

سابک  
sebic

ENABLING  
CREATIVE &  
SUSTAINABLE  
BUILDING DESIGNS

with Lexan\* Polycarbonate sheet

Lexan\* sheet helps to meet  
tough challenges facing  
architects and builders

SABIC Innovative Plastics has been working to bring its portfolio of leading edge materials to bear in architectural glazing applications for over 40 years. Virtually unbreakable, high optical quality solid and multiwall Lexan\* (PC) sheet products with highly specialized properties are often a top choice for answering the specific needs of a variety of structures.

Introduction

Rooflights and Skylights

Verandas, Conservatories and Pool Covers

Wall Cladding

Security Glazing and Storm Protection

Home Construction and Interior Applications

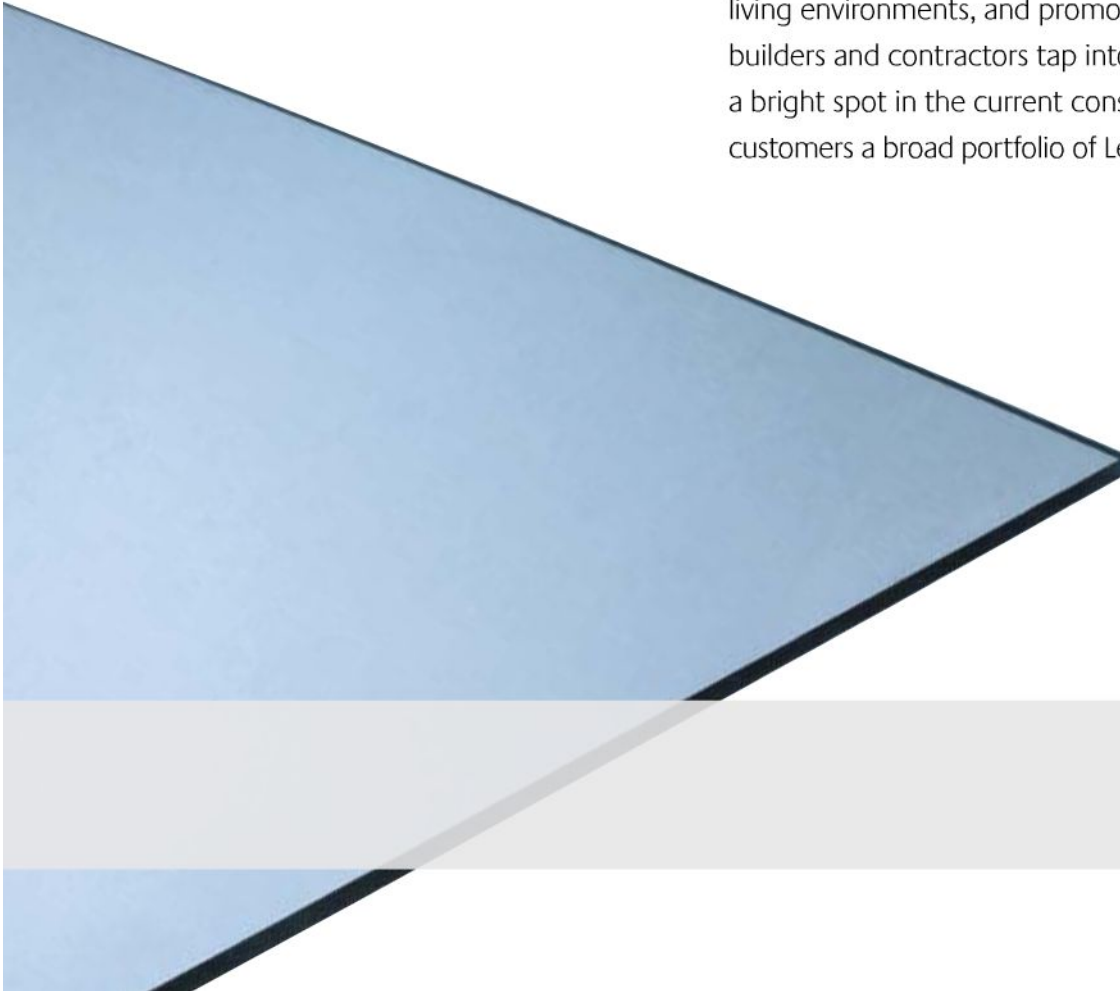
Large Architectural Projects

Design and Engineering Services

# Sustainable & creative designs with Lexan\* sheet

The sustainable design movement aims to reduce the negative impact of residential and commercial buildings on the environment. SABIC Innovative Plastics' growing portfolio of Lexan\* polycarbonate (PC) multiwall sheet products are contributing to this movement and strengthen sustainable building designs by increasing energy conservation, improving working/living environments, and promoting recycling. Lexan\* sheet solutions can help architects, builders and contractors tap into the "green" building market, a multi-billion-dollar sector and a bright spot in the current construction industry slump. SABIC Innovative Plastics offers its customers a broad portfolio of Lexan multiwall sheet solutions for roofing, cladding and glazing.

Widespread concerns about the negative environmental effects of traditional building materials and methods are driving the adoption of sustainable design. Lexan\* multiwall sheet products can make a significant contribution by helping our customers achieve sustainable designs. For example, Lexan\* sheet far surpasses double- and triple-pane glass windows in thermal insulation performance, and its light weight saves energy in transportation and installation. Plus, it's 100 percent recyclable. By incorporating Lexan\* sheet into your designs, you can make any building more sustainable.



# Conserving Energy

Sustainable design is the practice of creating healthier and more resource-efficient models of construction, renovation, operation, maintenance and demolition. Plastics can enhance sustainability in a variety of ways, including energy conservation and the potential for recyclability.

One key focus of sustainable design is energy efficiency. For example, builders must balance the increasing demand for designs that admit large amounts of light with concerns about energy costs. The use of specialized PC glazing instead of traditional glass can achieve both.

Lexan® PC sheet allows natural daylight to enter a building, creating a more aesthetically pleasing working or living environment while saving on electricity for artificial lighting. However, while letting light in, the material also offers ultraviolet (UV) protection for occupant health, and exceptional thermal insulation to enhance energy conservation. With new Lexan® Thermoclear® 9-wall sheet, U-values as low as  $.89 \text{ W/m}^2\text{K}$  (acc. ISO 10077 test) can be achieved – surpassing the insulation performance of double- and even triple-pane glass. Improved insulation reduces the use of energy for heating during cold periods and air conditioning during hot periods.

The use of specialized PC sheet that blocks infrared radiation (IR) can reduce the build-up of interior heat for lower energy consumption, while admitting plenty of light. This material is an excellent choice for skylights, walkways and roof domes where it

is important to admit high light levels while reducing heat that would otherwise require air conditioning.

Another area where Lexan® sheet conserves energy is in handling. This lightweight material – at least three times lighter than a comparably sized glass panel with the same thermal insulation value – saves fuel in shipping and installation. Less weight also allows Lexan® sheet to be supported by lighter-weight glazing bars and substructure, reducing the amount of support material required.

Even during manufacture, Lexan® sheet offers environmental advantages over glass. Typical operating temperatures during the sheet extrusion process are in the  $240^\circ\text{C}$  range. Therefore the energy used during the extrusion process in which Lexan® polycarbonate resin is converted into Lexan® polycarbonate sheet, is just a fraction of the energy needed to manufacture the flat glass that goes into the same building & construction applications. During the Lexan® polycarbonate sheet extrusion process, up to 15 percent of recycled content is used to produce virgin material.



INTRODUCTION



# Building a Case for LEED Certification

In the United States, the Leadership in Energy and Environmental Design (LEED) rating system is used to recognize whole-building sustainability. The LEED Green Building Rating System™ recognizes sustainable performance in major categories of a construction project and has become one of the most widely used systems in the United States. For example, many municipalities mandate that new public buildings must be designed and built with the goal of achieving LEED certification.

Under the LEED system, credits are awarded for a number of different aspects of a project: sustainable sites; energy and atmosphere; materials and resources; and indoor environmental quality, to name a few. By incorporating Lexan® sheet glazing, roofing and cladding solutions into the design, builders can help win credits in the following areas:

## Sustainable Sites

**Credit 8 – Light Pollution Reduction (1 point):** Lexan® SoftLite sheet, a new addition to SABIC Innovative Plastics' portfolio, offers light-diffusing characteristics that prevent direct-beam illumination from leaving the building interior. Also, the use of opaque Lexan sheet and Lexan multiwall sheet can block up to 100 percent of light pollution.

## Energy & Atmosphere

**Credit 1 – Optimize Energy Performance (1 point each, up to 10 points):** Lexan® sheet provides superior winter and summer energy efficiency while transmitting diffused daylight.

## Materials & Resources

**Credits 4.1 and 4.2 – Recycled Content (1 point each):** Lexan® sheet utilizes different percentages of pre-consumer recycled content that can help builders to obtain the credits.

## Indoor Environmental Quality

**Credit 6.2 – Controllability of Systems (1 point):** Lexan® Solar Control IR sheet (monolithic and multiwall sheet versions) can help increase comfort in the building by up to 20 percent.

**Credits 8.1 and 8.2 – Daylight & Views (1 point each):** Lexan sheet for walls, curtain walls and window replacement systems can easily and effectively integrate fixed and operable windows glazed with PC sheet for connection to the outdoors.

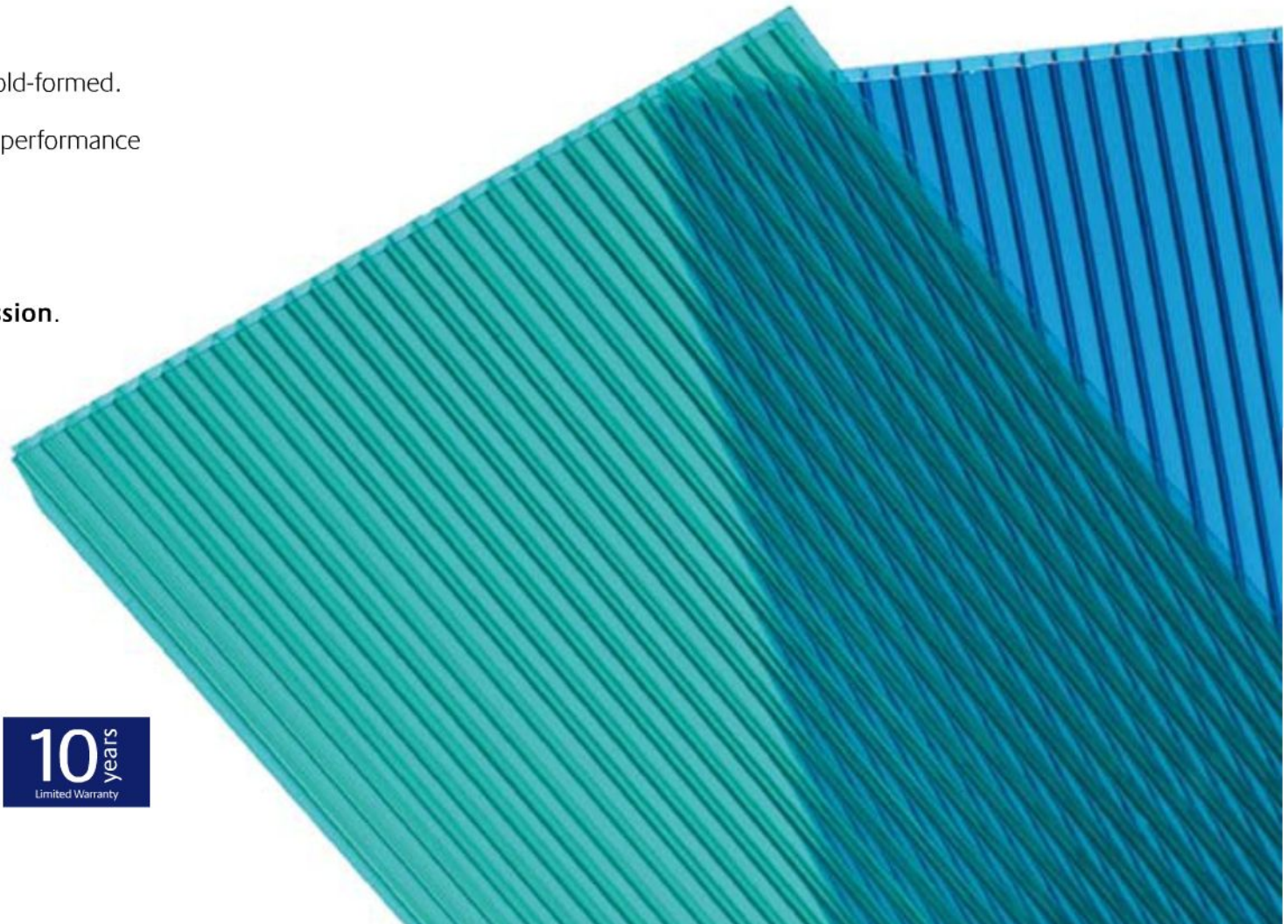
Virtually unbreakable, high optical quality Lexan polycarbonate (PC) sheet materials from SABIC Innovative Plastics are often a top choice due to the versatile glazing solutions that they may help provide.

SABIC Innovative Plastics' Lexan polycarbonate sheet combines crystal-clear transparency with value-added performance that features light weight, high stiffness, design freedom, impact and fire resistance and weatherability. This high-tech sheet product – solid and multiwall products with highly specialized properties – is an excellent candidate to help answer the specific needs of a variety of structures.

# Typical properties of the Lexan\* sheet include

This unique sheet portfolio is amongst the most extensive on the market today, offering hundreds of possible combinations of structure, color, coating and finish.

- Outstanding balance of **light weight** and **high stiffness**
- **Ease of installation**  
it can be easily cut on site using conventional tools and can be cold-formed.
- **Excellent thermal insulation** performance
- **Excellent flame resistance**
- **UV resistance**
- Long-term **high light transmission**.
- **Broad portfolio**  
a range of structures, coatings, colors, dimensions and gauges



**Lexan\*** Tough  
Polycarbonate Sheet Virtually  
Unbreakable

\* Trademark of SABIC Innovative Plastics IP JV

**10** years  
Limited Warranty

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## Product Solutions for rooflights and skylights

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Lexan® Thermoclear® sheet	Lexan® Thermoclear® Sheet is high insulation multiwall sheet product with excellent thermal insulation values. A sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. The complete range offers remarkable impact strength, high light transmission, light weight, long term weather resistance and, due to the multi-wall construction, outstanding thermal insulation properties and is 2 sides UV protected. Lexan Thermoclear Plus 2UV sheet grades are available in Clear (112), Opal White (WH7A092X), Bronze (515055), Opaque White (GY8D201), Solar Control IR Green (GN8B038T) and Metallic (GY6A744M).
Lexan® Thermoclear® sheet Aesthetical Effects	Member of the Lexan Thermoclear sheet rang of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin with new aesthetics effects (Metallic, Hammered Glass and Venetian Look).
Lexan® Thermoclear® SunXP Sheet	In addition to the inherent properties of the Lexan Thermoclear range, this range of products offers UV protection on both sides, but with even higher resistance to UV radiation, yellowing and loss of light transmission. This exceptional material is awarded a unique 15 years limited written warranty.
Lexan® Thermoclear® Easy Clean sheet	This is the world's first self-cleaning polycarbonate sheet. UV protected on both sides, Lexan Thermoclear Easy Clean sheet features a unique hydrophobic coating on the outside surface that reduces the surface tension of polycarbonate and increases the contact angle of water to the sheet. This causes larger droplets to form and wash away dirt, leaving the sheet almost spotless. Furthermore, it stays clean for longer, thereby reducing the frequency and the associated cost of cleaning.
Lexan® Exell®-D sheet	Lexan® Exell®-D Sheet is a transparent polycarbonate solid sheet with proprietary UV protection on both sides offering excellent weathering properties. With its excellent impact resistance it is an excellent candidate for a wide variety of building and construction applications. Lexan Exell D sheet can be easily cold formed into gentle curves which makes it a good material choice for skylights, covered walkways, barrel vaults etc. Lexan Exell D sheet is thermoformable and can be thermoformed into the desired geometry whilst retaining the UV resistant coating specially developed for weather resistant applications.
Lexan® Solar Control® IR sheet	Is a proprietary solid and/or Multiwall sheet that absorbs infra-red (IR) radiation, the largest cause of heat build-up in buildings, while maintaining high light transmission. Keeping heat out
Lexan® Corrugated sheet	Corrugated panels offering high impact strength and excellent light transmission. This product is an excellent candidate for greenhouse coverings. The fine matte texture on the surface scatters light for more uniform distribution of sun light within the greenhouse canopy.
Lexan® Thermopanel® sheet	Standard Roof Systems. The solution for in plane insulated roof lights to match with standard metal panels.
Lexan® Thermoroof® sheet	Custom Roof Systems. Custom made insulated roof light products.

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ROOF



Current residential and commercial designs increasingly call for roofing structures that admit large amounts of natural light, both to improve aesthetics and to reduce energy needed for interior lighting.

Rooflight and skylight structure with Lexan\* sheet provides natural, high quality light and significantly improves the aesthetics, comfort and energy efficiency of your working place and home.



# LIGHTS AND SKYLIGHTS



SKYLIGHTS

1  
**Rooflight Shopping Mall**  
Lexan® Exell™-D sheet  
transparent

2  
**Skylight Office Building**  
Lexan Exell-D sheet  
transparent

3  
**Skylight Shopping Centre**  
Lexan Exell-D sheet  
transparent

4  
**Curved Rooflight Office Building**  
Lexan Exell-D sheet  
transparent

5  
**Rooflight Office Building**  
Lexan® ThermoClear® sheet  
opal white colour



3



4



5



# SKYLIGHTS



6  
Rooflight of a metro station in  
Rotterdam, The Netherlands  
Lexan® Exell®-D sheet  
transparent

7  
Skylight of an office building  
Lexan Exell-D sheet  
transparent

8  
Skylight of The Shopping Centre  
Lexan Exell-D sheet  
transparent





9

**9**  
Khalifa Stadium, pyramid roofing  
structure in Doha, Qatar  
Lexan® Exell™-D  
Solar Control IR sheet  
blue colour



**10**  
Roof Glazing of the  
Warsaw University library  
Lexan® Thermoclear® sheet

**11**  
Domed Conservatory  
India's Butterfly Park  
Lexan Exell-D sheet  
transparent

**12**  
Domed Conservatory  
India's Butterfly Park  
Lexan Exell-D sheet  
transparent

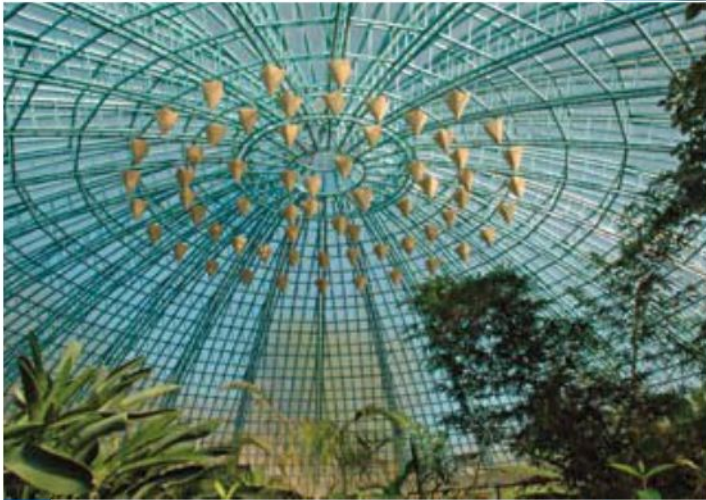
**13**  
Domed Conservatory  
Lexan Thermoclear sheet  
opal white colour

**14**  
Skylight  
Lexan Exell-D sheet  
transparent

10

## India's Butterfly Park

The highlight of the new 7.5 acre Butterfly Park within the Bannerghatta Biological Park in Bangalore, India, is a stunning 10,000-sq.-ft. domed conservatory. The dome admits optimal sunlight to sustain the enclosed tropical rain forest, while protecting the delicate butterflies from wind and storms. To construct this signature dome, the architects sought a material that would provide maximum transparency combined with light weight, impact resistance and design flexibility. Although glass provided good light transmission, its heavy weight, design restrictions, and potential for breakage made it unacceptable. Instead, the architects decided to find a thermoplastic material that would deliver the properties needed for this unique structure.



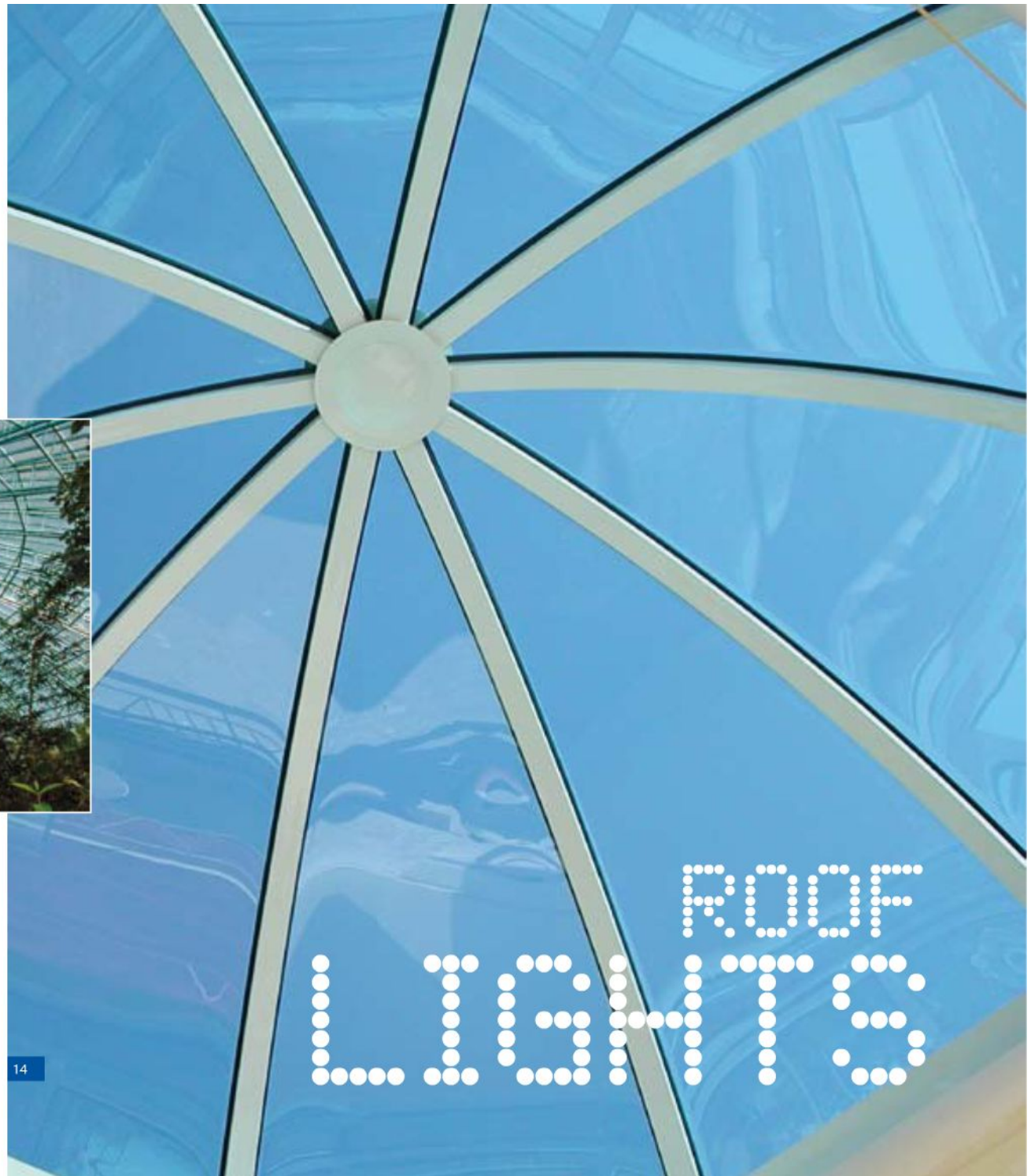
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12



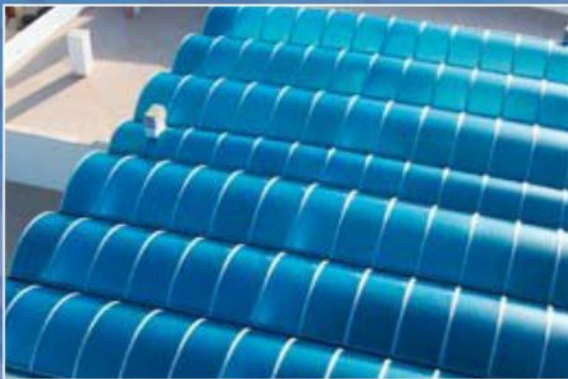
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14

## Curved Roofing

Lexan® sheet can be installed with a curve under stress. The flexible sheets lend themselves to unique designing for various applications such as skylights, canopies and walkways





15  
**Curved Roofing**  
Lexan® Exell®-D sheet  
Solar Control IR  
blue colour

16  
**Curved Roofing**  
Lexan Exell-D sheet,  
Solar Control IR  
blue colour

17  
**Curved Roofing**  
**Shopping Center**  
Leclerc Romilly Acrolux, France  
Lexan Exell-D sheet with  
10 years limited written warranty



16



17

ROOF  
LIGHTS

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## Product Solutions for Verandas, Conservatories and Pool Covers

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Lexan® Thermoclear® Sheet	Lexan® Thermoclear® Sheet is high insulation multiwall sheet product with excellent thermal insulation values. A sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. The complete range offers remarkable impact strength, high light transmission, light weight, long term weather resistance and, due to the multi-wall construction, outstanding thermal insulation properties and is 2 sides UV protected. Lexan Thermoclear Plus 2UV sheet grades are available in Clear (112), Opal White (WH7A092X), Bronze (515055), Opaque White (GY8D201), Solar Control IR Green (GN8B038T) and Metallic (GY6A744M).
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Lexan® Corrugated sheet	Corrugated panels offering high impact strength and excellent light transmission. This product is an excellent candidate for greenhouse coverings. The fine matte texture on the surface scatters light for more uniform distribution of sun light within the greenhouse canopy.
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Lexan® Thermoroof® sheet	Custom Roof Systems. Custom made insulated roof light products.

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VERANDAS, CONSERVAT

The wide range of Lexan\* polycarbonate glazing materials provides architects with broad design flexibility in applications for both inside and outside the home.

From intelligent glazing materials for conservatories and verandas that help to block heat by reflecting heat and cut down glare, to robust glazing with double-sided UV protection for porches and carports that can withstand high wind and snow loads. Lexan solid and multiwall sheets are **lightweight, unobtrusive and flexible** materials to be able to design the optimal pool cover.



ORIES AND POOL COVERS



1

**Veranda**

Lexan® Thermoclear®  
Solar Control IR sheet  
green colour

2

**Veranda Office Building**

Lexan Thermoclear  
Solar Control IR sheet  
blue colour

3

**Veranda Restaurant**

Lexan Thermoclear  
Solar Control IR sheet

4

**Conservatory – Art Gallery**

Lexan Thermoclear sheet  
opal white colour

5

**Veranda Hotel & Restaurant**

Lexan Thermoclear sheet  
opal white colour

6

**Veranda – Apartment Building**

Lexan Thermoclear sheet  
transparent



2



3



4



5



6



7

**7**  
**Centerpoint® Roofing Structure**  
**Housing Project**

Lexan® Thermoclear® sheet opal white colour offers exceptional sound and energy insulation.

**8**  
**Centerpoint® Roofing Structure**  
**Housing Project**

Lexan Thermoclear sheet opal white colour

**9**  
**Centerpoint® Roofing Structure**  
**Bathroom Glazing**

Lexan Thermoclear sheet opal white colour

**10**  
**Centerpoint® Roofing Structure**  
**Housing Project**

Transparent Lexan Thermoclear sheet roofing structure is designed to allow penetration of natural, filtered daylight into living areas without the energy loss and higher heating and cooling costs of glass roofing inserts.

**11**  
**Centerpoint® Roofing Structure**  
**Housing Project**

Lexan Thermoclear sheet opal white colour

**12**  
**Conservatory Restaurant Entrance**

Lexan Thermoclear sheet opal white colour



8



9



10



11



12

RESIDENTIAL  
AND CONSER

LEZING  
STORIES

# Restaurant Roofing

Astoa, Greece

Curved, transparent Lexan® Solar Control sheet from SABIC Innovative Plastics helps absorb infrared (IR) and near-IR radiation from the sun, potentially reducing interior heat buildup by up to 40 percent. The tough virtually unbreakable SABIC Innovative Plastics material also helps protect restaurant customers from inclement weather conditions while allowing penetration of natural daylight into living, working or sitting areas.



RESTAURANT



# POOLCOVERS

13  
Crown Paradise Hotel  
in Cancun, Mexico  
Lexan® Solar Control IR sheet

14  
Swimming Pool Shelter  
Lexan® Thermoclear® sheet  
transparent

15  
Swimming Pool Shelter  
Lexan Thermoclear sheet  
transparent

16  
Swimming Pool Shelter  
Lexan Thermoclear sheet  
transparent

17  
Swimming Pool Shelter  
Lexan Thermoclear sheet  
transparent

Swimming pool shelters with  
Lexan Thermoclear Plus sheet  
demonstrate extreme endurance  
in this low profile pool cover.



14



15



16



17

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## Product Solutions for Wall Cladding

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Lexan* Thermoclick* Sheet Facade Systems	Lexan* Thermoclick* sheet LTC404X4000, is an impact resistant, energy-saving multi-wall sheet with profiled tongue and groove connection, including a groove for double sided tie on the inside. This inter-connecting system eliminates the need for vertical profiles, thereby saving costs and enhancing aesthetics.
Lexan* SG305-OB Sheet	Lexan*SG305-OB sheet is an optical bright light diffuser sign grade. This extruded polycarbonate sheet offers significant advantages over many other sign materials in terms of design freedom, aesthetics and weathering properties
Lexan* Thermoclear* Sheet	Lexan* Thermoclear* Sheet is high insulation multiwall sheet product with excellent thermal insulation values. A sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. The complete range offers remarkable impact strength, high light transmission, light weight, long term weather resistance and, due to the multi-wall construction, outstanding thermal insulation properties and is 2 sides UV protected. Lexan Thermoclear Plus 2UV sheet grades are available in Clear (112), Opal White (WH7A092X), Bronze (515055), Opaque White (GY8D201), Solar Control IR Green (GN8B038T) and Metallic (GY6A744M).
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Lexan* Thermopanel* sheet	Standard Roof Systems. The solution for in plane insulated roof lights to match with standard metal panels.
Lexan* Thermoroof* sheet	Custom Roof Systems. Custom made insulated roof light products.

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Wall cladding has an important influence on the character of a building. Lexan\* sheet systems provide exciting design opportunities that are a world apart from the drab uniformity of traditional flat panels.

With their inherent design freedom, Lexan sheet systems allow designs that are visually striking and yet extremely practical.



WALL CLADDING



1



2



3

**1**  
Façade of the building  
in Barcelona, Spain by night  
Lexan® Thermoclick® sheet System

**2**  
Façade of the building  
in Barcelona, Spain by daylight  
Lexan Thermoclick sheet System

**3**  
Industrial Warehouse, Austria  
Lexan Thermoclick sheet  
opal white colour

**4**  
DackeStop Museum of Arts  
in Virserum, Sweden  
curved Lexan Thermoclick sheet  
opal white colour



## Blue Cube Massachusetts

Building a giant, luminescent “blue cube” with Lexan® Polycarbonate Thermoclick® sheet system

The New Bedford Seaport in Massachusetts is a historic coastal site nicknamed the “Whaling City” because it was formerly a key port for whaling. With its maritime heritage, the seaport has focused on marine education. The most recent attraction is the Ocean Explorium, a joint partnership between the University of Massachusetts, Dartmouth and the New Bedford Oceanarium, which takes a new approach to the concept of aquariums and marine education. The focal point for the new facility is an exhibit called Blue World Pavilion, an educational exhibit featuring advanced technology to depict a three-dimensional view of the planet on a large sphere suspended in space. To enclose this sphere, the Ocean Explorium contracted with cosestudi, an exhibit design group. In turn, cosestudi worked with EXTECH/Exterior Technologies to build a translucent cubical structure. The material chosen for the walls of the “blue cube” was Lexan Thermoclick sheet from SABIC Innovative Plastics.

lexan lighting



5



6

5  
**Sports centre**  
Lexan® Thermoclick® sheet system

6  
**Hangar facility in New York, USA**  
Lexan® Thermoclear® sheet  
opal white colour

7  
**Haestens Office Building  
in Sweden**  
Lexan Thermoclick sheet system

8  
**Wall Cladding Warehouse**  
Lexan Thermoclick sheet system

9  
**Wall Cladding Sport centre**  
Lexan Thermoclick sheet system

10  
**Theater Building, Rotterdam,  
The Netherlands.**  
Lexan® Corrugated sheet



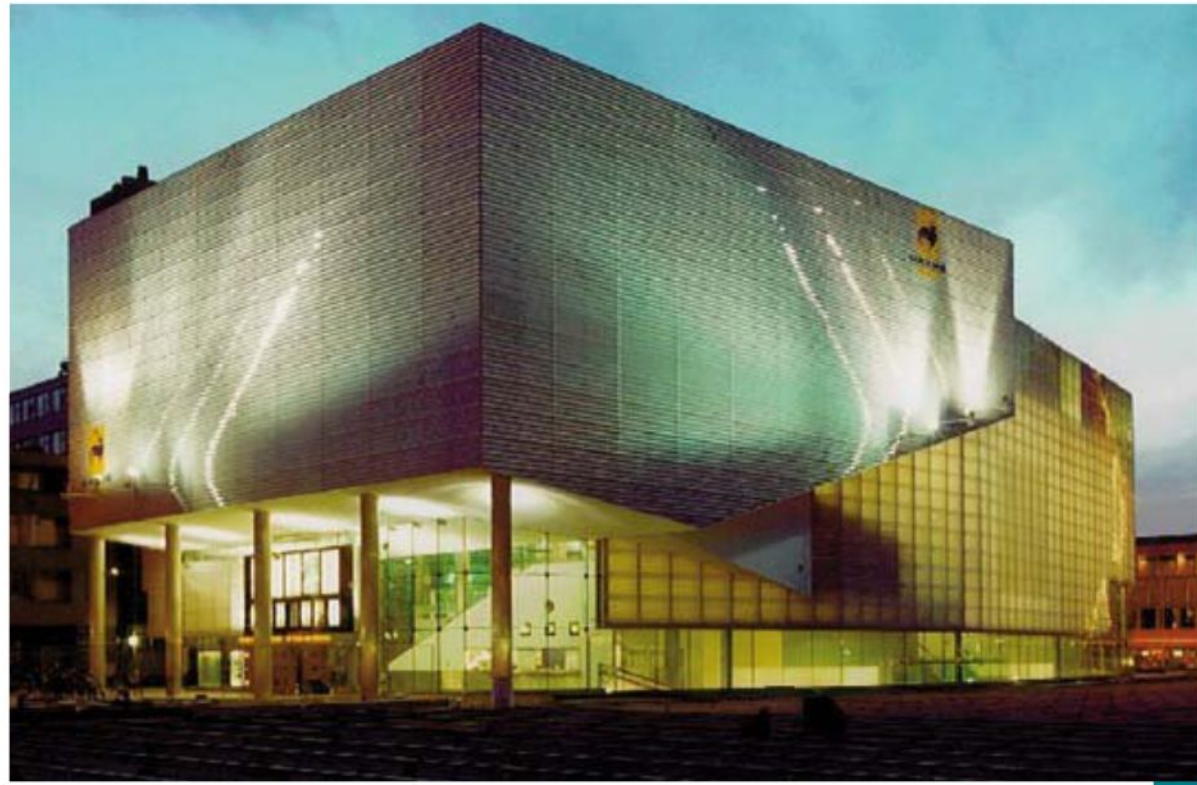
7



8



9



10



11  
Philips Science Park  
Wall Cladding  
Lexan® SG305 SLG sheet

12  
Philips Science Park  
Wall Cladding  
Lexan SG305 SLG sheet

13  
Philips Science Park  
Wall Cladding  
Lexan SG305 SLG sheet

14  
Warehouse Wall Cladding  
Thermoformed Lexan® sheet

12



13

11

wall





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## Product Solutions for Security Glazing and Storm Protection

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### Lexan\* Margard\* sheet

Lexan\* Margard\* MR5E sheet is a transparent UV and mar resistant glazing material for flat applications only. The intrinsic properties of Lexan polycarbonate combined with its dual hard coated surface provide: high impact strength and forced entry protection, graffiti resistance, excellent all weather performance.

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### Lexan\* Soundglaze\* sheet

Lexan Margard Soundglaze and Soundglaze SC sheets are virtually unbreakable, UV protected transparent polycarbonate sheet products which have ideal properties for demanding sound screen and noise reduction barrier applications in urban, road, rail, and airport environments.

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### Lexan\* Margard\* FMR5 XT sheet

Lexan\* Margard\* FMR5 XT sheet is a transparent UV and abrasion resistant glazing material. Extremely high impact strength, with the capacity to be cold curved or drape formed. Two side formable hard-coated, offers resistance against wear and tear.

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### Lexan\* Lookout Clear Storm Panels

Clear storm panels from Lookout\* Shutters, Inc. are made with SABIC Innovative Plastics' Lexan\* sheet for windows and doors. Lookout clear storm panels help protect homes and businesses from the devastating damage caused by hurricanes and storms.

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SECURITY GLAZING

Lexan\* Margard\* sheet can be an excellent candidate for safety and security glazing to suit a wide range of applications. Lexan Margard sheet will resist a burglar from forcing an entry. It will delay him to a point where he simply gives up the attempt, or is detected. Either way, the premises and property are protected and re-glazing costs are eliminated.

Lexan Margard sheet will not shatter or splinter, so greatly reduces the risk of accidental injury in applications like internal partitions and doors...



AND STORM PROTECTION



# SOUNDWALLS

- 1 Soundwall used for highway in Holland**  
Lexan® Margard® sheet  
transparent
- 2 Soundwall used for Metro Line in Poland**  
Lexan® Soundglaze® SC sheet  
blue colour
- 3 Soundwall used for Highway in China**  
Lexan Margard sheet  
transparent
- 4 Soundwall Highway Crossing in Poland**  
Lexan Margard sheet  
transparent
- 5 Abbot Bridge near Los Angeles, USA**  
Lexan® Thermoclear® sheet  
opal white colour



2



3



4



5



6  
Ski Jump Barrier Olympic Winter  
Games Torina 2006  
Lexan® Soundglaze SC\* sheet  
transparent

7  
Safety Glazing for Ice Skating  
Centre  
Lexan® Margard\* MR5E sheet  
transparent

8  
Rollershutter of a Shop  
in Rotterdam, Netherlands  
Lexan Margard MR5E sheet  
transparent

9  
Seperation Wall of a Stadium  
Lexan Margard MR5E sheet  
transparent

10  
Dug Out of a Football Stadium  
Lexan Margard sheet  
opal white colour

# SECURITY GLAZING



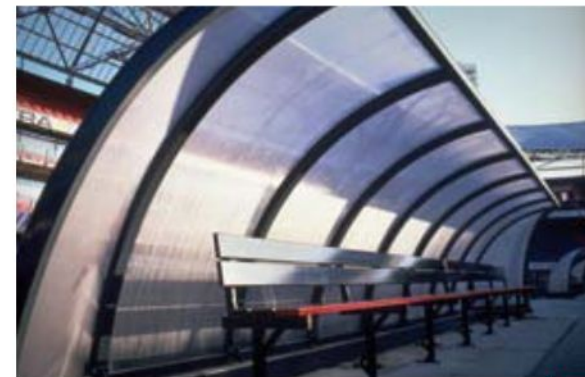
7



8



9



10



11



12

**11**  
Clear Storm panels  
from Lookout® Shutters Inc.  
Lexan® sheet  
transparent

**12**  
Window Storm Panel  
Lexan sheet  
transparent

**13**  
Light home interior through using  
Lookout® clear storm panels  
Lexan sheet  
transparent



13



# STORM PROTECTION

## See-through Hurricane Protection!

Clear storm panels from Lookout® Shutters, Inc. are made with SABIC Innovative Plastics' Lexan® sheet for windows and doors. Lookout® clear storm panels help protect homes and businesses from the devastating damage caused by hurricanes and storms.

**The difference is clear with see-through hurricane protection!**

Lookout® Shutters, Inc., has chosen to utilize SABIC Innovative Plastics' Lexan sheet to help protect homes and businesses from the forces of nature. Lookout's patented system (utilizing Lexan sheet as a component) is quick and easy to install, and can be used with standard f-tracks and headers.

### Benefits

- Lets light into your home and office
- Aesthetically pleasing and may stay-up seasonally
- Lightweight—easily installed and removed
- No glass breakage
- Serves as vandal deterrent

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## Product Solutions for Home Construction and Interior Applications

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### Lexan® Thermoclear® Sheet

Lexan® Thermoclear® Sheet is high insulation multiwall sheet product with excellent thermal insulation values. A sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. The complete range offers remarkable impact strength, high light transmission, light weight, long term weather resistance and, due to the multi-wall construction, outstanding thermal insulation properties and is 2 sides UV protected. Lexan Thermoclear Plus 2UV sheet grades are available in Clear (112), Opal White (WH7A092X), Bronze (515055), Opaque White (GY8D201), Solar Control IR Green (GN8B038T) and Metallic (GY6A744M).

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### Lexan® Thermoclear® Hammered Glass Sheet

Lexan Thermoclear "Hammered Glass Look" sheet offers: totally new aesthetics with improved light diffusion, twin, triple and X-structure wall structure, both sides U.V. protected, long-term weather resistance, high impact strength, excellent light transmission, Light weight, easy installation and outstanding thermal insulation properties.

---

### Lexan® Margard® sheet

Lexan® Margard® MR5E sheet is a transparent UV and mar resistant glazing material for flat applications only. The intrinsic properties of Lexan polycarbonate combined with its dual hard coated surface provide: high impact strength and forced entry protection, graffiti resistance, excellent all weather performance.

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### Lexan® Exell®-D Sheet

Lexan® Exell®-D Sheet is a transparent polycarbonate solid sheet with proprietary UV protection on both sides offering excellent weathering properties. With its excellent impact resistance it is an excellent candidate for a wide variety of building and construction applications. Lexan Exell D sheet can be easily cold formed into gentle curves which makes it a good material choice for skylights, covered walkways, barrel vaults etc. Lexan Exell D sheet is thermoformable and can be thermoformed into the desired geometry whilst retaining the UV resistant coating specially developed for weather resistant applications.

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### Lexan® Thermoclick® Sheet Facade Systems

Lexan® Thermoclick® sheet LTC404X4000, is an impact resistant, energy-saving multi-wall sheet with profiled tongue and groove connection, including a groove for double sided tie on the inside. This inter-connecting system eliminates the need for vertical profiles, thereby saving costs and enhancing aesthetics.

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HOME CONSTRUCTION AND

While the characteristics of glass – weight and brittleness – limit its design versatility, Lexan\* sheet products can provide exceptional design freedom mainly due to their light weight, ability to be formed and bent into complex shapes. Next to that it offers easy installation, resistance to yellowing, graffiti, scratching and breakage.



INTERIOR APPLICATIONS

## Ceiling Topographies

By using textured Lexan sheet, The Topo™ 3-Dimensional System by USG transforms flat interior ceiling planes into gently rolling landscapes and adds aesthetic interest while filtering overhead light. USG is a leading manufacturer of building materials for construction and remodeling. From major commercial developments, to residential housing and simple home improvement projects, USG products turn vision into reality everywhere people live and work.



1



2

1  
Ceiling Office Building  
Lexan® sheet

2  
Ceiling Nailstudio  
Lexan® sheet

3  
Wall DackeStop Museum of Arts in  
Visserum, Sweden  
Lexan® Thermoclick® sheet  
opal white colour

4  
Apartment Partition Wall  
Lexan® Thermoclear®  
Hammered Glass Look sheet

5  
Interior Partition Walls  
in 100% Design EXPO Restaurant  
Lexan Thermoclear  
Hammered Glass Look sheet

6  
Partition Wall  
Lexan Thermoclear  
Hammered Glass Look sheet

7  
Façade and interior  
Theater Building,  
Lexan® Corrugated® Sheet

8  
Interior The Spike Cyberworks  
Lexan® sheet system



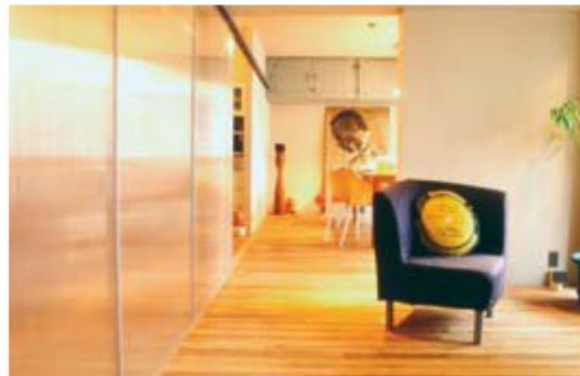
5



3



6



4



7



8

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## Product Solutions for Large Architectural Projects

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Lexan® Thermoclear® Sheet	Lexan® Thermoclear® Sheet is high insulation multiwall sheet product with excellent thermal insulation values. A sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. The complete range offers remarkable impact strength, high light transmission, light weight, long term weather resistance and, due to the multi-wall construction, outstanding thermal insulation properties and is 2 sides UV protected. Lexan Thermoclear Plus 2UV sheet grades are available in Clear (112), Opal White (WH7A092X), Bronze (515055), Opaque White (GY8D201), Solar Control IR Green (GN8B038T) and Metallic (GY6A744M).
Lexan® Margard® sheet	Lexan® Margard® MR5E sheet is a transparent UV and mar resistant glazing material for flat applications only. The intrinsic properties of Lexan polycarbonate combined with its dual hard coated surface provide: high impact strength and forced entry protection, graffiti resistance, excellent all weather performance.
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Lexan® Thermoclick® Sheet Facade Systems	Lexan® Thermoclick® sheet LTC404X4000, is an impact resistant, energy-saving multi-wall sheet with profiled tongue and groove connection, including a groove for double sided tie on the inside. This inter-connecting system eliminates the need for vertical profiles, thereby saving costs and enhancing aesthetics.
Lexan® Thermopanel® sheet	Standard Roof Systems. The solution for in plane insulated roof lights to match with standard metal panels.
Lexan® Thermoroof® sheet	Custom Roof Systems. Custom made insulated roof light products.

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LARGE AR

Building on a legacy of leading-edge products and long-term experience in large architectural projects like stations and stadium glazing, SABIC Innovative Plastics continues to push forward with state-of-the-art materials designed to help our customers to achieve competitive differentiation through new **designs, safety, durability and comfort.**



ARCHITECTURAL PROJECTS





For over a quarter of a century, Lexan® polycarbonate glazing materials have been the materials of choice in stadiums and arenas around the world. From balconies, dugouts and walkways to bowl cladding, separation walls and roofing, architects and installers value the materials' different coating surfaces, lightweight and formability into the most complex designs.

**1**  
**Millennium Dome**  
**Greenwich, England**

More than 12,000 m<sup>2</sup> Lexan® Exell® -D and Thermoclear® sheets are used to construct the exterior/interior cladding walls of the Millennium Dome. According to architects involved in this project, these materials were chosen because of the outstanding impact strength, optical clarity and design flexibility.

**2**  
**Shaikh Khalifa Stadium**  
**Sport Academy, Doha, Qatar**

Lexan Exell-D  
Solar Control IR sheet

**3**  
**Detail Pyramid**

Lexan Exell-D  
Solar Control IR sheet



2

Beginning with its first application in a stadium in Split, Croatia in 1979, Lexan® Thermoclear® sheet has been selected for several Olympic arenas, including the Barcelona and Sydney facilities, as well as six stadiums that hosted the UEFA Euro 2004™ football championship in Portugal and four stadiums of the UEFA Euro 2008™ football championship in Austria and Switzerland.

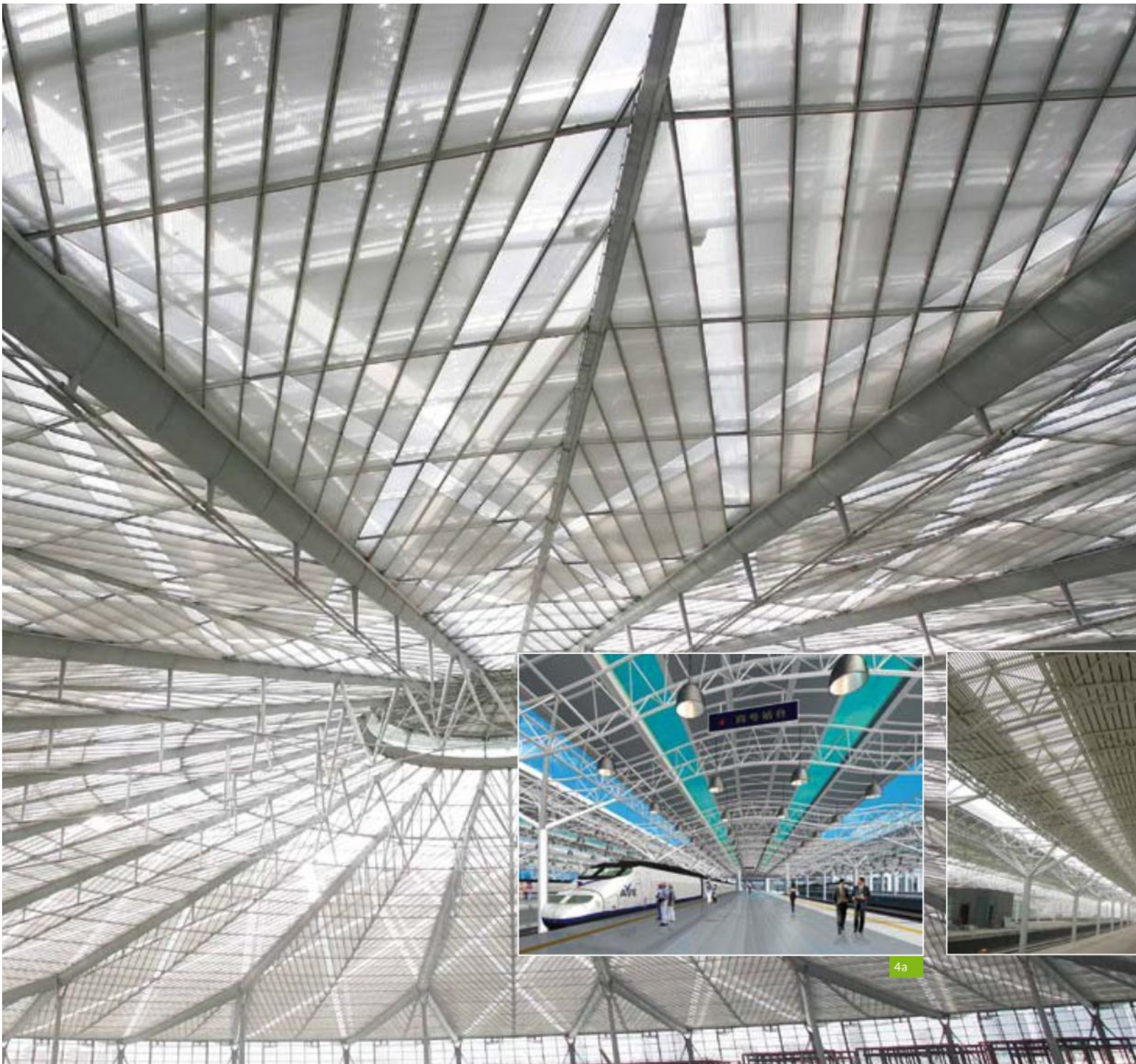
Lexan sheet glazing materials can help to deliver measurable return on investment through ease of installation; lower insurance costs through resistance to break-ins, weather damage, and vandalism; and less need for replacement due to UV degradation, weathering, and breakage. Most of these products are covered by a minimum 10-year limited written warranty against excessive yellowing, loss of light transmission, and loss of strength due to weathering.

Building on a legacy of leading-edge products, SABIC Innovative Plastics continues to push forward with state-of-the-art materials designed to further help our customers to achieve competitive differentiation through new designs, safety, durability and comfort.

For the most of the large architectural projects SABIC Innovative Plastics, Specialty Film & Sheet business engages its global team of experts and manufacturing facilities around the world.



3



**4**  
Arrival & Departure Hall  
Shanghai Railway Station  
Lexan® Thermopanel®  
multiwall sheet

**5**  
The installation of the Roofing  
Shanghai Railway Station  
Lexan Thermopanel  
multiwall sheet

**6**  
The completed Shanghai  
Railway Station  
Lexan Thermopanel  
multiwall sheet



4a



4b

55,000 m<sup>2</sup> Of a new tailor-made Lexan\* Thermopanel\* multiwall sheet is installed for the roof of the Shanghai South Railway station. Not only does this ambitious construction project represent one of the largest building with polycarbonate sheet ever used, but more importantly underscores SABIC's commitment to help revitalize the Chinese infrastructure with some of the world's most advanced materials technologies.



5

# ANGHAI RAILWAY STATION

Much of the roof of the Shanghai South Railway Station covers the upper departure area of the station, which is around 300 meters in diameter and capable of holding up to 10,000 people. The custom-designed sheet is being manufactured using procedures developed specifically for this demanding project. The company engaged a global team of experts from Specialty Film & Sheet business in China, France, Italy, India and European headquarters in Bergen op Zoom, The Netherlands



6

# THREE DECADES OF PROVEN PERFORMANCE IN

# STADIUM ROOF

Safety, comfort, durability, and design Building on a legacy of leading-edge products, SABIC Innovative Plastics continues to push forward with state-of-the-art materials designed to further help our customers to achieve competitive differentiation through new designs, safety, durability and comfort.



7

Lexan® Thermoclear® sheet from SABIC Innovative Plastics is an impact-resistant, multi-wall polycarbonate (PC) glazing material. It features a proprietary surface treatment on one or both sides that provides excellent resistance against degradation from UV radiation, while transmitting visible light very well. It withstands high wind and snow loads, and storms.

7

Porto Dragoa Football Stadium,  
Portugal

Lexan® Thermoclear® sheet

The multi-wall construction of Lexan Thermoclear sheet also ensures excellent thermal insulation. It is available in X-structure and rectangular -structure configurations, and a variety of special coatings and finishes to address special challenges:

- Lexan Thermoclear Easy Clean sheet products feature a patented hydrophobic coating that offers self-cleaning properties.
- Lexan Solar Control IR solid and multi-wall sheet grades reduce heat build-up by blocking near-infrared radiation.

More than 74,000m<sup>2</sup> Lexan Thermoclear sheet has been used for the roof glazing in of 6 stadiums that hosted the UEFA Euro 2004™ in Portugal.

Lexan Thermoclear sheet is also used for the roofs of four stadiums for the UEFA Euro 2008 football championship in the Tivoli NEU Stadium in Innsbruck, Salzburg Wals-Seizenheim Stadium in Salzburg, Wörthersee Stadium in Klagenfurt, all three based in Austria, and Stade de Suisse Wankdorf stadium in Bern, Switzerland.



FINA

## Wörthersee Stadium Klagenfurt - Austria

Newly built stadium, opened in September 2007.  
Capacity: up to 30,000. 11,000 m<sup>2</sup> of transparent  
roof is made of Lexan® Thermoclear® 25mm 6RS  
sheet up to 18.5 meter length.

Architect: Albert Wimmer  
Installer: PORR AG  
Distributor: Interlux



8

## Chongqing's Olympic Stadium, West China

### **Lexan® Thermoclear® Easy Clean sheet**

Lexan® Thermoclear® Easy Clean sheet glazes Chongqing's first Olympic stadium rooftop. The patented technology of Lexan Thermoclear Easy Clean sheet was chosen by Chongqing Urban Development Co., Ltd. for the roof glazing of the first Olympic stadium in Chongqing, west China. With over 60,000 people to please over an area of around 36,000 square meters, this comes as no surprise. Lexan Thermoclear Easy Clean sheet needs minimal cleaning, provides excellent light transmission, delivers a high stiffness performance, and helps protect spectators from changing weather conditions.

## Luz stadium Lisbon, Portugal

### **Lexan® Thermoclear® X-structure sheet**

Luz is Portugal's biggest stadium with a fully covered seating capacity of 65,000 spectators. It incorporates a series of high quality facilities and has been specially designed to withstand long-term exposure to sunlight and harsh weather conditions.

## Dragão stadium Porto, Portugal

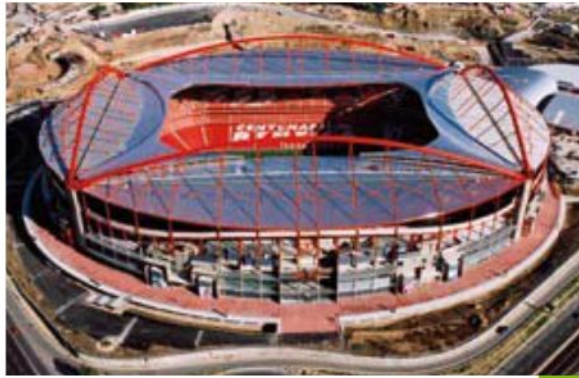
### **Lexan® Thermoclear® X-structure Sheet**

Dragão stadium, the stadium has a 50,000-seat capacity, incorporates 280 tonnes of metal in its structure and has an array of pillars to support its translucent roof. The roof incorporates 35,200m<sup>2</sup> of Lexan Thermoclear X-structure sheet.



9

8  
Chongqing's Olympic Stadium,  
West China  
Lexan® Thermoclear®  
Easy Clean sheet



10

9  
Chongqing's Olympic Stadium,  
West China  
Lexan Thermoclear  
Easy Clean sheet

10  
Luz Stadium Lisbon, Portugal  
Lexan Thermoclear  
X-structure sheet



13

11  
Salzburg Wals-Seizenheim  
Stadium in Salzburg, Austria  
Lexan® Thermoclear®  
X-structure sheet  
transparent



11

12  
Dragão Stadium Porto, Portugal  
Lexan Thermoclear  
X-structure sheet

13  
Olympic Stadium of Sydney,  
Australia  
27,000m<sup>2</sup> of Lexan Thermoclear®  
sheet was used for the most chal-  
lenging engineering feature of  
the stadium, the 300-metre span  
roof structure. Suspended from  
a huge arch structure, the roof is  
constructed from a translucent  
grade of Lexan polycarbonate to  
help minimize any shadows  
and patches of direct sunlight  
on the sporting area.



12

14  
Wankdorf Stadium in Bern,  
Switzerland  
Lexan Thermoclear SunXP sheet



14





Amsterdam Arena in Amsterdam, The Netherlands is Europe's first stadium with a sliding roof, made from transparent sheet. 20.000m<sup>2</sup> - The sliding roof was necessary to allow events to be staged regardless of the weather.

15  
Escalator Tunnels  
Amsterdam Arena  
Lexan® Solar Control IR sheet



16  
Amsterdam Arena  
Football Stadium  
Lexan® Thermoclear® sheet

# DAM ARENA

The Amsterdam Arena, in addition to major sports and concert events, is also popular for smaller events. Altogether, the Arena with a total capacity of 52,000 seats, hosts about 70 major events per year, with around 2.1 million visitors in total, including tours.

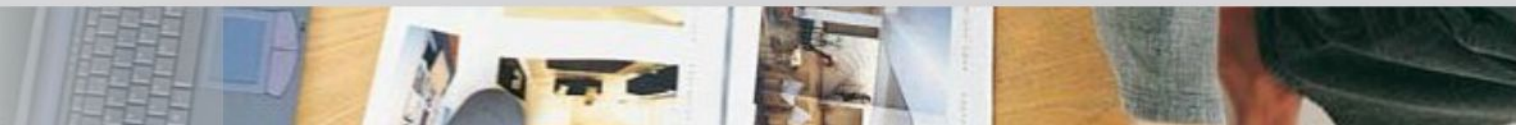


DESIGN AND

While the characteristics of glass – weight and brittleness – limit its design versatility, Lexan\* sheet products can provide exceptional design freedom, mainly due to their light weight, ability to be formed and bent into complex shapes. Next to that it offers easy installation, resistance to yellowing, graffiti, scratching and breakage.



# ENGINEERING SERVICES



ENABLING CREATIVE





## Enabling Creative Designs

A successful architectural requires a well-designed concept, the right material and an appropriate construction process. While these factors are individually of great importance, it is in the areas where they meet that they become truly critical to the final building. Creating a design, which uses a particular construction technique, and tuning this design to a selected material can be especially complicated areas.

For architects, contractors and installers around the world, SABIC Innovative Plastics Specialty Film & Sheet is much more than a supplier of high quality glazing materials. We offer our assistance with an insight into the considerations necessary when designing buildings in polycarbonate sheet. From the conceptual design phase to actual result, we offer our assistance to our customers on:

<b>Architect</b>	Design / Consultancy service Product advices Specification/ project requirements
<b>Main contractor Engineer office</b>	Computer analysis Prediction of sheet behavior during loading
<b>Subcontractor Installer</b>	Fixing details Glazing profile design Installation guidelines Handling

Based on your designs, we can offer experience and knowledge about:

- Anticipated structural requirements
- Anticipated environments
- Assembly and profile requirements
- Secondary operations and maintenance
- Cost limits
- Regulations/standards compliance



## Design and engineering services from concept... ...to realization of the project

The design for the new Lansdowne Road, Aviva Stadium in Dublin, Ireland has been created by international stadium architects, HOK Sport Architecture. The undulating design makes wide usage of translucent Lexan\* sheet materials that are reflecting the color of the sky and light conditions, making the building's façade ever changing.

The distinctive transparent form of the new Lansdowne Road stadium will be an important addition to the skyline of Dublin, symbolizing the positive future for sport in Ireland. It will be a sporting and entertainment venue with 50,000 seating that provides facilities and comfort levels comparable to the best in the world.

**Architect:**  
HOK Sport Architecture  
London - UK  
**Engineering office:**  
Buro Happold  
London - UK  
**Installation:**  
Williaam Cox  
Dublin - Ireland

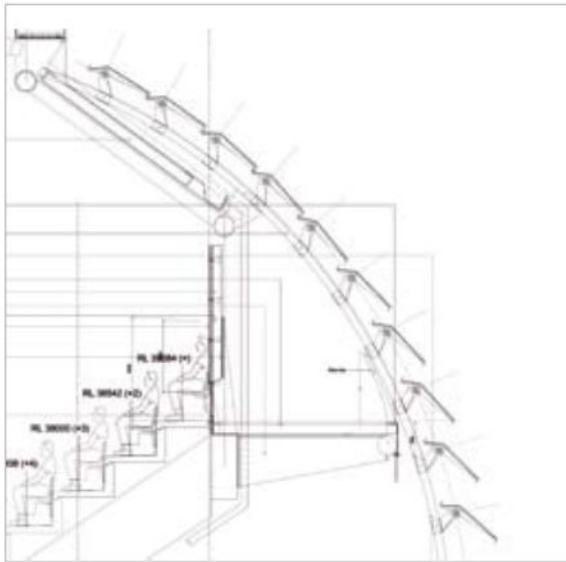


1  
Engineering drawing of cold line  
banded Lexan sheet louvers

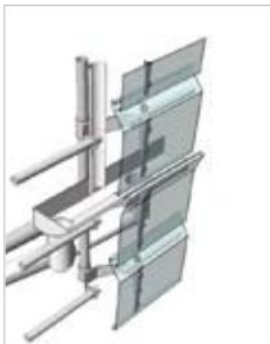
2  
Engineering drawing of Lexan sheet  
louvers

3  
Lexan sheet louvers

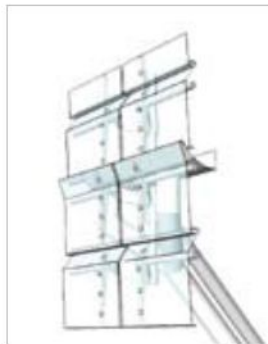
4  
Lexan® Exell D\* sheet with matte finish  
on the outside surface to reduce re-  
flection and glare fixed with bolts onto  
support profiles



1



2a



3b



3a



3b



4

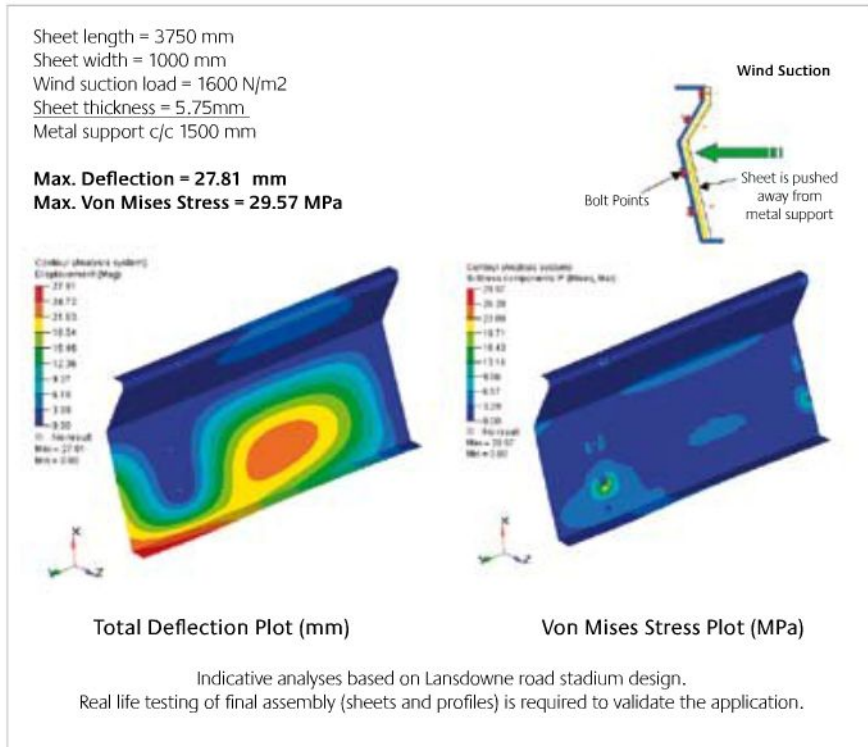


# Computer Analysis

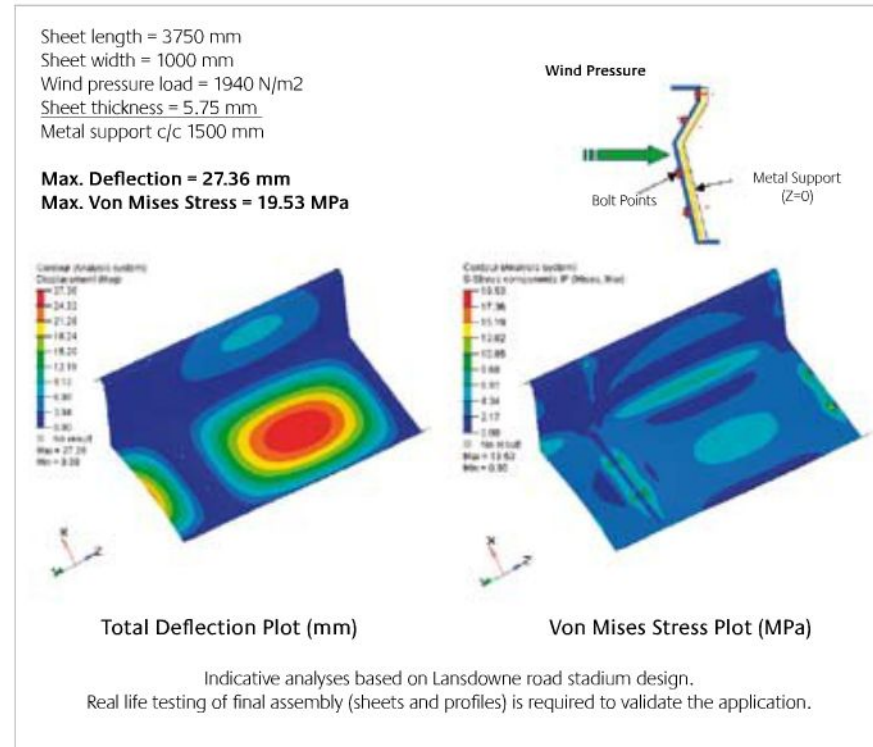
Prediction of Sheet Performance  
During Wind Load

5  
Prediction of sheet deflection /  
stress performance during wind  
suction

6  
Prediction of sheet deflection /  
stress performance during wind  
pressure



5



6

ENABLING





CREATIVE DESIGNS

# Glazing Profiles and Installation

This section of the book is based on a variety of extruded Aluminum glazing profile systems that can be used for Lexan\* polycarbonate sheet glazing and offered by the global network of installers.

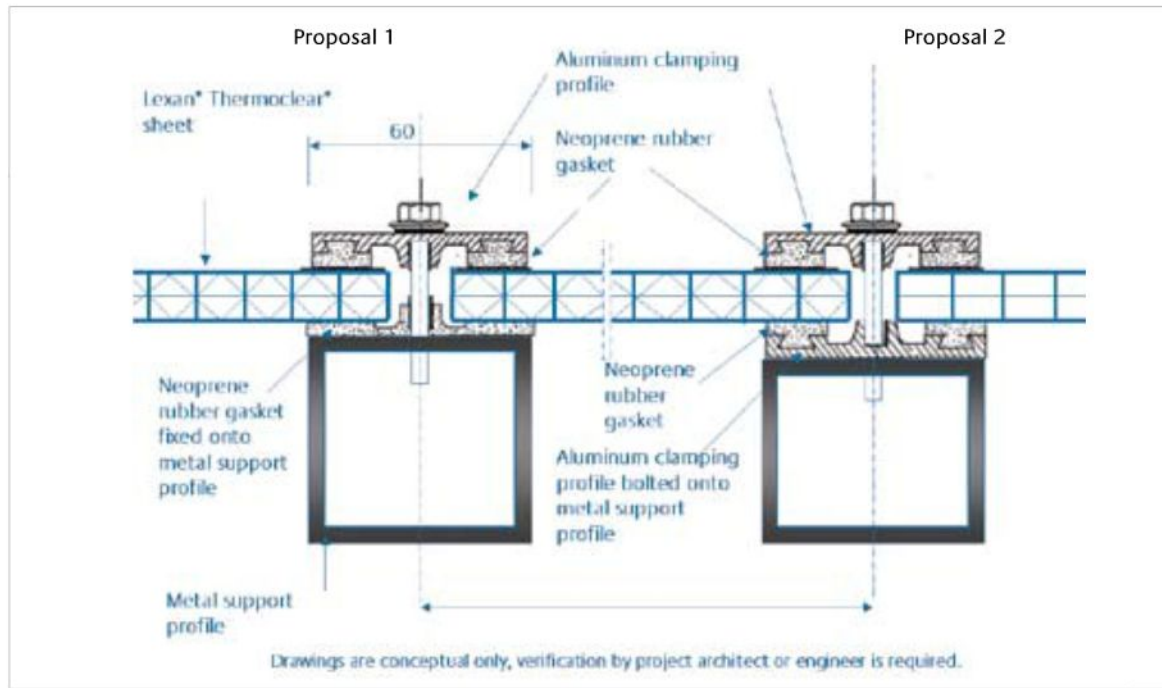
The roof of the Wörthersee Stadium in Klagenfurt, Austria, developed by Interlux, utilized SABIC Innovative Plastics' Lexan\* Thermoclear\* sheet for its stiffness and UV resistance. We would like to give you this stadium as an example to how to use possible profile solutions.



GLAZING



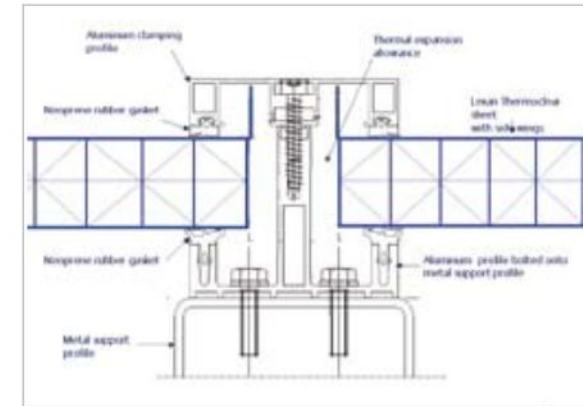
# Alternative Lexan Thermoclear sheet glazing proposals



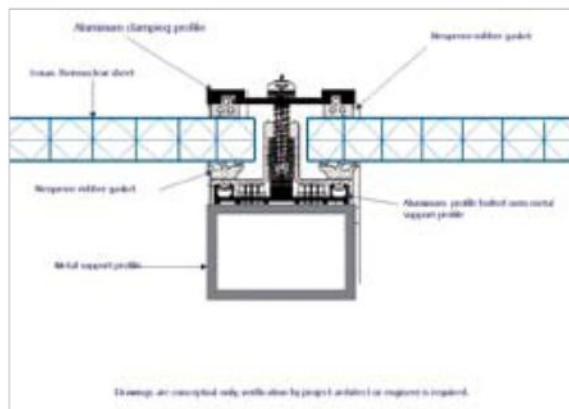
11

11  
Alternative Lexan\* Thermoclear\*  
sheet glazing proposals  
- Aluminium clamping profile

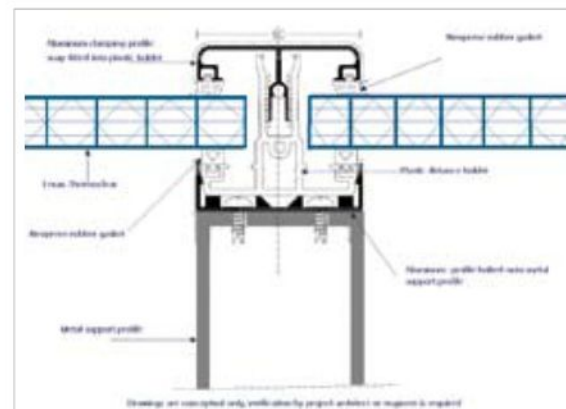
12  
Different alternative glazing  
profiles



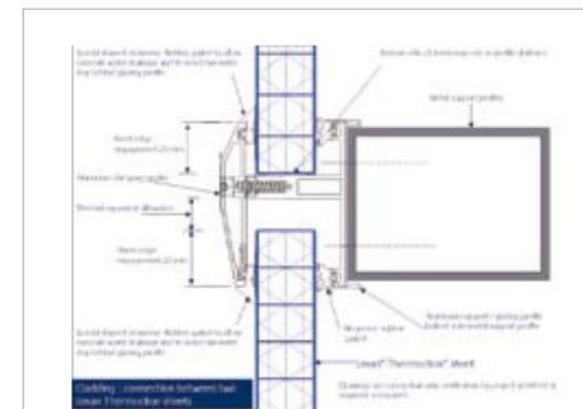
12c



12a



12b

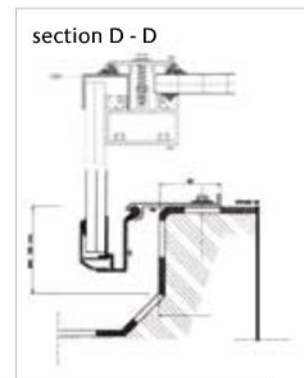
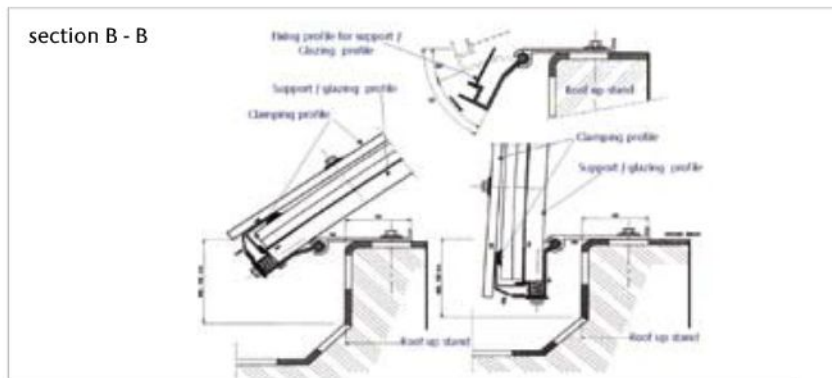
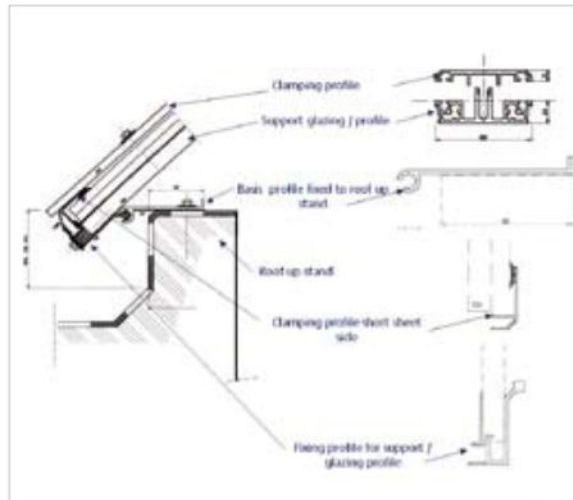
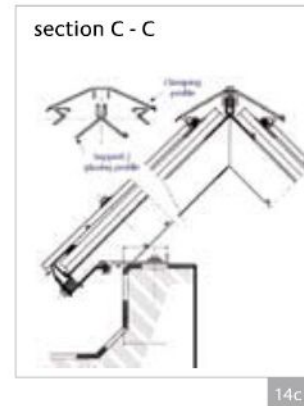
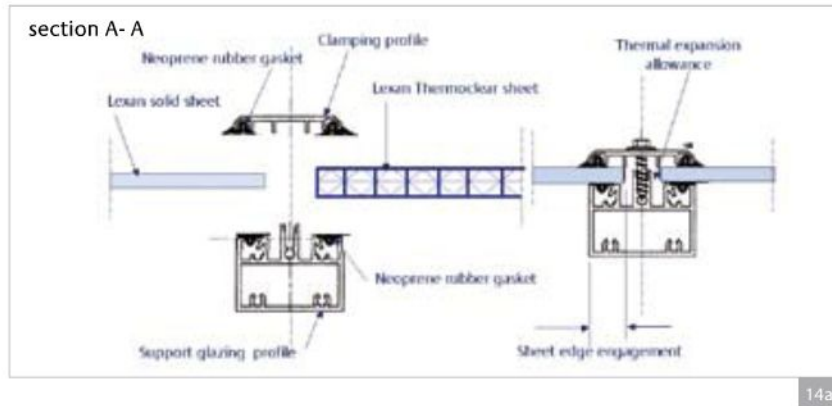
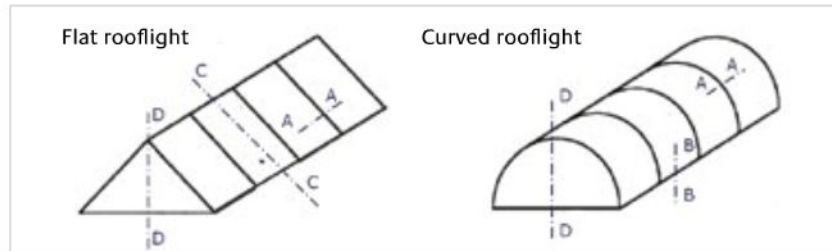


12c

# Aluminum glazing profiles for rooflights

13  
 Aluminum glazing profiles  
 for roof lights  
 - Different Aluminum profiles to  
 install Lexan® sheet for roof lights

14  
 Different Aluminum profiles to  
 install Lexan sheet for roof lights





INSULATION

# Installation

Low weight of the Lexan\* sheet allows small and fewer support profiles, offering easy handling and installation. We also offer our customers handling and installation training supervision on the site.

For architects, contractors and installers around the world, SABIC Innovative Plastics Specialty Film & Sheet is much more than a supplier of high quality glazing materials. From its network of technical centers in the Netherlands, Japan, China and India, the company helps to offer hands-on engineering support. Founded on a history of innovation and technology that spans over 40 years, SABIC Innovative Plastics offers customers services that extends from glazing material selection to profile design and installation guidelines.

SABIC Innovative Plastics Specialty Film & Sheet operates a world-wide network of sales, research, manufacturing and technical

service facilities. With the manufacturing sites across the US, Canada, the Netherlands, Italy, Austria, China, India and Japan, the company serves customers around the world in a broad spectrum of industries and applications.

As a business unit of SABIC Innovative Plastics, Specialty Film & Sheet benefits from global cross-business resources and expertise. At the state-of-the-art polymer processing development center in the USA, engineers, designers and technologists explore and extend the boundaries of film and sheet application development through sophisticated material analysis and advanced processing technology.



# SOURCES



## Architects:

### Chapter " Wall Cladding"

Photo 1 and 2:

Façade of the building in Barcelona, Spain.  
Architect: Pich-Aguilera

Photo 7:

Haestens Building, Sweden  
Architect: Thomas Eriksson

Photo 11, 12 and 13:

Philips Campus, Eindhoven, Netherlands  
JHK Architectural

### Chapter " Interior Applications"

Photo 8:

The Spike Cyberworks  
Architect: Klein Dytham

### Chapter " Large Architectural projects"

Photo 1:

The Millennium Dome in Greenwich, England  
Architect and photography:  
Richard Rogers Partnership Architects

Photo 16:

The Amsterdam Arena  
Architect and photography:  
R.H.M. Schuurman en Sjoerd Soeters

Photo 4, 5 and 6:

The Shanghai Railway Station  
Architect and photography:  
Arep Architects, Paris, France

### Chapter " Design and Engineering Services"

The Lansdowne Road, Aviva Stadium in Dublin, Ireland  
Architects:  
The joint partnership between HOK Sport and Scott Tallon Walker Architects

### Photography cover:

Lian van Herel Photography

### Design and printing:

Page & Poster Graphics  
The Netherlands

sabic-ip.com/sfs

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sfs.info@sabic-ip.com

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