

# Solutions for upgrading glass in buildings

ARCHITECTURAL WINDOW FILM  
ENERGY SAVING, THERMAL COMFORT, SECURITY & ENVIRONMENT



# SOLAR GARD IN NUMBERS

HEAT REJECTION

UP TO **84%**

The window film improves your comfort and keeps your building cool.

ENERGY SAVINGS

UP TO **30%**

Solutions that reduce the consumption of your cooling system.

UV-REDUCTION

MORE THAN **99%**

Solar Gard window film protects you and your interior.

GLARE REDUCTION

UP TO **95%**

Window films can block light thus providing more visual comfort

## LEED & BREEAM CREDITS

Global assessment- and rating methods for sustainability of buildings

Building owners can earn a higher rating with the use of Solar Gard window film in following categories<sup>1</sup>:



SS EA EQ MR ID

LEED POINTS\*

BREEAM®

ENE HEA MAT

BREEAM CREDITS

[solargard.com/eu/leed-breeam](http://solargard.com/eu/leed-breeam)



Security films with certification



High quality production



Protection in case of explosion



\*Qualified project uses of our products may be eligible for LEED credit.



Verified EPD for 92 window films (in 12 EPDs)



# ENERGY SAVINGS, SOLAR HEAT REDUCTION AND SECURITY



## Solar Gard® solutions help you to:

- Reduce energy consumption with a payback time of up to 3 years.
- Make the indoor climate much more pleasant.
- Introduce a sustainable solution in the context of LEED/BREEAM or HQE label.
- Increase a company's well-being and productivity.
- Protect people from broken glass in the event of an accident, explosion or aggression.
- Securing a building against burglary/intrusion.
- To protect an interior, museum or shop against fading.

## Solutions that make a difference

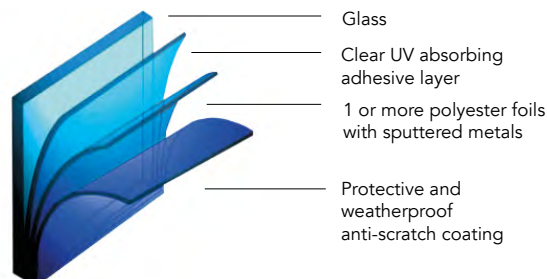
**As a global player in vacuum sputtering and coating technology, Solar Gard improves the performance of existing glazing with window film. The effects of our solutions is the result of more than 40 years of knowledge and development:**

- Advanced technology and specialized production; the window film contains up to 14 layers of precious metals such as titanium, copper, gold, silver, aluminum and other alloys.
- Durability, optical clarity, firm adhesion to glass, resistant to UV radiation and weather conditions.
- Extensive manufacturer's guarantees on the quality of the film.
- Unique solution for improving the insulation Ug value with test certification.
- A range of certifications on the operation of the security films.

### Attention to the environment and climate change

Solar Gard's solar control window films drastically reduce the consumption of cooling systems in offices, hotels and other buildings. This reduces emissions and reduces the ecological footprint; an important challenge for companies, real estate managers and facility managers.

#### CONSTRUCTION OF THE WINDOW FILM



## YOUR PROBLEM

Too much sunlight, too hot...

## SOLUTION

Solar & Energy Window Film



5°C reduction of the perceived indoor temperature



Pleasant indoor climate with natural light and the view to the outside



Reduction of glare and too bright light



Increased privacy, reduced exposure



## THERMAL AND VISUAL COMFORT

In buildings like offices, schools, public buildings or hospitals, the temperature is influenced by many factors. The insulation on the glass ensures that a lot of heat enters the room. The insulating glass ensures that the excessive heat cannot escape, resulting in an unpleasant indoor climate and overheating. Too high an indoor temperature and too much bright light have a negative impact on the productivity, well-being and health of employees, visitors and residents.

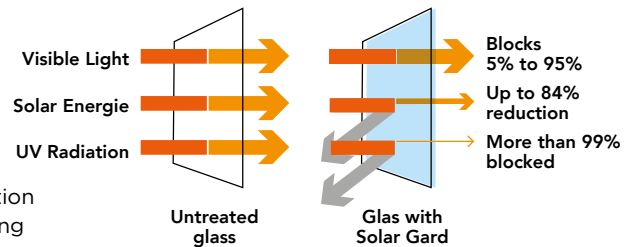
(For example: indoor temperatures from 26°C already lead to a 5% reduction in productivity; excessive fatigue occurs from 30°C)<sub>2</sub>

2. Lan L., Wargoeki P., Lian Z., Optimal thermal environment improves performance at office work, EHVA Journal, 2012.

## MORE COMFORT and a better quality of life

### Comfortable temperature and natural daylight

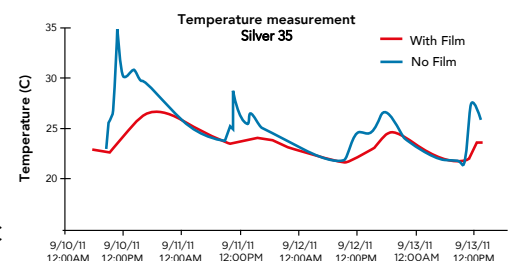
- Up to 84% resistant to solar energy: the window film blocks infrared heat radiation to keep the building cool.
- Depending on the wishes of the customer, window film can block between 5% and 95% of daylight.
- 99% of UV radiation will be blocked reducing decolourisation of interiors and premature aging of the skin



### Comfortable indoor temperature

Office building in Deinze, Belgium:

- Comparison between 2 identical rooms with double glazing and facing south
- Temperature measured over a period of 15 days in the month of September
- The solar control film lowers the temperature by an average of 2.3°C



### Visual comfort

Comparison between a window with / without film; An adapted window film can dampen the bright light and still retain the view to the outside. In this way, it increases visual comfort and improves the view of screens.



## SOLUTION

Safety & Security  
Window Film

## YOUR PROBLEM

Intrusion, broken glass due to accidents, explosions...



Personal protection against broken glass



Skin protection with SPF > 285



Protection against vandalism and burglary



Data security

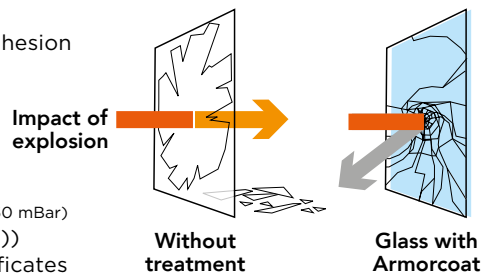
# PROTECTION

## of people and buildings

### Holding glass shards together in case of breakage Stopping shock waves in the event of an explosion

Armorcoat security films have a thickness of 50 to 350 microns. They prevent flying shards of glass when broken and stop the shock wave in the event of an explosion. The film has exceptional properties:

- Tensile strength and very strong adhesion
- Breaking strength, tear resistance
- Various certifications:
  - EN 12600 (1B1)
  - EN 356 ( P1A up to P4A)
  - INERIS : industrial explosion (20 - 50 mBar)
  - EN 13541 - SHOCK TUBE (ER1 (NS))
  - ISO 16993 en GSA explosion certificates



### GraffitiGard® : protecting facades and surfaces

GraffitiGard® is a fully transparent film specifically designed to protect glazing against graffiti, acid etching, scratches, stone chips,... The special adhesive layer allows efficient replacement of the film when necessary. In addition, UV rays are blocked without altering the appearance of the surface.

ALSO AVAILABLE IN MULTIPLE LAYERS  
AND IN ANTIMICROBIAL VERSION



## SECURE GLAZING

Glass is the weakest point in the building envelope: easy access in case of burglary and vulnerable in the event of project impact filth and explosion - of any kind. In addition, for a lot of buildings there are requirements related to the safety.

Broken glass - for whatever reason - poses a risk of injury.





## SOLUTION

Energy &  
Environment

# Reduce energy consumption and protect the environment

Part of the Saint-Gobain group, a leader in sustainable solutions, Solar Gard offers several products that reduce the energy consumption of a building.

- Significant reduction in electricity consumption and CO2 emissions of the building throughout its life cycle through greatly reduced air conditioning consumption.
- The ability to improve the insulation value (Ug value) of glass by up to 40%.

Specific Energy Saving Calculations



Technical data of the film specific to your glass



Up to 30% energy savings on air conditioning consumption



Solar Gard® Ecolux™  
Feel Good Inside.™

## Improve insulation up to 40%



### DURING THE SUMMER

On hot days, the heat from the sun is blocked. This creates a comfortable living environment and saves energy on the cooling system.



### DURING THE WINTER

During the winter, the heat is reflected back inside. This way less heating is needed to create a comfortable living environment and save energy.



## Thermal comfort and energy savings

- Stable and pleasant indoor temperatures
- Reducing peak consumption
- Optimizing the air conditioning system
- Reduced energy costs up to 30%<sub>3</sub>

## A return on investment of less than 5 years

Modeling of an office building in Paris: 500 m<sup>2</sup> glass surface – double glazing 4/16/4 on which Sentinel Plus Silver 20 solar control film has been applied.

**Product and installation costs € 27 500**

|  |           |
|--|-----------|
| Reduction in energy consumption (kWh/year) | 79 504    |
| Reduction in energy costs (1kWh = 0.15 €)  | 8 745     |
| Return on investment                       | 32%       |
| Recovery period (ROI)                      | 3,1 years |

The Capshot energy performance calculator integrates the climate zone, the type of glazing with orientation and solar irradiation, the efficiency of the cooling system and the energy costs.

3. Solar Gard Environmental Statement, UL Environment, 2014

4. Réseau de Transport de l'Electricité: Breakdown of tertiary electricity consumption, by use in 2009

5. MEDDTL: Report on the production of greenhouse gases by air conditioning systems and their impact on the environment, especially in overseas communities, 2011

ECOLUX® is the registered name outside Germany; in Germany the product is registered as ENVIROLUX®





KSA  
AC 8 Mil Clear



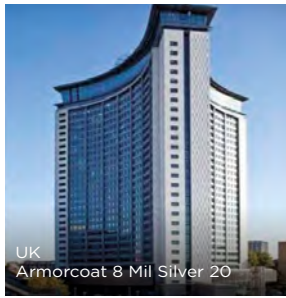
UAE  
Silver 20



Lebanon  
AC 14 Mil Clear



UAE  
Silver 20 and Silver 35



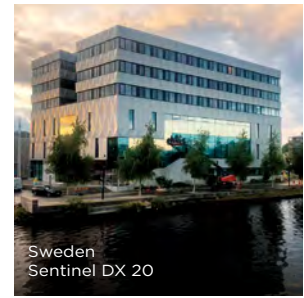
UK  
Armorcoat 8 Mil Silver 20



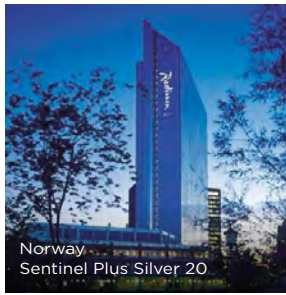
UK  
Armorcoat 8 Mil Silver 20



UK  
Armorcoat 8 Mil Silver 20



Sweden  
Sentinel DX 20



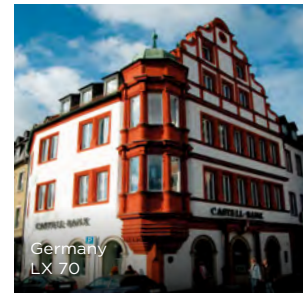
Norway  
Sentinel Plus Silver 20



Finland  
Sentinel Plus SX 50



Estonia  
Sentinel Plus SX 50



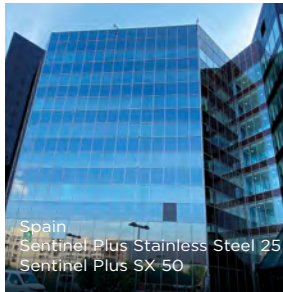
Germany  
LX 70



Germany  
Sentinel Plus SX 50



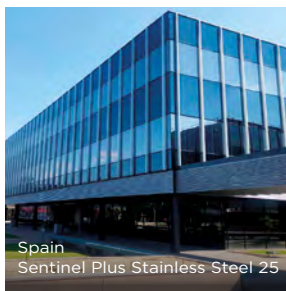
Germany  
Sentinel Plus Silver 35



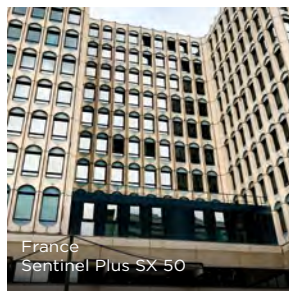
Spain  
Sentinel Plus Stainless Steel 25  
Sentinel Plus SX 50



Spain  
Sentinel Plus Silver 35



Spain  
Sentinel Plus Stainless Steel 25



France  
Sentinel Plus SX 50



France  
Sentinel Plus SX 50



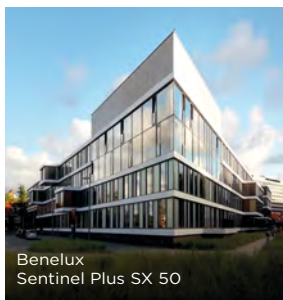
France  
Sentinel Plus SX 80



Benelux  
Sentinel Plus QX 70



Benelux  
Graffitigard/Sentinel Plus SX 50



Benelux  
Sentinel Plus SX 50



SOLUTIONS AND  
REFERENCE CASES



Saint-Gobain Innovative Materials  
Belgium SA/NV - Solar Gard  
HQ : Avenue Einstein 6  
1300 Wavre, Belgium  
Offices : Karreweg 18  
9870 Zulte, Belgium  
Tel: +32 (0)9 240 95 66  
E-mail: [solargard.eu@saint-gobain.com](mailto:solargard.eu@saint-gobain.com)

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#### About Saint-Gobain Solar Gard®

Solar Gard is a world leader in patented technologies for solar control and protective window film; for both residential and commercial buildings and vehicles. As the "Thin Films" division of the global glass and building technology group Saint-Gobain – a company that originated more than 350 years ago with the Hall of Mirrors in the Palace of Versailles – Solar Gard builds on decades of experience in the development and production of window film. The Solar Gard product range provides solutions for upgrading and improving glass in vehicles, homes and large buildings for the comfort and protection of passengers, residents, visitors and employees. Follow Solar Gard on Facebook, Twitter and Instagram. #SolarGard

