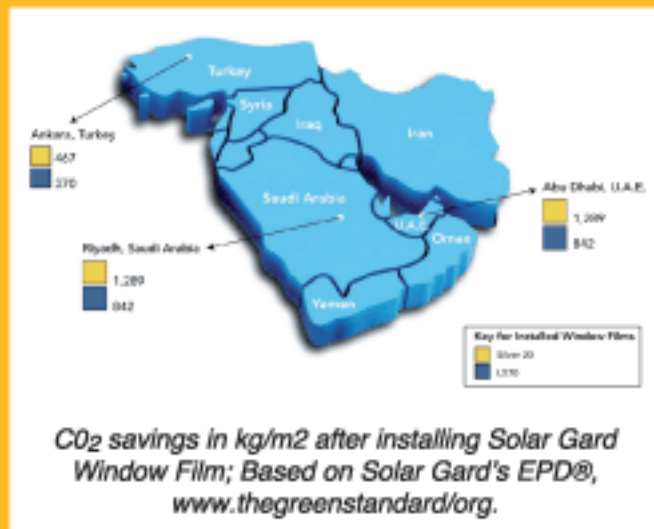


# Solutions to Challenges around windows and glazing



Windows can inspire productivity and a sense of well-being by allowing the benefits of natural daylighting. The duality of windows is however hard to manage because windows also contribute to heat gain, bothering glare, and reduced comfort due to direct solar radiation.

The U.S. DoE estimates that 1/3 of a building's cooling bill is related to solar heat gain through windows<sup>1</sup>. In addition fenestration improvement projects are often expensive, time consuming and disruptive.

Windows also are critical when it comes to safety and security. Shards of glass breaking due to impact or explosions pose a serious danger to the occupants.

Solar Gard® window film helps to solve diverse of these window challenges.

## Challenge 1: cooling costs and comfort

Windows have a profound effect on the energy performance and operating costs of a building. The solar heat gain associated with windows makes them an ideal target for efficiency improvements: solar energy penetrates the glass, leading to uncomfortable hot spots and increased need for air-conditioning. A major challenge is balancing peak energy usage with climate control and interior comfort.

Window film rejects up to 79% of the solar energy resulting in reduced air-conditioning use and energy costs.

## Challenge 2: providing building safety and security

The safety of building occupants and the security of the building nowadays is a most pressing concern for all due to recent terrorist attacks and bombings. Explosions exert enormous pressure on windows, breaking windows and sending harmful shards of glass into the environment at high, lethal velocities. In the case of an explosion, 90% of the injuries are caused by flying glass rather than the explosion itself.

Meeting ISO 16933, ASTM, GSA explosion standards Solar Gard Armorcoat security window film provides protection in such events. The film's strong, resilient and flexible composition enables to withstand severe levels of pressure, retaining the dangerous shreds of glass should an explosion occur.

## Challenge 3 comfort and productivity issues

Daylight is an effective stimulant linked to productivity and well being, but brings challenges to the workplace with uncomfortable heat gain and bothersome glare.

Filtering incoming natural light, window film significantly reduces glare on computer and electronic screens – easing strain on the eyes.

Window film is an ideal solution, for building managers, owners and users looking for a way to keep workspaces comfortable and productive yet maximizing view and day-lighting.

## Challenge 4: understanding the risks of UV exposure

Prolonged UV-exposure causes 90% of all premature ageing and is increasingly linked to skin cancer. It also causes fading of carpets, furniture and merchandise.

Window film blocks more than 99% of the sun's damaging UV rays while admitting up to 95% of the visible light. Benefiting from the Skin Cancer Foundation Seal, Solar Gard Window film helps tackling the challenge of balancing the desired amount of incoming light with the risk of UV-exposure.

## Challenge 5: sustainability

When retrofitting buildings for greater sustainability, an understanding of retrofitting options in relation to the needs is critical.

Improving fenestration offers one of the best opportunities for a solid return of investment for energy savings. Lawrence Berkeley National Laboratory, a DoE Energy lab — confirms that

window film is a very cost-effective way to upgrade a building's windows<sup>2</sup> bringing the following benefits:

- Energy savings: with proven heat rejection properties, window film helps to reduce energy consumption for cooling by up to 30%.
- Reduced carbon footprint: Solar Gard solar control films benefit a full Environmental Product Declaration ([www.thegreenstandard.org](http://www.thegreenstandard.org)) demonstrating reduction of carbon emissions.
- LEED and BREEAM: Solar Gard window films can help to achieve points or credits toward LEED or BREEAM certifications.
- System benefits: improving window performance will reduce the load on air-conditioning systems, even allowing downsizing HVAC equipments ([www.pewclimate.org/technology/overview/buildings](http://www.pewclimate.org/technology/overview/buildings)).

The versatility and benefits of installing window film make an attractive and cost-effective solution to address multiple challenges of building designers, managers and owners. Read more on [www.solargard.com](http://www.solargard.com)

1 Department of Energy, 2009 Buildings data book  
2 "Cost Effective Building Envelope Options for Reducing Cooling Loads in Commercial Buildings,"

Lawrence Berkeley National Laboratory, University of California.

### About Solar Gard

Solar Gard positively impacts lives with products that protect, save and renew. Headquartered in San Diego, California, Solar Gard makes industry leading architectural and automotive window films, photovoltaics and custom coatings. A division of Saint-Gobain Performance Plastics, a subsidiary of Saint-Gobain, the world leader in the habitat and construction markets, Solar Gard's architectural solar control window films are proven carbon negative and reduce global greenhouse gas emissions. Solar Gard products are sold in more than 90 countries under the Solar Gard®, Panorama®, Quantum® and Solar Gard Armorcoat® brands. For more information, visit [www.solargard.com](http://www.solargard.com).



A better environment inside and out™

Protect your people and assets  
Improve building safety and security



Meeting ISO16933, GSA and ASTM explosion standards, Solar Gard Armorcoat window film absorbs shocks and holds shattered glass in place. Armorcoat not only protects people from flying shards, but also provides a barrier against break-ins, bomb blasts, looting and interior damage.



Find out how Solar Gard can help you today on +971 50 5533659 or [info.middleeast@solargard.com](mailto:info.middleeast@solargard.com) and enjoy an initial free survey in any of the following:

- Full building modelling (for a detailed energy and comfort analysis)
- Building regulations
- Glazing standards for personal safety and wellbeing, security and explosion protection (including EN 12600, ISO 16933 and EN 356)



[www.solargard.com](http://www.solargard.com)

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Solar Gard, a division of Saint-Gobain Performance Plastics, a subsidiary of Saint-Gobain, the world leader in the habitat and construction markets.