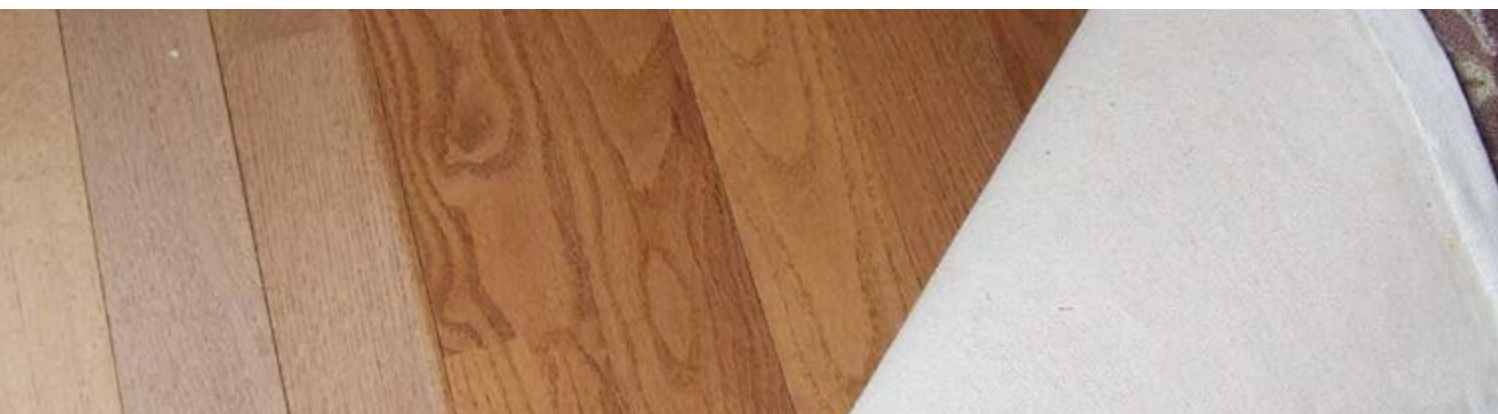
UV AND GLARE REDUCTION



Being excessively exposed to UV radiation can cause sunburn and certain types of skin cancer, and also acute or chronic damages of the skin, eyes and the immune system. The deadliest mutation (malignant melanoma) is mainly the result of direct DNA damage. Ultraviolet photons are harmful to living organisms' DNA in different ways.

Both UVA, UVB and UVC can damage collagen tissues, thus fastening the aging of the skin. UVA and UVB destroys vitamin A in the skin, which might result in more skin damage. High intensity UV light is dangerous for the eyes – it can cause photokeratitis, cataract, pterygium and pinguecula. Skyfol films provide efficient filtering in the whole UV range, thanks to their special Ultraviolet Absorbers (UVA). As these absorbers are found within the polyester structure, their efficiency does not decrease during the warranty period.

PROTECTION AGAINST FADING



Fading is the result of three main factors: UV radiation, heat and visible light. A second group of factors include humidity, the type of the drapery, the colour fixing agent, etc.

UV radiation is the most important factor (40%), while visible light and IR radiation are responsible for fading to the extent of 25% each. It is therefore clear that filtering UV radiation only is not sufficient – it is recommended to use a film that filters well in the IR range as well, and somewhat reduces visible light. Do not be misled by the fact that direct sunshine does not enter through the window – this does not mean that objects in the room are not exposed to the harmful range of the electromagnetic spectrum. The best-performing window films offer 99% UV rejection, that means an almost complete elimination of UV radiation.

We have to be careful with claims that a window film will entirely prevent damages originating from the sun, as this is not true. The only way to do so would be to do away with windows, which is not an option. However, architectural window films are indeed a good way to reduce damages by the sun, this way saving replacement costs.

HOW TO SELECT A WINDOW FILM?

A number of film series are available from different manufacturers, not accidentally. First of all it has to be clarified that is the aim of applying an architectural window film.

1. SHOULD I CHOOSE AN INTERIOR OR EXTERIOR WINDOW FILM?



This will be discussed in details (pages 16-19), but at this point it is worth knowing that there are both interior and exterior window films – the first group is installed from the inside, and the latter from the outside. An exterior window film is recommended if you need a heat protective solution for developed glazing systems (e.g. dual-pane low-e or triple-pane windows), and if the glass surface is accessible only from the outside (e.g. skylights of industrial halls). Exterior window films have the advantage of being much thinner, but the drawback of shorter durability.

Turn to page 16 to see the differences in more detail – it is an important question that is good to decide right in the beginning.

2. HOW REFLECTIVE CAN THE WINDOW FILM BE?



Window films are usually reflective, since the amount of absorbed energy must be minimized for efficient heat protection.

Dark, non-reflective films are good to avoid, because they usually absorb heat – these films are not really efficient and can also cause glass breakage in extreme cases.

If you are looking for a low-reflectivity film, it is best to select an exterior one, as with these products, absorbed heat is less important (more details on pages 16-19). There are interior films with low reflectivity and good heat protection as well, but they are lighter in shade.

3. HOW DARK SHOULD THE FILM BE?



Nowadays it is common to see oversized windows, as they are much better for the sensation of space than being surrounded by walls. As a result, light is also abundant, therefore its filtering is not such a great loss as one might think. The human eye has a different perception of light reduction, as the dilation of the pupils result in more light reaching the eye. The table below is a good illustration of this.

Visible light transmission of the window	80%	60%	40%	15%
Perceived light	90%	82%	74%	50%

With a visible light transmission over 50%, the film is barely noticeable. Above 70%, generally we cannot tell the difference between a glass surface with or without the film, if placed next to each other.

4. WHAT ARE THE FINANCIAL LIMITS?



The prices of each series are quite different from each other. Films with a less complex manufacturing technology contain aluminium, while more developed solutions make use of silver or even gold. The recommended installation price of each series is indicated on our website, so it is easy to decide what one can afford.

Window film





ARE YOU LOOKING FOR A LONG-LASTING AND COST-EFFECTIVE SOLUTION THAT IS CAPABLE OF A HIGH LEVEL OF HEAT PROTECTION?

Products of the Skyfol SI series are aluminium metallized heat protection window films, which are the most cost-effective solutions in the Skyfol range. Because of their low heat absorption, these films efficiently filter radiant energy, resulting in a short payback period. The dyed versions are recommended if the facade windows shall be coloured at the same time. The efficiency and durability of the dyed films are shorter. This series is recommended primarily for the heat protection of industrial and office buildings.

Window film





DOES LIGHT SHINE ON THE INNER SIDE OF THE WINDOW, SO ITS REFLECTIVITY WOULD BE TROUBLESOME?

The Skyfol DR series contains a metallic layer that is reflective towards the outside, but neutral towards the inside, therefore its interior reflectivity is much lower than the exterior one. In its light shade, the Skyfol DR series has a completely neutral appearance, which means that it is a perfectly applicable light filtering film in case the building facade cannot be of a reflective character. These films are recommended primarily for offices and restaurants. These films are generally used for residential buildings, too.

- Interior/exterior

Interior
- Adhesive

Pressure sensitive
- Sizes available

0,91×30 m, 1,22×30 m
1,52×30 m, 1,83×30 m
- Thickness

38 microns
- Scratch resistant coating

2nd generation
- Warranty

10 years

	Single pane			Dual pane			Dual pane low-e			Triple pane low-e		
	SI15	SI35	SI50	SI15	SI35	SI50	SI15	SI35	SI50	SI15	SI35	SI50
Total Solar Energy Rejected	79%	68%	43%	69%	61%	45%	64%	55%	49%	66%	59%	52%
Visible Light Transmitted	15%	28%	58%	17%	27%	46%	17%	27%	44%	16%	25%	40%
Visible Light Reflected Exterior	60%	44%	14%	59%	48%	29%	59%	48%	25%	58%	49%	30%
Visible Light Reflected Interior	58%	40%	12%	59%	47%	25%	59%	47%	24%	59%	47%	26%
Total Solar Energy Reflected	55%	43%	12%	52%	44%	25%	52%	44%	37%	47%	40%	35%
Total Solar Energy Absorbed	33%	35%	43%	36%	36%	41%	36%	36%	34%	43%	43%	40%
Total Solar Energy Transmitted	12%	22%	45%	12%	19%	34%	12%	19%	29%	11%	17%	25%
SHGC	0,25	0,34	0,66	0,31	0,39	0,55	0,36	0,46	0,52	0,34	0,41	0,48
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	5,337	5,394	5,41	2,618	2,633	2,70	1,434	1,439	1,41	1,153	1,156	1,19
Emissivity	0,84	0,84	0,81	0,84	0,84	0,81	0,84	0,84	0,81	0,84	0,84	0,81
Compatibility	Compatible			Compatible			Compatible			Conditionally		

- Interior/exterior

Interior
- Adhesive

Pressure sensitive
- Sizes available

1,52×30 m
- Thickness

38 microns
- Scratch resistant coating

2nd generation
- Warranty

10 years

	Single pane		Dual pane		Dual pane low-e		Triple pane low-e	
	DR05	DR15	DR05	DR15	DR05	DR15	DR05	DR15
Total Solar Energy Rejected	84%	79%	73%	70%	66%	64%	67%	66%
Visible Light Transmitted	7%	11%	6%	10%	6%	10%	6%	9%
Visible Light Reflected Exterior	60%	54%	61%	59%	61%	59%	60%	58%
Visible Light Reflected Interior	14%	24%	18%	27%	18%	27%	18%	27%
Total Solar Energy Reflected	53%	50%	54%	52%	53%	52%	50%	46%
Total Solar Energy Absorbed	41%	40%	39%	41%	40%	41%	47%	47%
Total Solar Energy Transmitted	6%	10%	7%	7%	7%	7%	3%	6%
SHGC	0,16	0,21	0,27	0,3	0,34	0,36	0,33	0,34
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	5,17	5,224	2,57	2,749	1,42	1,481	1,14	1,183
Emissivity	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Compatibility	Compatible		Compatible/ Conditionally		Conditionally		Conditionally / Not compatible	

Window film





ARE YOU LOOKING FOR A HIGHLY HEAT PROTECTIVE, YET LIGHT FILM FOR ADVANCED GLAZINGS?

The ideal solution is the Skyfol P series. Thanks to the NSN (nickel-silver-nickel) metallization, these films reflect heat efficiently, while their absorption is very low, so they can be applied safely on any glazing window system. This is a primarily recommended film for residential buildings and exclusive offices.

 **Interior/exterior**
Interior

 **Thickness**
38 microns

 **Adhesive**
Pressure sensitive

 **Scratch resistant coating**
2nd generation

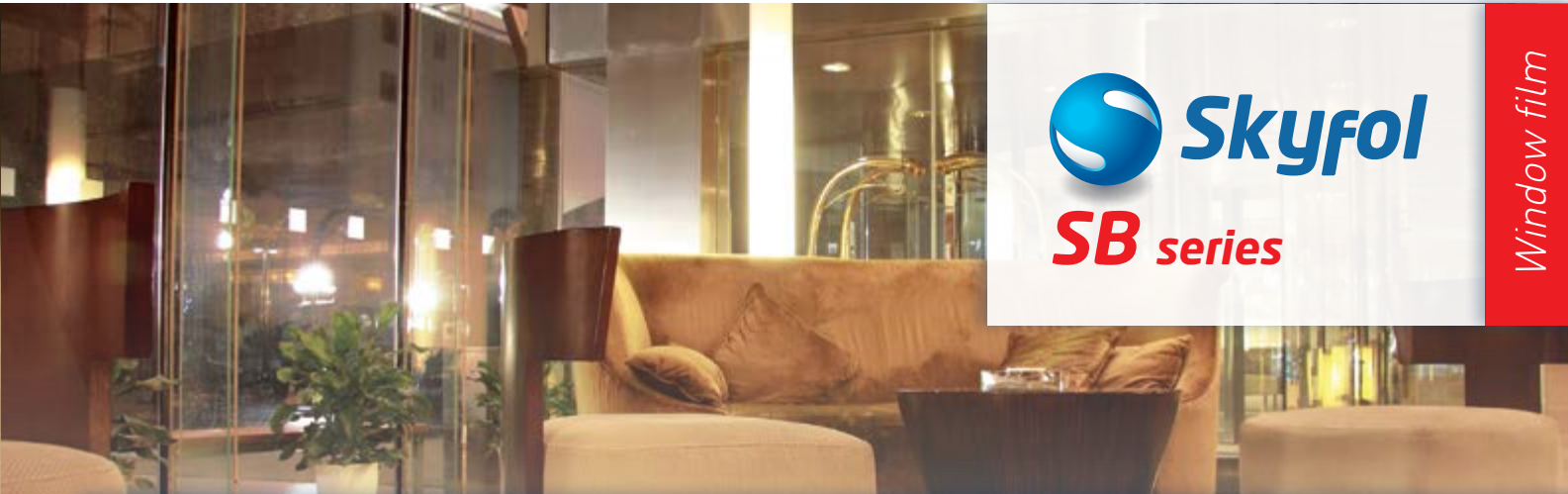
 **Sizes available**
1,52×30 m

 **Warranty**
10 years

	Single pane			Dual pane			Dual pane low-e			Triple pane low-e		
	P35	P50	P70	P35	P50	P70	P35	P50	P70	P35	P50	P70
Total Solar Energy Rejected	71%	61%	45%	62%	55%	43%	67%	58%	53%	68%	61%	57%
Visible Light Transmitted	32%	50%	68%	30%	46%	62%	29%	45%	58%	27%	42%	53%
Visible Light Reflected Exterior	48%	37%	20%	49%	42%	27%	44%	30%	23%	45%	33%	28%
Visible Light Reflected Interior	46%	35%	20%	51%	42%	26%	50%	32%	25%	51%	34%	27%
Total Solar Energy Reflected	42%	35%	23%	46%	46%	32%	49%	40%	38%	47%	40%	37%
Total Solar Energy Absorbed	39%	34%	31%	37%	26%	26%	36%	36%	30%	40%	38%	34%
Total Solar Energy Transmitted	19%	31%	46%	17%	28%	42%	15%	24%	32%	13%	22%	29%
SHGC	0,29	0,39	0,54	0,36	0,40	0,55	0,32	0,40	0,45	0,32	0,39	0,43
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	5,34	5,337	5,394	2,56	2,581	2,593	1,4	1,372	1,375	1,16	1,165	1,168
Emissivity	0,67	0,68	0,7	0,67	0,68	0,7	0,67	0,68	0,7	0,67	0,68	0,7
Compatibility	Compatible											

Window film





ARE YOU LOOKING FOR A WINDOW FILM WITH A BRONZE APPEARANCE?

The copper-containing Skyfol SB series provides a unique bronze look. Thanks to the metal content, these films can also be used as signal shading films to decrease electromagnetic interference. The series, similarly to neutral films, has a high level of heat absorption, hence it is not appropriate for triple-pane windows. These films are recommended if appearance is a more important factor than energy saving. The Skyfol SB series suits exterior wooden and stone surfaces.

 **Interior/exterior**
Interior

 **Thickness**
38 microns

 **Adhesive**
Pressure sensitive

 **Scratch resistant coating**
2nd generation

 **Sizes available**
1,52×30 m

 **Warranty**
10 years

	Single pane		Dual pane		Dual pane low-e		Triple pane low-e	
	SB20	SB35	SB20	SB35	SB20	SB35	SB20	SB35
Total Solar Energy Rejected	81%	70%	72%	62%	66%	58%	65%	60%
Visible Light Transmitted	17%	33%	16%	31%	15%	29%	14%	26%
Visible Light Reflected Exterior	40%	30%	42%	33%	37%	29%	40%	33%
Visible Light Reflected Interior	45%	29%	45%	30%	45%	30%	45%	31%
Total Solar Energy Reflected	53%	44%	53%	45%	52%	46%	46%	41%
Total Solar Energy Absorbed	38%	35%	38%	36%	41%	37%	47%	44%
Total Solar Energy Transmitted	9%	21%	9%	19%	8%	17%	7%	15%
SHGC	0,19	0,3	0,28	0,38	0,35	0,42	0,34	0,4
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	5,45	5,51	2,59	2,6	1,38	1,38	1,17	1,17
Emissivity	0,69	0,7	0,69	0,7	0,69	0,7	0,69	0,7
Compatibility	Conditionally compatible / Compatible		Conditionally compatible		Conditionally compatible / Not compatible		Conditionally compatible / Not compatible	

Window film





A neutral interior heat rejection series, mainly for those projects, when the facade cannot change its appearance. As with all neutral films, heat absorption must be taken into consideration when offering this series.

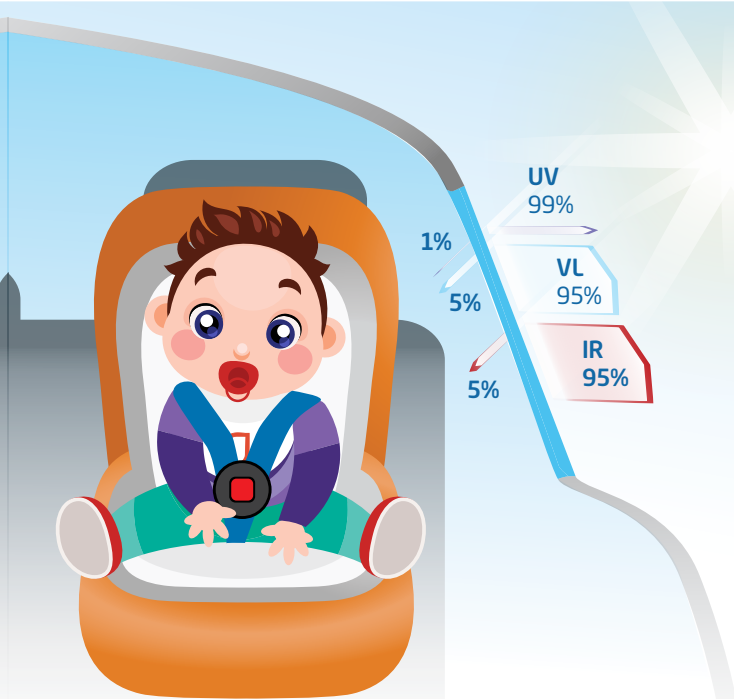




SKYFOL BABYGUARD IS THE UNIQUE PRODUCT OF ONE OF THE LEADING MANUFACTURERS OF THE WORLD, PRODUCED EXCLUSIVELY FOR SKYFOL. THIS SERIES IS REVOLUTIONARY: AN AUTOMOTIVE WINDOW FILM RANGE DEVELOPED SPECIFICALLY FOR YOUNG CHILDREN, BROUGHT TO EUROPE BY SKYFOL.

- **Interior/exterior**
Interior
- **Adhesive**
Pressure sensitive
- **Sizes available**
1,52×30 m
- **Thickness**
50 microns
- **Scratch resistant coating**
2nd generation
- **Warranty**
10 years

	Single pane		
	N20	N35	N50
Total Solar Energy Rejected	68%	66%	55%
Visible Light Transmitted	21%	34%	48%
Visible Light Reflected Exterior	32%	22%	16%
Visible Light Reflected Interior	31%	22%	16%
Total Solar Energy Reflected	29%	22%	17%
Total Solar Energy Absorbed	51%	49%	35%
Total Solar Energy Transmitted	20%	29%	48%
SHGC	0.3	0.34	0.44
UV Rejection	99%	99%	99%
U-Value	5.65	5.65	5.7
Compatibility	Compatible		



- The Skyfol BabyGuard series produced using nano technology contains a multitude of very thin layers, with the help of which it is capable of more than 95% IR filtering with any VLT.
- One of the most durable products in the industry that shows no sign of fading even after 10 years.
- It can be installed with ease and quickly.
- With its solar energy transmission of 5%, the sensation of heat will practically be eliminated in the car.
- The series has a unique UV protection of 99.9%, as it utilizes the UV filtering materials of so-called „museum films“, used for the protection of valuable objects from fading.
- Thanks to its thickness of 50 microns and to its safety adhesive, it keeps the window in one piece in case of breakage better than regular window films.
- Up to 95% insight protection with clear vision.



THE FUNCTIONS OF INTERIOR VS. EXTERIOR FILMS

Irradiated energy consists of three parts: reflected, transmitted and absorbed energy. Absorbed energy is radiated back into the environment by the structure of the window, and its amount plays a very important role in assessing the efficiency of the window film.

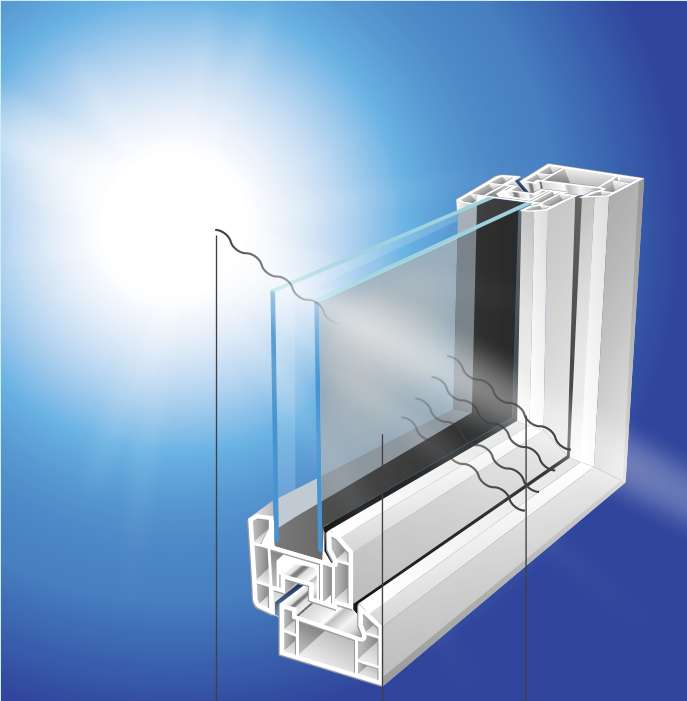
Glass manufacturers started to produce dual layer glasses already decades ago, in order to avoid losses because of air movement and heat conduction – the question of absorbed energy is a more serious question with this type of windows. Soon fine, soft metallic coatings also appeared on glasses, whose primary aim is to reduce heat loss in winter by reflecting heat radiated towards the outside back into the room (more information on pages 24-25). Nowadays, triple pane windows with metallic coating are spreading in an unstoppable way.

WHAT HAPPENS TO THE ABSORBED ENERGY?

As it has been mentioned, absorbed energy is radiated back into the environment by the glass structure. With single pane windows, it is a simple matter: in case of identical interior and exterior temperatures, energy is radiated towards the inside and outside 1:1.

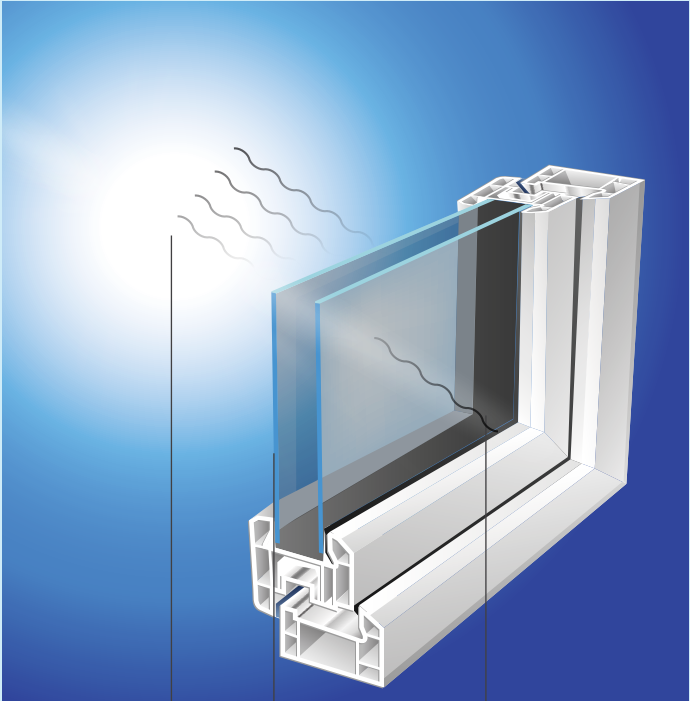
The situation is different with a dual pane low-e glass that is generally used nowadays (with a metallic coating to reduce winter heat loss). With these glasses, energy radiation is decreased by the low-e coating and by the air between the glass panes. As a result, the ratio of heat transfer towards the inside and outside is about 80% and 20% respectively. If an exterior window film is installed, the ratio is reversed, therefore the film is much more efficient.

INTERIOR WINDOW FILM



radiation of absorbed energy towards the outside **20%** film **80%** radiation of absorbed energy towards the inside

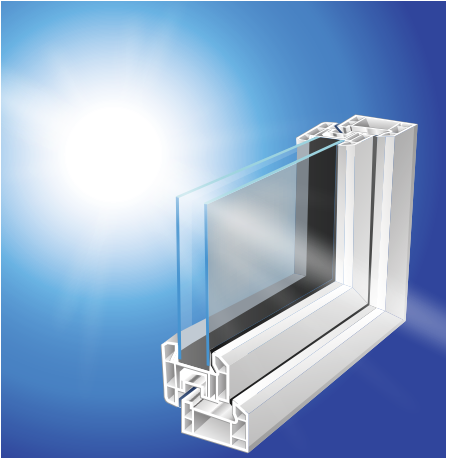
EXTERIOR WINDOW FILM



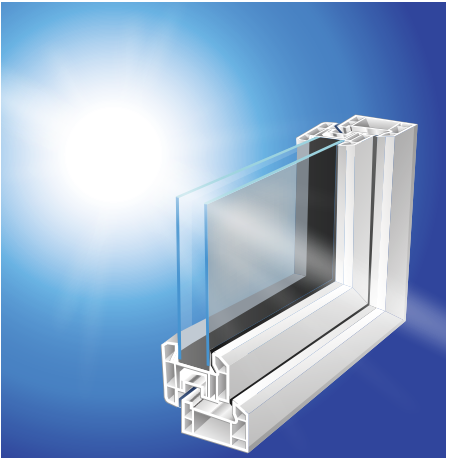
radiation of absorbed energy towards the outside **80%** film **20%** radiation of absorbed energy towards the inside

The window films industry has to follow these trends, therefore the appearance of interior and exterior films with low heat absorption. Let's take a look at a few examples to illustrate the differences.

SINGLE PANE VS. DUAL PANE LOW-E GLASS, INTERIOR SI35 FILM

	Skyfol SI35 reflective silver interior film on single pane window	Skyfol SI35 reflective silver interior film on dual pane low-e window
Total Solar Energy Rejected	68%	55%
		

SINGLE PANE VS. DUAL PANE LOW-E GLASS, INTERIOR N35 FILM

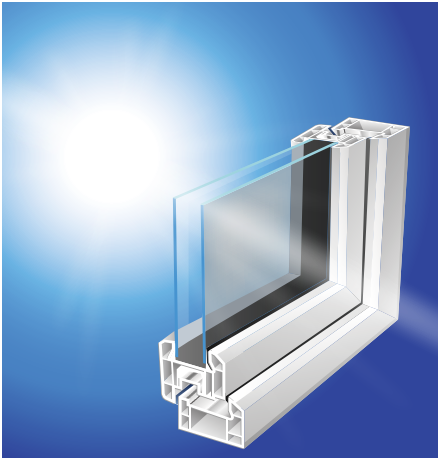
	Skyfol N35 neutral interior film on single pane window	Skyfol N35 neutral interior film on dual pane low-e window
Total Solar Energy Rejected	60%	38%
		

THE FUNCTIONS OF INTERIOR VS. EXTERIOR FILMS

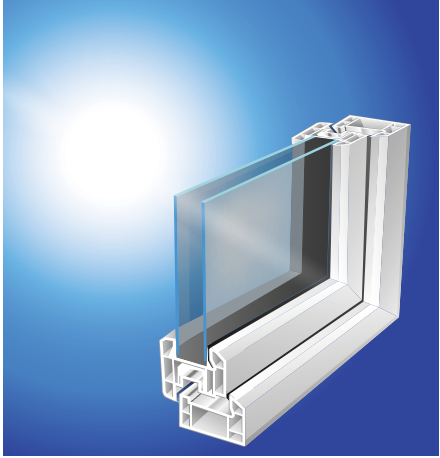
DUAL PANE LOW-E GLASS WITH P35, SI35 AND N35 FILMS

	Skyfol P35 spectrally selective interior film on dual pane low-e window	Skyfol SI35 reflective silver interior film on dual pane low-e window	Skyfol N35 neutral interior film on dual pane low-e window
Total Solar Energy Rejected	67%	55%	38%
			

DUAL PANE LOW-E GLASS WITH INTERIOR VS. EXTERIOR SILVER 35 FILMS

	Skyfol SI35 reflective silver interior film on dual pane low-e window	Skyfol XT33S reflective silver exterior film on dual pane low-e window
Total Solar Energy Rejected	55%	78%
		

DUAL PANE LOW-E GLASS WITH INTERIOR NEUTRAL VS. EXTERIOR NEUTRAL 35 FILMS

	Skyfol N35 neutral interior film on dual pane low-e window	Skyfol XT40N neutral exterior film on dual pane low-e window
Total Solar Energy Rejected	38%	74%
		

It can be clearly seen from the above that there might be considerable differences in the technical parameters of certain window films when applied on a developed glazing system. Unfortunately, a lot of distributors and installers offer window films based on data measured on single pane glasses, which is a serious professional mistake. There are, naturally, other aspects as well which must be taken into consideration, e.g. if the client asks for low reflectivity or low visible light filtering. As everything, exterior and interior window films have their advantages and drawbacks as well.

	Interior	Exterior
Durability	15-20 years	5-7 years
Heat protection	performance is considerably worse on dual pane insulating windows	performance increases on dual pane insulating windows
Installation period	can be installed any time	only if the weather permits
Installation quality	installation is cleaner	dust-free installation is not possible
Edge sealing	only with high humidity, films with silver or copper	mandatory with all film types

Window film





DO YOU SEEK A VERY HIGH LEVEL OF HEAT PROTECTION? IS THE RATIO OF THE GLASS SURFACE CONSIDERABLE COMPARED TO THE FLOOR AREA?

The Skyfol XT S exterior reflective silver series is capable of the strongest energy protection. These films can be installed safely on any window system – the more advanced the glazing, the more efficient the film. In case of public use, these films are primarily recommended for shopping centres, factories and offices that are exposed to considerable heat. In case of private buildings, these films provide an ideal solution for the heat protection of conservatories.

Window film





IS HEAT FLOWING IN THROUGH THE POLYCARBONATE SURFACE? IS IT DIFFICULT TO MAINTAIN THE APPROPRIATE TEMPERATURE IN THE HALL OR IN THE CONSERVATORY?

Skyfol XT 16SPC was developed for companies and private people with such problems. It is a heat protection window film applicable on polycarbonate surfaces with an air permeable adhesive. The film is easier to remove within the warranty period. Skyfol XT 16SPC filters nearly 90% of the incoming energy, therefore the efficiency of cooling increases and operational costs are considerably decreased. This film is recommended for polycarbonate skylights, but it can also be applied on any polycarbonate or plexiglass surface.

 **Interior/exterior**
Kültéri

 **Adhesive**
Pressure sensitive

 **Sizes available**
0,91×30 m, 1,22×30 m
1,52×30 m, 1,83×30 m

 **Thickness**
50 microns

 **Scratch resistant coating**
2nd generation

 **Warranty**
7 years on vertical,
4 years on sloped glass

	Single pane			Dual pane			Dual pane low-e			Triple pane low-e		
	XT17S	XT33S	XT48S	XT17S	XT33S	XT48S	XT17S	XT33S	XT48S	XT17S	XT33S	XT48S
Total Solar Energy Rejected	81%	66%	54%	85%	72%	60%	88%	78%	69%	89%	79%	71%
Visible Light Transmitted	17%	33%	48%	16%	31%	45%	15%	29%	43%	14%	27%	39%
Visible Light Reflected Exterior	62%	42%	27%	62%	43%	29%	62%	42%	28%	62%	43%	30%
Visible Light Reflected Interior	62%	42%	28%	62%	44%	32%	55%	39%	28%	55%	41%	31%
Total Solar Energy Reflected	63%	45%	30%	64%	46%	32%	64%	47%	34%	64%	47%	34%
Total Solar Energy Absorbed	25%	30%	33%	25%	32%	35%	27%	35%	40%	28%	38%	43%
Total Solar Energy Transmitted	12%	25%	37%	11%	22%	34%	9%	18%	25%	8%	16%	22%
SHGC	0,19	0,34	0,46	0,16	0,29	0,40	0,12	0,22	0,31	0,11	0,21	0,29
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	5,91	5,91	5,91	2,73	2,71	2,72	1,42	1,42	1,42	1,20	1,20	1,20
Emissivity	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Compatibility	Compatible											

 **Interior/exterior**
Exterior

 **Adhesive**
Pressure sensitive

 **Sizes available**
1,52×30 m

 **Thickness**
50 microns

 **Scratch resistant coating**
2nd generation

 **Warranty**
4 years on vertical,
3 years on sloped plexiglass

	Single pane PC		Dual pane PC	
	XT16SPC	XT15SLPC	XT16SPC	XT15SLPC
Total Solar Energy Rejected	81%	83%	85%	84%
Visible Light Transmitted	16%	14%	15%	16%
Visible Light Reflected Exterior	65%	66%	65%	62%
Visible Light Reflected Interior	64%	65%	64%	62%
Total Solar Energy Reflected	63%	66%	64%	63%
Total Solar Energy Absorbed	23%	24%	23%	25%
Total Solar Energy Transmitted	12%	10%	11%	12%
SHGC	0,19	0,17	0,15	0,16
UV Rejection	99%	99%	99%	99%
U-Value	5,9	2,71	2,73	2,71
Emissivity	0,84	0,84	0,84	0,84
Compatibility	Compatible			

Window film





WOULD YOU LIKE TO HAVE A LOWER LEVEL OF INTERIOR REFLECTIVITY?
ARE YOU LOOKING FOR A COST-EFFECTIVE NEUTRAL SOLUTION?

Skyfol XT DR exterior dual reflective window films have a highly reflective outer side, while the inner side is neutrally metallized, therefore it has a lower reflective effect. The lighter film of the Skyfol XT DR series provides a neutral appearance and a cost-effective, neutral heat protective solution. In case of public buildings, these films are recommended if the interior reflectivity has to be reduced compared to silver films, but if a high level of heat protection is necessary at the same time. The films of this series are generally used for heat protection in the case of residential buildings.

- 

Interior/exterior

Exterior
- 

Adhesive

Pressure sensitive
- 

Sizes available

1,52×30 m
- 

Thickness

50 microns
- 

Scratch resistant coating

2nd generation
- 

Warranty

5 years on vertical,
2.5 years on sloped glass

	Single pane			Dual pane			Dual pane low-e			Triple pane low-e		
	XT08DR	XT19DR	XT36DR	XT08DR	XT19DR	XT36DR	XT08DR	XT19DR	XT36DR	XT08DR	XT19DR	XT36DR
Total Solar Energy Rejected	83%	69%	57%	87%	77%	65%	91%	84%	74%	92%	85%	76%
Visible Light Transmitted	8%	19%	36%	8%	18%	32%	7%	17%	31%	7%	15%	28%
Visible Light Reflected Exterior	55%	34%	22%	57%	35%	23%	57%	34%	23%	57%	35%	24%
Visible Light Reflected Interior	17%	14%	14%	24%	21%	21%	21%	17%	17%	25%	22%	22%
Total Solar Energy Reflected	58%	38%	26%	58%	38%	27%	58%	39%	29%	58%	39%	29%
Total Solar Energy Absorbed	35%	45%	44%	35%	46%	47%	37%	50%	51%	38%	51%	54%
Total Solar Energy Transmitted	7%	18%	31%	7%	15%	26%	5%	11%	20%	4%	10%	17%
SHGC	0,17	0,31	0,43	0,13	0,24	0,36	0,09	0,16	0,26	0,08	0,15	0,24
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	5,91	5,91	5,91	2,71	2,72	2,72	1,68	1,42	1,42	1,2	1,20	1,20
Emissivity	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Compatibility	Compatible			Compatible			Conditionally compatible / Compatible			Conditionally compatible / Compatible		

Window film





WOULD YOU LIKE TO HAVE AN INVISIBLE FILM WITH STRONG HEAT PROTECTION CHARACTERISTICS?

The Skyfol XT CV series is the result of the latest developments – almost completely invisible, yet highly heat protective films. Skyfol XT CV films are spectrally selective that transmit visible light but efficiently filters infrared radiation. Another advantage of the Skyfol XT CV series as compared to other products is that these films reach the above results with a low level of heat absorption, which means that they can be installed safely on any window system. The SkyFol XT CV series is recommended primarily for shop windows, exclusive offices, high-end residential buildings and for applications where strong heat protection, a high level of visible light transmission and low reflectivity are needed at the same time.

- 

Interior/exterior

Exterior
- 

Adhesive

Pressure sensitive
- 

Sizes available

1,52×30 m
- 

Thickness

50 microns
- 

Scratch resistant coating

2nd generation
- 

Warranty

7 years on vertical,
3 years on sloped glass

	Single pane			Dual pane			Dual pane low-e			Triple pane low-e		
	XT47CV	XT67CV	XT80CV	XT47CV	XT67CV	XT80CV	XT47CV	XT67CV	XT80CV	XT47CV	XT67CV	XT80CV
Total Solar Energy Rejected	61%	53%	44%	67%	60%	54%	74%	66%	61%	76%	69%	64%
Visible Light Transmitted	47%	67%	78%	43%	62%	71%	41%	59%	69%	37%	54%	63%
Visible Light Reflected Exterior	17%	18%	8%	19%	22%	14%	18%	20%	12%	20%	24%	16%
Visible Light Reflected Interior	12%	17%	8%	18%	22%	15%	16%	19%	13%	21%	24%	18%
Total Solar Energy Reflected	30%	30%	6%	30%	31%	7%	31%	31%	7%	31%	33%	9%
Total Solar Energy Absorbed	43%	33%	50%	45%	35%	53%	49%	40%	58%	51%	42%	59%
Total Solar Energy Transmitted	27%	37%	44%	25%	34%	40%	20%	29%	35%	18%	25%	32%
SHGC	0,39	0,47	0,56	0,33	0,40	0,46	0,26	0,34	0,39	0,24	0,31	0,36
UV szűrés	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
U-érték	5,92	5,92	5,91	2,72	2,72	2,72	1,42	1,42	1,42	1,20	1,20	1,2
Belső emisszivitás	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Kompatibilitás	Compatible			Compatible			Compatible			Compatible		



A neutral exterior heat rejection series, mainly for those projects, when the facade cannot change its appearance. As with all neutral films, heat absorption must be taken into consideration when offering this series.



Interior/exterior
Exterior



Adhesive
Pressure sensitive



Sizes available
1,22x30 m, 1,52x30 m



Thickness
75 microns



Scratch resistant coating
2nd generation



Warranty
7 years on vertical,
4 years on sloped glass

Single pane

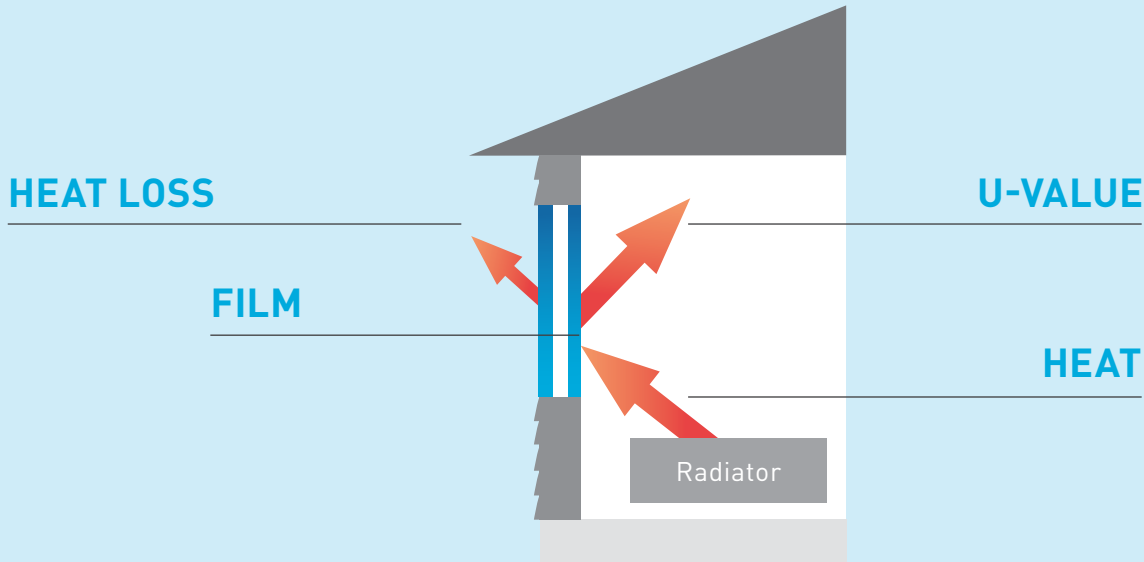
	XTN20	XTN40
Total Solar Energy Rejected	70%	59%
Visible Light Transmitted	20%	40%
Visible Light Reflected Exterior	31%	16%
Visible Light Reflected Interior	18%	16%
Total Solar Energy Reflected	24%	19%
Total Solar Energy Absorbed	57%	48%
Total Solar Energy Transmitted	19%	33%
SHGC	0.2	0.4
UV Rejection	99%	99%
U-Value	5.8	5.8



The low emission Skyfol E series was designed to increase interior heat reflectivity during wintertime, in order to block as much heat from leaving the room through the windows as possible. At the same time, the Skyfol E series also helps reject incoming heat in summer, this way reducing air conditioning costs.

ABOUT THE U-VALUE

The U-Value is a feature of the glass that shows the total thermal energy loss through the glazing structure, its unit is W/m^2C° . The temperature in the unit represents simply the difference of the temperatures indoors and outdoors. Heat conductivity and heat radiation are the most important factors of wintertime heat loss. Most of the heat, 60% leaves the interior through heat conductivity, which can be lowered by applying insulating layers, e.g. glass panes and air layers. Window films do not make the conductive features of the glazing system better, so they do not affect this part of heat loss. About 40% of heat leaves the room through radiation, which means that long wavelength radiation exits from the inside through the glass. Metallic coatings and special, metallized window films reflect this radiation back towards the interior, therefore significantly lowering energy loss.



- 

Low emission – less energy in winter
A special metallic coating helps reduce energy radiation towards the outside, thus lowering heating costs.
- 

High energy rejection in summer
The film reduces summertime energy radiation, which means saving a lot of cooling costs. The film helps increase comfort by levelling out temperature differences.
- 

High light transmission
Skyfol E70 is the lightest insulating window film, which helps retain natural light and reduce the necessity of artificial one.
- 

Low reflectivity
Because of its high light transmission, the film has low reflectivity, which helps maintain visibility through the glass.
- 

Low heat absorption
Thanks to its special metallization, heat absorption is low, which means efficient energy rejection and compatibility with any glazing system.
- 

Efficient and durable UV filtering
The film blocks 99% of harmful UV radiation, thus protects your health and your valuables from fading. Inorganic UV absorbing particles will block radiation for long years without any decline in efficiency.

	Single pane		U-Value	
	E50	E70	E50	E70
Total Solar Energy Rejected	58%	53%	Single pane	
Visible Light Transmitted	51%	68%	4,3	3,4
Visible Light Reflected	24%	13%	Dual pane	
Total Solar Energy Transmitted	35%	42%	2,3	1,9
Total Solar Energy Absorbed	37%	33%	Dual pane low-e	
Total Solar Energy Reflected	28%	25%	1,2	1,0
UV Rejection	99%	99%	Triple pane low-e glass	
Emissivity	0,37	0,09	1,1	0,9

Window film



Skyfol
Skyfol safety



The primary purpose of these films is to hold the window together in case of accidental breakage, therefore preventing the scattering of shards, which could cause serious injuries. Beside homes, where we have to protect our children and loved ones, there are certain legal regulations for making public buildings protected against shards of glass.



Thicker film

Safety films can be 10 times as thick as regular window films



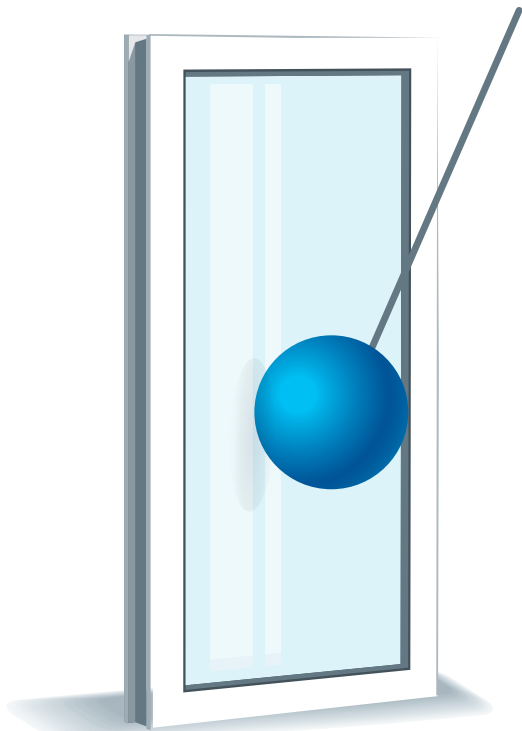
Thicker adhesive

The adhesive of safety films is twice as thick as the one with normal window films



Crystal clear

Clear film without any distortion in visibility



EN12600

The EN12600 breakage test gives an objective evaluation about the performance of a glass and window film combination, by simulating someone attacking the window.

A 50-kg pendulum is dropped on a glass panel of 876×1938 mm. Based on the drop height and breakage pattern, the following categories are classified:

Category	Breakage pattern	Drop height
1B1	laminated glass pattern, no shards of glass are present	190, 450 and 1200 mm
2B2	laminated glass pattern, no shards of glass are present	190 and 450 mm
3B3	laminated glass pattern, no shards of glass are present	190 mm

Category	On glass of 3 and 4 mm thickness	On glass of 6 mm thickness
1B1	Skyfol S7, Skyfol S7 ECO, Skyfol S11, Skyfol S12	Skyfol S4, Skyfol S7, Skyfol S7 ECO, Skyfol S11, Skyfol S12
2B2	Skyfol S4, Skyfol S4 ECO	-

Window film



Skyfol
Skyfol anti-burglary



Skyfol safety films make it slower to break through the glass, in thicker versions practically impossible. The strength of Skyfol safety films originate not only from their thickness, but also from the special, industrial adhesive that fixes them on the glass surface.



American and Israeli quality

Safety films from the Far East are cheaper, but not close the quality of our products



UV protection

The film protects your health and valuables



Anti-scratch

An industrial anti-scratch layer protects the film when cleaning



EN356

The EN356 breakage test gives an objective evaluation about the performance of a glass and window film combination, by simulating someone throwing an object through the window.

A 90×110 cm glass panel is fixed into a frame, and a 4.1 kg steel ball is dropped on it. The results vary as below:

Category	Drop count	Drop height
P1A	3x	1,5 meters
P2A	3x	3 meters
P3A	3x	6 meters
P4A	3x	9 meters
P5A	9x	9 meters

Category	Normal, non-laminated glazing system
P1A	Skyfol S7 ECO
P2A	Skyfol S12

Window film





WOULD YOU LIKE TO PROTECT YOUR FAMILY FROM SHARDS OF GLASS?

Do you want to replace security bars with an invisible Skyfol safety film? Do you need to make the windows shard-free? You can feel safe with and trust the performance of the clear Skyfol S series. The series, which is made in the USA, is manufactured from a material thicker than traditional window films and also with a security adhesive, therefore the window is held together in case of breakage. The S series is recommended everywhere, if security is a priority.

Window film





WOULD YOU LIKE TO PROTECT YOUR GLASS FROM VANDALISM?

Intentional vandalism to the glass by paint, acids or scratching is especially an issue with large and expensive shop windows, but the problem is present with many different surfaces, e.g. the glass walls of bus stops. If the surface was unprotected, there is no other solution than to replace it. Skyfol Anti Graffiti provides an ideal answer to this problem – it protects the glass surface, while its removable adhesive makes it possible for a professional to replace the film quickly and cost-efficiently.

 Interior/exterior	 Adhesive					
	Double security sensitive					
 Thickness	 Scratch resistant coating					
	2 nd generation					
 Warranty	 Sizes available					
	0,91×30 m, 1,22×30m, 1,52×30 m, 1,82×30 m					

Single pane						
	S2	S4	S4 ECO	S7	S7 ECO	S12
Total Solar Energy Rejected	19%	20%	13%	20%	15%	18%
Visible Light Transmitted	88%	86%	90%	85%	91%	87%
Visible Light Reflected Exterior	10%	10%	9%	10%	8%	11%
Total Solar Energy Reflected	8%	8%	6%	10%	7%	10%
Total Solar Energy Absorbed	17%	18%	11%	19%	12%	12%
Total Solar Energy Transmitted	75%	74%	83%	71%	81%	78%
UV Rejection	99%	99%	99%	99%	99%	99%
U-Value	5,96	5,96	5,96	5,96	5,96	6,07
Tensile strength [PSI N/mm ²]	34100 235	34900 241	34900 241	32260 222	32260 222	28500 197
Break strength [lbs/inch N/mm]	68 12	136 24	136 24	216 38	216 38	336 59
Puncture strength [lbs N]	54 240	93 414	93 414	149 663	149 663	-

 Interior and exterior	 Adhesive		
	Removable		
 Thickness	 Scratch resistant coating		
	2 nd generation		
 Warranty	 Sizes available		
	1,52×30 m		

Single pane			
	S4AG	S6AG	S6AGPC
Total Solar Energy Rejected	16%	16%	18%
Visible Light Transmitted	90%	90%	88%
Visible Light Reflected Interior	11%	12%	10%
Visible Light Reflected Exterior	11%	12%	10%
Total Solar Energy Reflected	10%	11%	9%
Total Solar Energy Absorbed	8%	7%	11%
Total Solar Energy Transmitted	82%	82%	80%
UV Rejection	92%	97%	99%
U-Value	5,91	6,05	6,05

Window film



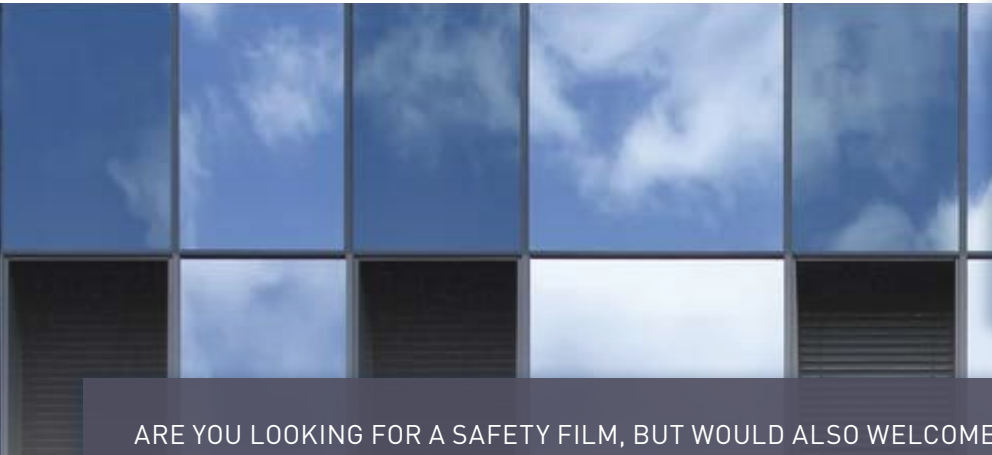


WOULD YOU LIKE TO HAVE MAXIMAL HEAT PROTECTION?

In many cases it is not enough to make a glass shard-free from one side, as with dual pane windows, the danger of injuries is present on both sides. Skyfol XT exterior films were designed for such instances – these materials are made with a special scratch-resistant coating to provide exterior durability.

Window film





ARE YOU LOOKING FOR A SAFETY FILM, BUT WOULD ALSO WELCOME A HEAT PROTECTIVE FUNCTION?

Would you protect yourself from shards of glass and save money on cooling bills at the same time? The Skyfol SSI series is a combination of thick safety films and heat protective silver reflective films. These products both provide protection from radiant heat and hold the glass surface together in case of breakage, so that shards cannot scatter around. In case of residential buildings, we always recommend these films, since they fulfil a dual function. For business customers, the lower floor is often filmed with the Skyfol SSI series to protect the street-level windows and their customers, while the SI series is applied on the upper floors.

- Interior/exterior

Exterior
- Adhesive

Double security adhesive
- Sizes available

1,52x30 m
- Thickness

100 microns - XT4M
175 microns - XT7M
- Certification

EN12600
- Warranty

5 years

	Single pane	
	XT4M	XT7M
Total Solar Energy Rejected	17%	17%
Visible Light Transmitted	88%	88%
Visible Light Reflected Exterior	10%	11%
Total Solar Energy Reflected	10%	9%
Total Solar Energy Absorbed	10%	11%
Total Solar Energy Transmitted	80%	80%
UV Rejection	99%	99%
U-Value	5,91	5,91
Tensile strength (PSI N/mm²)	28500 197	26000 179
Break strength (lbs/inch N/mm)	112 20	180 32

- Interior/exterior

Interior
- Adhesive

Double security adhesive
- Sizes available

1,52x30m, 1,82x30m
- Thickness

100 microns
- Certification

EN12600
- Warranty

10 years

	Single pane			Dual pane			Dual pane low-e			Triple pane low-e		
	SSI420	SSI430	SSI820	SSI420	SSI430	SSI820	SSI420	SSI430	SSI820	SSI420	SSI430	SSI820
Total Solar Energy Rejected	79%	68%	79%	69%	61%	69%	64%	55%	64%	66%	59%	66%
Visible Light Transmitted	15%	28%	15%	17%	27%	17%	17%	27%	17%	16%	25%	16%
Visible Light Reflected Exterior	60%	44%	60%	59%	48%	59%	59%	48%	59%	58%	49%	58%
Visible Light Reflected Interior	59%	40%	59%	59%	47%	59%	59%	47%	59%	59%	47%	59%
Total Solar Energy Reflected	55%	43%	55%	52%	44%	52%	52%	44%	52%	47%	40%	47%
Total Solar Energy Absorbed	33%	35%	33%	36%	36%	36%	36%	36%	36%	43%	43%	43%
Total Solar Energy Transmitted	12%	22%	12%	12%	19%	12%	12%	19%	12%	11%	17%	11%
SHGC	0,21	0,34	0,21	0,31	0,39	0,31	0,36	0,46	0,36	0,34	0,41	0,34
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	5,34	5,394	5,34	2,62	2,633	2,62	1,43	1,439	1,43	1,15	1,156	1,15
Emissivity	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Compatibility	Compatible			Compatible			Compatible			Conditionally		
SSI420							SSI820					
Tensile strength (PSI N/mm²)	33600 232						30400 210					
Break strength (lbs/inch N/mm)	134 23						265 46					
Puncture strength (lbs N)	103 458						173 770					

Window film





ARE YOU LOOKING FOR A SAFETY FILM WITH A LIGHT, SMOKE-LIKE TINT?

The films of the Skyfol SDR series slightly darken the glass, while they also guarantee your safety in case of window breakage. SDR 650 is often chosen as a safety film for shop windows, with a very light tint. The Skyfol SDR series offers films that are three times as thick as traditional heat protection films, and are also manufactured with a security adhesive. These films are recommended primarily for windows where a combined safety and heat protection film is practical, but where the reflectivity has to remain minimal.

- 

Interior/exterior
Interior
- 

Adhesive
Double security adhesive
- 

Sizes available
1,52x30 m
- 

Thickness
150 microns
- 

Certification
EN12600
- 

Warranty
10 years

	Single pane		Dual pane		Dual pane low-e		Triple pane low-e	
	SDR635	SDR650	SDR635	SDR650	SDR635	SDR650	SDR635	SDR650
Total Solar Energy Rejected	56%	47%	46%	42%	47%	45%	51%	50%
Visible Light Transmitted	40%	52%	36%	48%	34%	45%	31%	41%
Visible Light Reflected Exterior	18%	17%	24%	23%	20%	20%	25%	25%
Visible Light Reflected Interior	16%	17%	18%	19%	17%	17%	18%	19%
Total Solar Energy Reflected	19%	19%	22%	22%	34%	34%	32%	32%
Total Solar Energy Absorbed	52%	40%	53%	43%	44%	36%	48%	41%
Total Solar Energy Transmitted	29%	42%	25%	35%	21%	30%	18%	26%
SHGC	0,44	0,53	0,54	0,58	0,53	0,55	0,49	0,5
UV Rejection	99%	99%	99%	99%	99%	99%	99%	99%
U-Value	6,08	6,08	2.78	2,78	1,43	1,43	1,2	1,2
Emissivity	0,9	0,9	0,9	0,9	0,9	0,9	0,9	0,9
Compatibility	Conditionally		Conditionally		Conditionally		Conditionally	
	SDR635				SDR650			
Tensile strength (PSI N/mm²)	33600 232				33600 232			
Break strength (lbs/inch N/mm)	134 23				134 23			
Puncture strength (lbs N)	103 458				103 458			





SKYFOL
DECOUR M2

A matt white window film, which is one of the most popular type in SkyFol's product range. It is a durable and aesthetic solution with a completely homogeneous surface.

- 

Material
PET
- 

Thickness
50 microns
- 

Width
1,52 m
- 

Warranty
10 years





SKYFOL
DECOUR M5

A matt white security window film, which fulfils a privacy protection function, while also holds the window together in case of breakage. It is an excellent solution for families with young children and for public institutions.

- 

Material
PET
- 

Thickness
125 microns
- 

Width
1,52 m
- 

Warranty
10 years





SKYFOL
DECOUR MS2

A matt silver heat protection film. It completely blocks visibility, while its aluminium layer efficiently filters heat. The film has a reflective silver appearance towards the outside and a matt silver one towards the inside

- 

Material
PET
- 

Thickness
50 microns
- 

Width
1,52 m
- 

Warranty
10 years

SKYFOL
DECOUR
FSQ 45/10



A privacy protection film with a frosted effect. The squares that make up the pattern are 45 mm, while the transparent dividing lines 10 mm wide. This film provides a modern appearance in offices, homes and shops, too.

- Material**
PET
- Thickness**
50 microns
- Width**
1,52 m
- Warranty**
10 years

SKYFOL
DECOUR
FST 30/3/3



A privacy protection film with a pattern made up of a frosted stripe of 30 mm, followed by a transparent dividing stripe of 3 mm and a second frosted stripe of 3 mm. The stripes run along the longitudinal side of the roll.

- Material**
PET
- Thickness**
50 microns
- Width**
1,52 m
- Warranty**
10 years

SKYFOL
DECOUR
FST 13/6



A privacy protection film with frosted stripes of 13 mm and transparent dividing stripes of 6 mm. The stripes run along the longitudinal side of the roll.

- Material**
PET
- Thickness**
125 microns
- Width**
1,52 m
- Warranty**
10 years

SKYFOL
DECOUR
MAZE



A white privacy protection window film with a unique pattern and a very modern appearance.

- Material**
PET
- Thickness**
125 microns
- Width**
1,27 m
- Warranty**
10 years

SKYFOL
DECOUR
FST 45/10



A privacy protection film with frosted stripes of 45 mm and transparent dividing stripes of 10 mm. The stripes run along the longitudinal side of the roll.

- Material**
PET
- Thickness**
50 microns
- Width**
1,52 m
- Warranty**
10 years

SKYFOL
DECOUR
WSQ 35/7



A privacy protection window film with white squares of a width of 35 mm. The transparent dividing lines 7 mm wide. This film provides a modern appearance in offices, homes and shops, too.

- Material**
PET
- Thickness**
50 microns
- Width**
1,52 m
- Warranty**
10 years

SKYFOL
DECOUR
WMARBLE



A privacy protection window film with a unique rice-paper effect and with a very modern appearance.

- Material**
PET
- Thickness**
50 microns
- Width**
1,27 m
- Warranty**
10 years

SKYFOL
DECOUR
PTF

An economical, fully frosted window film. It is a durable exterior solution for privacy protection with excellent value for money. Also available with air channelled adhesive.

- Material**
PVC
- Thickness**
50 microns
- Width**
1,22 m; 1,52 m
- Warranty**
3 years

SKYFOL
DECOUR
WHITEOUT



A white, completely opaque privacy protection window film. Its application does not involve any heat absorption issues.

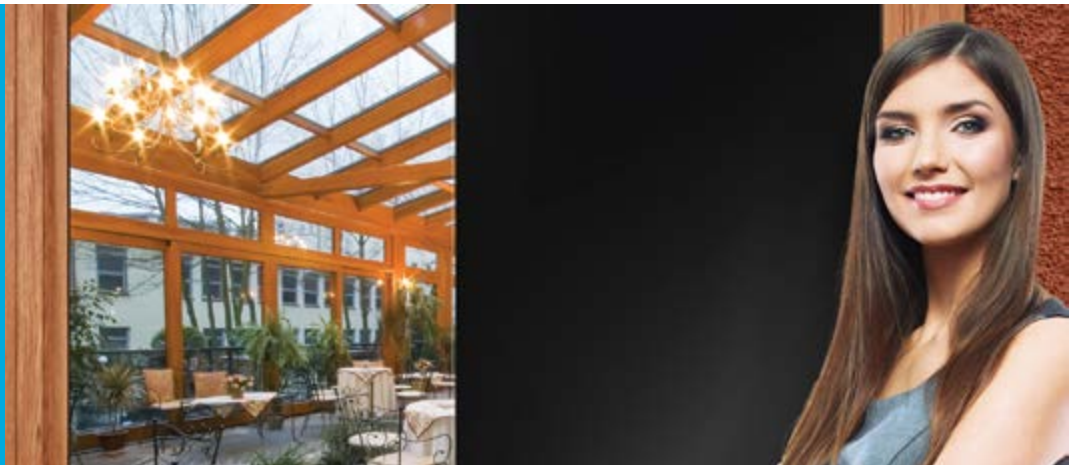
- Material**
PET
- Thickness**
125 microns
- Width**
1,22 m
- Warranty**
10 years

SKYFOL
DECOUR
PTA

An economical, fully etched window film. The addition of fine metallic fibres creates the etched effect. Also available with air channelled adhesive.

- Material**
PVC
- Thickness**
125 microns
- Width**
1,22 m; 1,52 m
- Warranty**
3 years

SKYFOL
DECOUR
BLKOUT



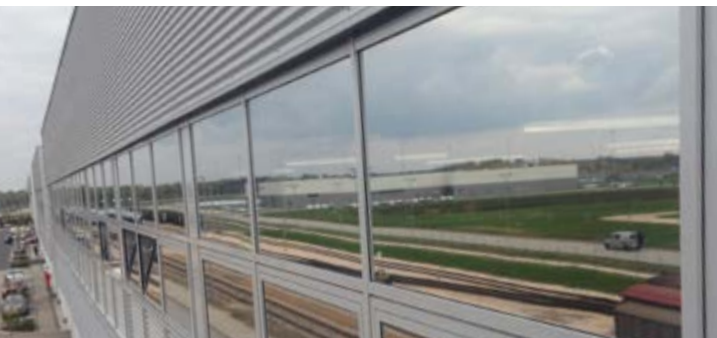
A black, completely opaque privacy protection window film, which provides excellent light filtering. The high level of heat absorption of the material has to be taken into account, therefore this film is recommended for dividing the space indoors only.

- Material**
PET
- Thickness**
50 microns
- Width**
1,52 m
- Warranty**
10 years

PRIVACY AND HEAT PROTECTION
IN THE CHANGING ROOMS

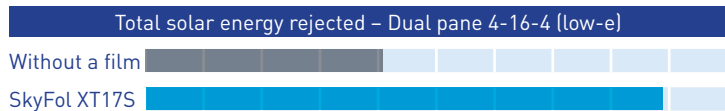
Győr, Hungary

XT17S



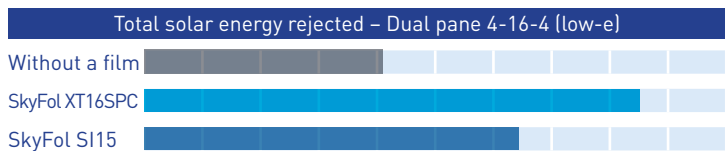
INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
30.738 kWh/year	200 nm	SkyFol XT17S

Installer Zámbófia Kft.	Website www.zambofia.hu	Client Factory
Glazing system 4 – 16 – 4 (low-e)	Installation 2 working days	Year of installation 2015



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
13.638 kWh / year	50 nm	SkyFol XT16SPC SkyFol SI15

Installer Nortek Kft.	Website www.nortek.hu	Client Car service centre
Glazing system 4-16-4 (low-e) polycarbonate	Installation 2 working days	Year of installation 2014



SURFACE PROTECTION
THAT PAYS OFF

Hatvan, Hungary

XT16SPC, SI15



COOL SHOPPING

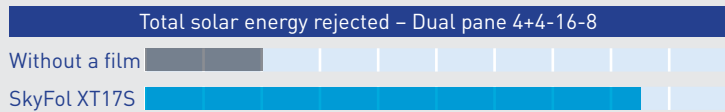
Miskolc, Hungary

XT17S



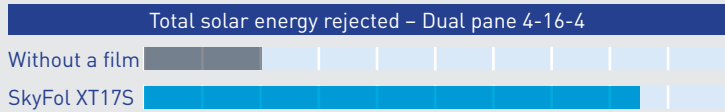
INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
244.909 kWh / year	647 nm	SkyFol XT17S

Installer Nortek Kft.	Website www.nortek.hu	Client Shopping centre
Glazing system 4+4-16-8	Installation 18 working days	Year of installation 2014



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
186.488 kWh / year	465 nm	SkyFol XT17S

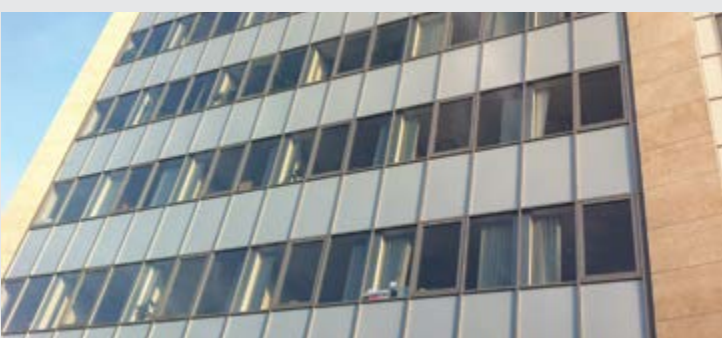
Installer Nortek Kft.	Website www.nortek.hu	Client Office building
Glazing system 4-16-4	Installation 10 working days	Year of installation 2014



ENVIRONMENT-FRIENDLY OFFICES

Budapest, Hungary

XT17S



HOT STAIRWAY COOLED DOWN

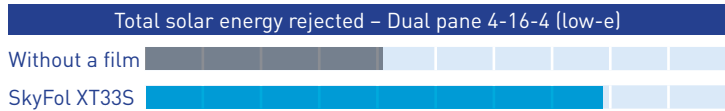
Brno, Czechia

XT33S



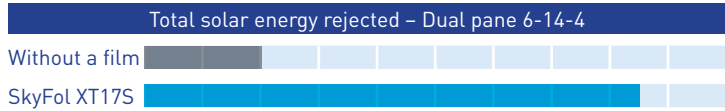
INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
19. 120 kWh/year	200 nm	SkyFol XT33S

Installer Zámbófia Kft.	Website www.zambofia.hu	Client Stairway
Glazing system 4 – 16 – 4 (low-e)	Installation 1 working day	Year of installation 2014



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
50.024 kWh / year	130 nm	SkyFol XT17S

Installer Nortek Kft.	Website www.nortek.hu	Client Factory
Glazing system 6-14-4	Installation 4 working days	Year of installation 2014



UV PROTECTION IN THE FACTORY

Veresegyház, Hungary

XT17S



IN SAFETY AND SECURITY

Budapest, Hungary

S7, S12



SAFETY LEVEL
EN356 P2A
EN12600 1B1

SURFACE AREA
244 nm

FILM
SkyFol
S7, S12

Installer
Nortek Kft.

Website
www.nortek.hu

Client
National monu-
ment building

Glazing system
4-16-4+8

Installation
2 working days

Year of installation
2014

Visible light transmission – Dual pane 4-16-4+8



**INCOMING
ENERGY
REDUCED BY**
3.647.616
kWh / year

SURFACE AREA
5900 nm

FILM
SkyFol
XT16SPC

Installer
Nortek Kft.

Website
www.nortek.hu

Client
Factory

Glazing system
Polycarbonate skylights

Installation
80 working days

Year of installation
2014-2015

Total solar energy rejected – Dual pane 4+4-16-8



SURFACE PROTECTION

THAT PAYS OFF

Hatvan, Hungary

XT16SPC



IT'S TOO HOT TO EAT

Budapest, Hungary

XT17S



**INCOMING
ENERGY
REDUCED BY**
339.706
kWh / year

SURFACE AREA
565 nm

FILM
SkyFol XT17S

Installer
Nortek Kft.

Website
www.nortek.hu

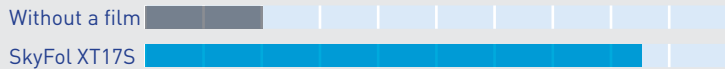
Client
Shopping centre

Glazing system
4+4-16-8

Installation
25 working days

Year of installation
2012

Total solar energy rejected – Dual pane 4+4-16-8



**INCOMING
ENERGY
REDUCED BY**
43.880
kWh / year

SURFACE AREA
436 nm

FILM
SkyFol P50

Installer
Nortek Kft.

Website
www.nortek.hu

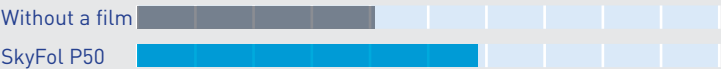
Client
Bank offices

Glazing system
Various

Installation
1 day / branch

Year of installation
2010-2011

Total solar energy rejected – Dual pane (various)



CUSTOMERS FEEL HOT,

WE ARE COLD

Budapest, Hungary

P50



WHEN THE BARCODE SCANNER
DOESN'T WORK

Budapest, Hungary

XT17S



**INCOMING
ENERGY
REDUCED BY**
402.148
kWh / year

SURFACE AREA
829 nm

FILM
SkyFol XT17S

Installer
Nortek Kft.

Website
www.nortek.hu

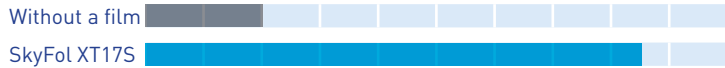
Client
Hipermarket

Glazing system
4+4-16-8

Installation
25 working days

Year of installation
2015

Total solar energy rejected – Dual pane 4+4-16-8



**INCOMING
ENERGY
REDUCED BY**
63.380
kWh/year

SURFACE AREA
600 nm

FILM
SkyFol
XT33S

Installer
Zámbófia Kft.

Website
www.zambofia.hu

Client
Shopping centre

Glazing system
5+5 – 16 – 6 (low-e)

Installation
2 working days

Year of installation
2015

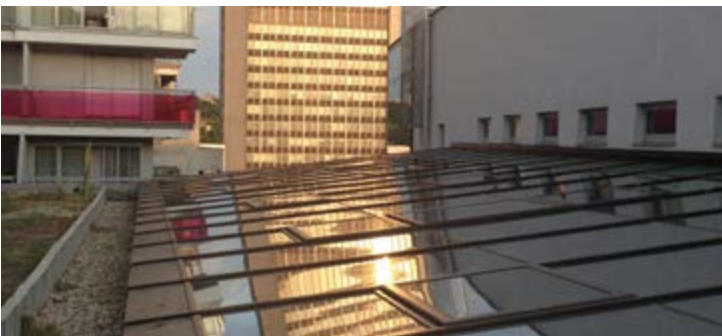
Total solar energy rejected – 5+5-16-6 (low-e)



STRONG HEAT PROTECTION,
MODERATE DARKENING

Bratislava, Slovakia

XT33S



SHORT PAYBACK PERIOD

Debrecen, Hungary

XT17S



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
116.809 kWh / year	183 nm	SkyFol XT17S
Installer Nortek Kft.	Website www.nortek.hu	Client Shopping centre
Glazing system 4+4-16-8	Installation 15 working days	Year of installation 2014
Total solar energy rejected – Dual pane 4+4-16-8		
Without a film		
SkyFol XT17S		

INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
15.942 kWh/year	80 nm	SkyFol XT17S
Installer Zámbófia Kft.	Website www.zambofia.hu	Client Office building
Glazing system 4 – 16 – 4 (low-e)	Installation 1 working day	Year of installation 2015
Total solar energy rejected – Dual pane 5-16-5 (low-e), polycarbonate		
Without a film		
SkyFol XT17S		

HEAT&WAREHOUSE PROTECTION

Brno, Czechia

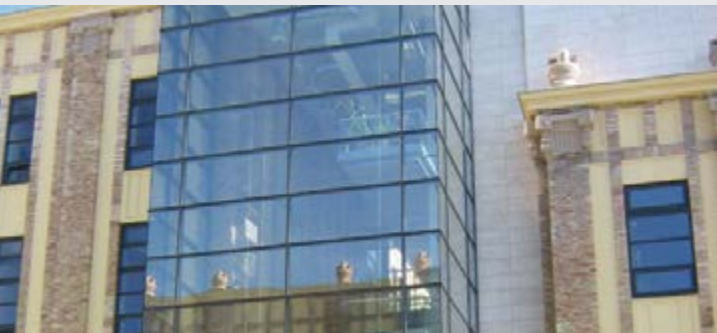
XT17S



HEAT PROTECTION OF PREMIUM OFFICES

Budapest, Hungary

P70



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
36.945 kWh / year	576 nm	SkyFol P70
Installer Nortek Kft.	Website www.nortek.hu	Client Office building
Glazing system 4-16-4 (low-e)	Installation 10 working days	Year of installation 2009
Total solar energy rejected – Dual pane 4-16-4 (low-e)		
Without a film		
SkyFol P70		

INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
1.268 kWh / year	19 nm	SkyFol M2 SkyFol P70
Installer Nortek Kft.	Website www.nortek.hu	Client Private home
Glazing system 4-16-4 (low-e)	Installation 1 working day	Year of installation 2012
Total solar energy rejected – Dual pane 4-16-4 (low-e)		
Without a film		
SkyFol P70		

MORE COMFORT AT HOME

Budapest, Hungary

M2, P70



HEAT&WAREHOUSE PROTECTION

Brno, Czechia

XT17S, XT16SPC



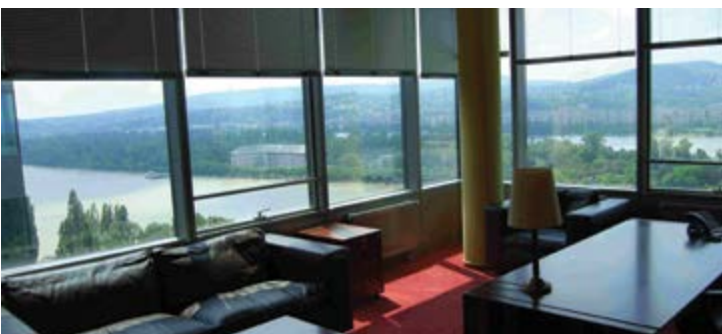
INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
14.483 kWh/year	60 nm	SkyFol XT17S XT16SPC
Installer Zámbófia Kft.	Website www.zambofia.hu	Client Office building
Glazing system 5 – 16 – 5 (low-e)	Installation 1 working day	Year of installation 2015
Total solar energy rejected – Dual pane 5-16-5 (low-e), polycarbonate		
Without a film		
SkyFol XT17S		
SkyFol XT16SPC		

INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
4.802 kWh / year	25 nm	SkyFol P50
Installer Nortek Kft.	Website www.nortek.hu	Client Office
Glazing system 4-16-4 (low-e)	Installation 1 working day	Year of installation 2013
Total solar energy rejected – Dual pane 4-16-4 (low-e)		
Without a film		
SkyFol P50		

STRONG HEAT PROTECTION IN THE OFFICE

Budapest, Hungary

P50



HEAT PROTECTION
IN THE PENTHOUSE

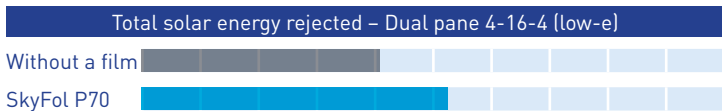
Budapest, Hungary

P70



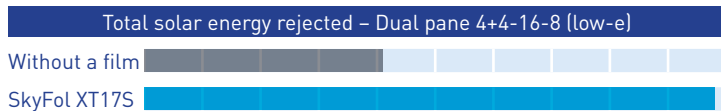
INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
1.695 kWh / year	25 nm	SkyFol P70

Installer Nortek Kft.	Website www.nortek.hu	Client Private home
Glazing system 4-16-4 (low-e)	Installation 1 working day	Year of installation 2014



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
284.532 kWh / year	744 nm	SkyFol XT17S

Installer Nortek Kft.	Website www.nortek.hu	Client Shopping centre
Glazing system 4+4-16-8 (low-e)	Installation 25 working days	Year of installation 2013



CONSIDERABLE COST SAVING

Budapest, Hungary

XT17S



MORE COMFORT IN THE GYM

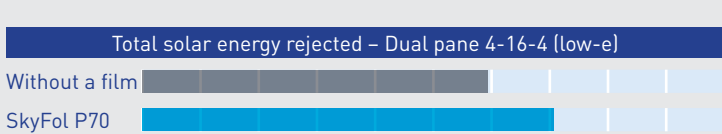
Budapest, Hungary

P35, P70



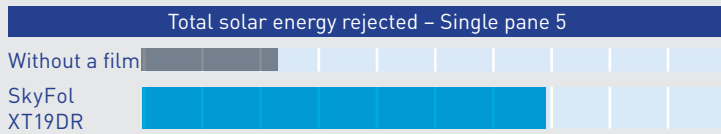
INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
4.300 kWh / year	60 nm	SkyFol P35 SkyFol P70

Installer Nortek Kft.	Website www.nortek.hu	Client Gym
Glazing system 4-16-4 (low-e)	Installation 1 working day	Year of installation 2014



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
31.122 kWh/year	200 nm	SkyFol XT19DR

Installer Zámbófia Kft.	Website www.zambofolia.hu	Client Kitchen
Glazing system 5	Installation 2 working days	Year of installation 2010



A MUSTARD YELLOW KITCHEN

Brno, Czechia

XT19DR



DROP OF TEMPERATURE
IN THE PANORAMIC LIFT

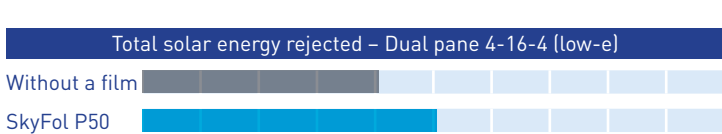
Budapest, Hungary

P50



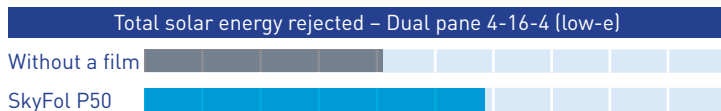
INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
25.423 kWh/year	300 nm	SkyFol P50

Installer Nortek Kft.	Website www.nortek.hu	Client Office building
Glazing system 4-16-4 (low-e)	Installation 10 working days	Year of installation 2014



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
24.758 kWh / year	246 nm	SkyFol P50

Installer Nortek Kft.	Website www.nortek.hu	Client Bank
Glazing system 4-16-4 (low-e)	Installation 5 working days	Year of installation 2014



HEAT PROTECTION OF THE BANK HQ

Budapest, Hungary

P50



CASE STUDIES

LIGHT AND HEAT PROTECTION
IN THE HOSPITAL

Brno, Czechia

XT17S



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
2.180 kWh/year	30 nm	SkyFol XT17S
Installer Zámbófia Kft.	Website www.zambofia.hu	Client Hospital
Glazing system 5+5 – 16 – 5 (szolár)	Installation 1 working day	Year of installation 2015
Total solar energy rejected – Dual pane 5+5-16-5 (solar)		
Without a film		
SkyFol XT17S		

INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
4. 711 kWh / year	330 nm	SkyFol XT17S
Installer Nortek Kft.	Website www.nortek.hu	Client Shopping centre
Glazing system 4+4-16-8	Installation 10 working days	Year of installation 2014
Total solar energy rejected – Dual pane 4+4-16-8		
Without a film		
SkyFol XT17S		

ENERGY SAVING
IN THE SHOPPING CENTRE

Győr, Hungary

XT17S



A FULL GLASS DIY STORE

Budapest, Hungary

XT17S, SI15



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
68.408 kWh / year	337 nm	SkyFol XT17S SkyFol SI15
Installer Nortek Kft.	Website www.nortek.hu	Client DIY store
Glazing system 4+4-16-8 (low-e)	Installation 25 working days	Year of installation 2013
Total solar energy rejected – Dual pane 4+4-16-8 (low-e)		
Without a film		
SkyFol XT17S		
SkyFol SI15		

INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
19.247 kWh/year	150 nm	SkyFol XT17S
Installer Zámbófia Kft.	Website www.zambofia.hu	Client Research centre
Glazing system 4 – 16 – 4 (low-e)	Installation 2 working days	Year of installation 2015
Total solar energy rejected – Dual pane 4-16-4		
Without a film		
SkyFol XT17S		

HOT AND GLARING SCREENS

Brno, Czechia

XT17S



HEAT AND PRIVACY PROTECTION
AT THE DOCTOR'S

Budapest, Hungary

SI15



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
104.429 kWh / year	12x30 nm	SkyFol SI15
Installer Nortek Kft.	Website www.nortek.hu	Client Doctor's offices
Glazing system 4-16-4	Installation 12x1 working day	Year of installation 2014
Total solar energy rejected – Dual pane 4-16-4		
Without a film		
SkyFol SI15		

INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
20.347 kWh / year	183 nm	SkyFol P50
Installer Nortek Kft.	Website www.nortek.hu	Client Bank
Glazing system 4-16-4 (low-e)	Installation 5 working days	Year of installation 2011
Total solar energy rejected – Dual pane 4-16-4 (low-e)		
Without a film		
SkyFol P50		

HEAT PROTECTION OF A BANK HQ

Budapest, Hungary

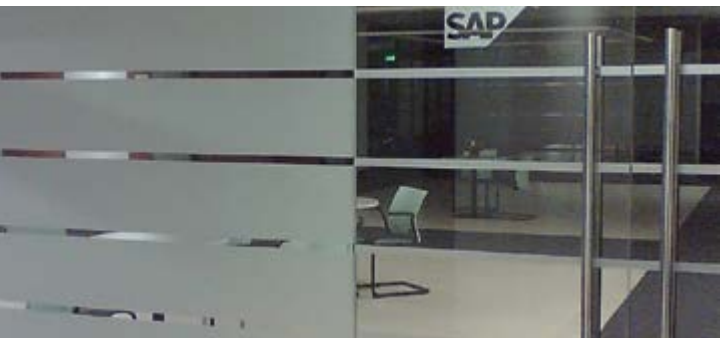
P50



PRIVACY PROTECTION
OF THE MEETING ROOM

Budapest, Hungary

M2



APPEARANCE	SURFACE AREA	FILM
Etched	35 nm	SkyFol M2
Installer Nortek Kft.	Website www.nortek.hu	Client Iroda
Glazing system 6-14-4	Installation 1 working day	Year of installation 2014

VERY HOT BEHIND THE GLASS WALL

Herceghalom, Hungary

XT17S



INCOMING ENERGY REDUCED BY	SURFACE AREA	FILM
71.905 kWh / year	244 nm	SkyFol XT17S
Installer Nortek Kft.	Website www.nortek.hu	Client Office building
Glazing system 6-16-4 (low-e)	Installation 10 working days	Year of installation 2014
Total Solar Energy Rejected - Kétrétegű 6-16-4 (low-e)		
Without a film		
SkyFol XT17S		

PRIVACY PROTECTION
AT THE DENTIST'S

Budapest, Hungary

M2



APPEARANCE	SURFACE AREA	FILM
Etched	16 nm	M2
Installer Nortek Kft.	Website www.nortek.hu	Client Fogászat
Glazing system 4-16-4	Installation 1 working day	Year of installation 2014

Skyfol® PPF nano

KEEP YOUR CAR NEW!

Automotive Paint Protection Film



WATER-REPELLENT COATING | EASY TO CLEAN
SELF-HEALING | SUPER GLOSSY APPEARANCE

TOTAL SOLAR ENERGY TRANSMITTED

the quantity of solar energy in the total solar wavelength range (300-2,500 nm) passing directly through the glazing system, in ratio of the solar energy falling on the glazing system

TOTAL SOLAR ENERGY REJECTED

the quantity of solar energy in the total solar wavelength range (300-2,500 nm) rejected directly from the glazing system, in ratio of the solar energy falling on the glazing system

TOTAL SOLAR ENERGY ABSORBED

the quantity of solar energy in the total solar wavelength range (300-2,500 nm) absorbed directly by the glazing system, in ratio of the solar energy falling on the glazing system

VISIBLE LIGHT TRANSMITTED

the quantity of visible solar energy between 380-780 nm passing through the glazing system, in ratio of the total visible light falling on the glazing system

VISIBLE LIGHT REFLECTED

the quantity of visible solar energy between 380-780 nm reflected from the glazing system, in ratio of the total visible light falling on the glazing system

SOLAR HEAT GAIN COEFFICIENT - SHGC

similar to shading coefficient, but this measure also takes into consideration the quantity of energy radiated back into the room as a result of the glass heating up because of increased absorption. The lower the value, the better the heat rejection

TOTAL SOLAR ENERGY REFLECTED

the quantity of solar energy in the total solar wavelength range (300-2,500 nm) not passing through the glazing system, in ratio of the solar energy falling on the glazing system

U-VALUE

the thermal conductivity value of the glazing system, which is independent from solar radiation. Multiplied by the difference between interior and exterior temperatures (in Kelvin), it gives the value of thermal conductivity (Watt/hour/sqm). The lower the U-Value, the better the decrease of heat loss

EMISSIONITY

shows the ability to reflect long interior energy waves. The lower the emissivity, the better the object in question can retain the heat in the room

UV REJECTION

the quantity of solar energy between 300-380 nm passing through the glazing system, in ratio of the total UV energy falling on the glazing system

TENSILE STRENGTH

the value when pulling apart a 1"x1" sized film in the same way as with break strength tests. Generally calculated based on break strength, its unit is lbs/inch² (psi)

BREAK STRENGTH

the actual strain or force as a result of which glass breakage happens. Its unit is lbs/inch

PUNCTURE STRENGTH

the puncture strength of a window film is defined by its resistance to a blunt object used to pierce it through. The unit of puncture strength is kg or lbs



SkyFol Automotive Window Films

Professionals behind SkyFol compiled a selection based on their experience of nearly 40 years. These films are manufactured by CP Films, Avery Dennison Hanita and Garware Polyester, among others. Should you need window films for highly advanced heat protection or simply to protect passengers' privacy, you will find an appropriate film among the 7 series offered. Quality, reliability, service. SkyFol.



Automotive | Premium Line

SKYFOL NT PRO SERIES

One of the most developed manufacturing technologies that exist today, with the help of which the film can provide the strongest heat protection possible. Outstanding IR filtering, durable dying technology while extrusion. The Skyfol NT Pro series represents the highest level of window film manufacturing, its extreme heat protection guaranteed by Lintec, the inventor of the technology.



Automotive | Premium Line

SKYFOL NT SERIES

Combined with ceramic manufacturing technology, in its lighter versions with added IR technology. These films contain a multitude of extremely thin layers, which result in up to 30% higher heat protection. Its carbon-based, solvent-resistant dying perfectly resists mutations, so the NT series will not fade, even in the slightest. The Skyfol NT series is manufactured using the most developed production technology.



Automotive | Professional Line

SKYFOL CarbonX SERIES

Carbon dying technology is one of the most durable methods in the industry. As opposed to traditional deep dyed window films, SkyFol CarbonX will not have a difference from its original light transmission even after years. Carbon dying provides a heat protective feature for the film, without the use of metals. This revolutionary technology results in a film that is easy to install, but which has good heat protection.



Automotive | Professional Line

SKYFOL HP SERIES

A professional heat protection film series that is easy to install, with 7 VLTs – one of the most popular ranges with Skyfol. The Skyfol HP automotive window film series is an American product manufactured with the most developed pigments. It provides long-term reliable performance, without fear of turning purple or getting detached from the surface after years.



Automotive | Economy

SKYFOL HP PRO SERIES

The fine metallic layer in the Skyfol HP Pro series filter IR radiation, therefore protects from scorching heat – it makes your journey more comfortable by filtering light and heat, too. The dying of the HP Pro series happens right during the first step of manufacturing, therefore it is the most durably dying technology in the industry – performance will be reliable on the long run.



Automotive | Economy

SKYFOL NR SERIES

The economical, yet durable Skyfol NR series is produced with dying during extrusion – it is the perfect privacy protection film. If heat protection is not a priority but you would like stable privacy protection, this series is the best choice.



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