

CHEMISTRY THAT MATTERS™



ENABLING CREATIVE & SUSTAINABLE BUILDING DESIGNS

WITH LEXAN™ POLYCARBONATE SHEET

LEXAN™ Tough
Polycarbonate Film Virtually
Unbreakable

LEXAN is a trademark of SABIC

LEXAN™ SHEET HELPS TO MEET TOUGH CHALLENGES FACING ARCHITECTS AND BUILDERS

SABIC's Functional Forms business 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

Home Construction and Interior Applications

Large Architectural Projects

Design and Engineering Services

INTRODUCTION

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's Functional Forms business 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's Functional Forms 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 W/m²K (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°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.



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's Functional Forms' 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.

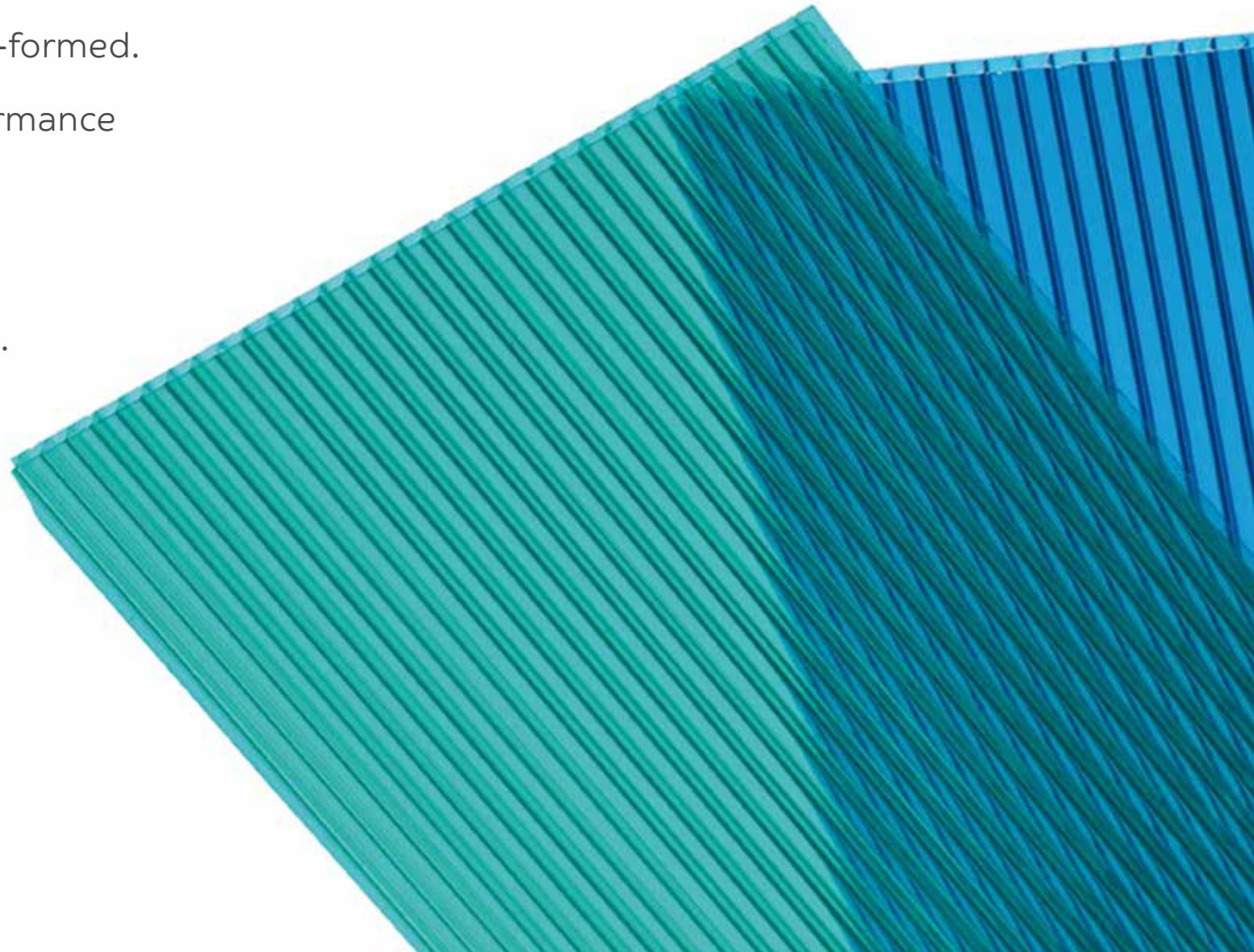
Virtually unbreakable, high optical quality LEXAN polycarbonate (PC) sheet materials from SABIC's Functional Forms are often a top choice due to the versatile glazing solutions that they may help provide.

SABIC's Functional Forms' 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



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Polycarbonate Film Virtually
Unbreakable

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10 YEARS
Limited Warranty

Product Solutions for rooflights and skylights

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.

ROOF LIGHTS AND SKYLIGHTS

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.



2

1

SKYLIGHTS

1
Rooflight Shopping Mall
LEXAN™ EXELL™-D sheet
transparent

2
Skylight Office Building
LEXAN™ THERMOCLEAR™ sheet
16 mm,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



10

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

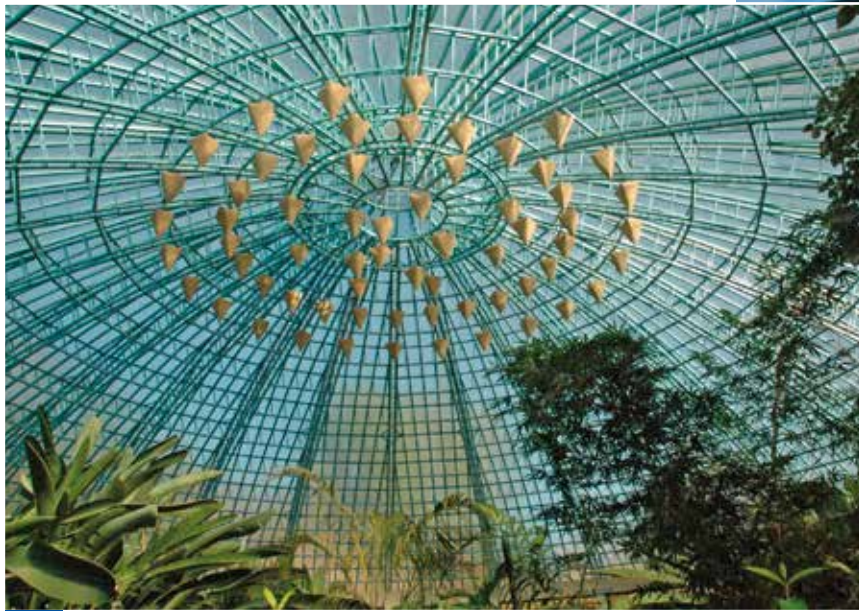
12
Domed Conservatory
India's Butterfly Park
LEXAN EXELL-D sheet
transparent

13
Domed Conservatory
LEXAN THERMOCLEAR sheet
opal white colour

14
Skylight
LEXAN EXELL-D sheet
transparent

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.



11



12



13

14

ROOF
LIGHTS

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 war-
ranty



16



ROOF LIGHTS

17

VERANDAS, CONSERVATORIES AND POOL COVERS

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.



VERANDAS

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
**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 THERMO-
 CLEAR sheet roofing structure
 is designed to allow penetra-
 tion of natural, filtered daylight
 into living areas without the
 energy loss and higher heating
 and cooling costs of glass roof-
 ing inserts.

11
**Centerpoint® Roofing
 Structure Housing Project**
 LEXAN THERMOCLEAR sheet
 opal white colour

12
**Conservatory Restaurant
 Entrance**
 LEXAN THERMOCLEAR sheet
 opal white colour





10



11



RESIDENTIAL GLAZING AND CONSERVATORIES

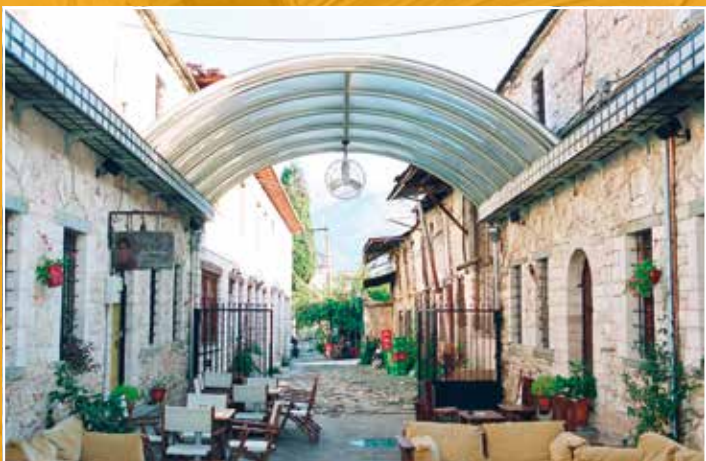


12

RESTAURANT ROOFING

Astoa, Greece

Curved, transparent LEXAN™ Solar Control sheet from SABIC's Functional Forms 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's Functional Forms material also helps protect restaurant customers from inclement weather conditions while allowing penetration of natural daylight into living, working or sitting areas.



CONSERVATORIES

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





18
Swimming Pool Roofing
LEXAN THERMOCLEAR sheet
transparent

19
Swimming Pool Roofing
LEXAN THERMOCLEAR sheet
transparent

POOLCOVERS

Product Solutions for Wall Cladding

LEXAN™ THERMOCLICK™ Sheet Facade Systems in 40 and 50 mm	<p>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.</p> <p>The new 50 mm LEXAN THERMOCLICK sheet [LTC509X] is a unique, 9-wall product with a superb U-value of 1.0 W/ m2K leading to energy saving and offers superior insulation properties vs. multi-pane glass, plus lightweight, extremely high impact resistance, stiffness and ultra violet (UV) protection. With specially designed V-joint connection profile, 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.</p>
LEXAN™ SG305-OB Sheet	<p>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</p>
LEXAN™ THERMOCLEAR™ Sheet	<p>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.</p> <p>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).</p>
LEXAN™ EXELL™-D Sheet	<p>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.</p>
LEXAN™ Solar Control IR Sheet	<p>Is a proprietary solid sheet 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.</p>
LEXAN™ CLINIWALL™ Sheet	<p>A new thermoplastics material solution for clean room surfaces and interior wall cladding applications in public facilities and hospitals. This opaque, low-gloss PC/ABS blend solid sheet delivers high impact- and wear resistance, and it can help provide long awaited solutions to customer's needs for materials that can meet European fire regulation for building materials and their sanitation requirements while helping to save significant maintenance costs, resulting in reduced operation costs.</p>
LEXAN™ Corrugated Sheet	<p>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.</p>
LEXAN™ THERMOPANEL™ Sheet	<p>Standard Roof Systems. The solution for in plane insulated roof lights to match with standard metal panels.</p>
LEXAN™ THERMOROOF™ Sheet	<p>Custom Roof Systems. Custom made insulated roof light products.</p>

WALL CLADDING

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.



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



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’s Functional Forms.

WALL CLADDING



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



7

8
Wall Cladding Warehouse
LEXAN THERMOCLICK sheet
system



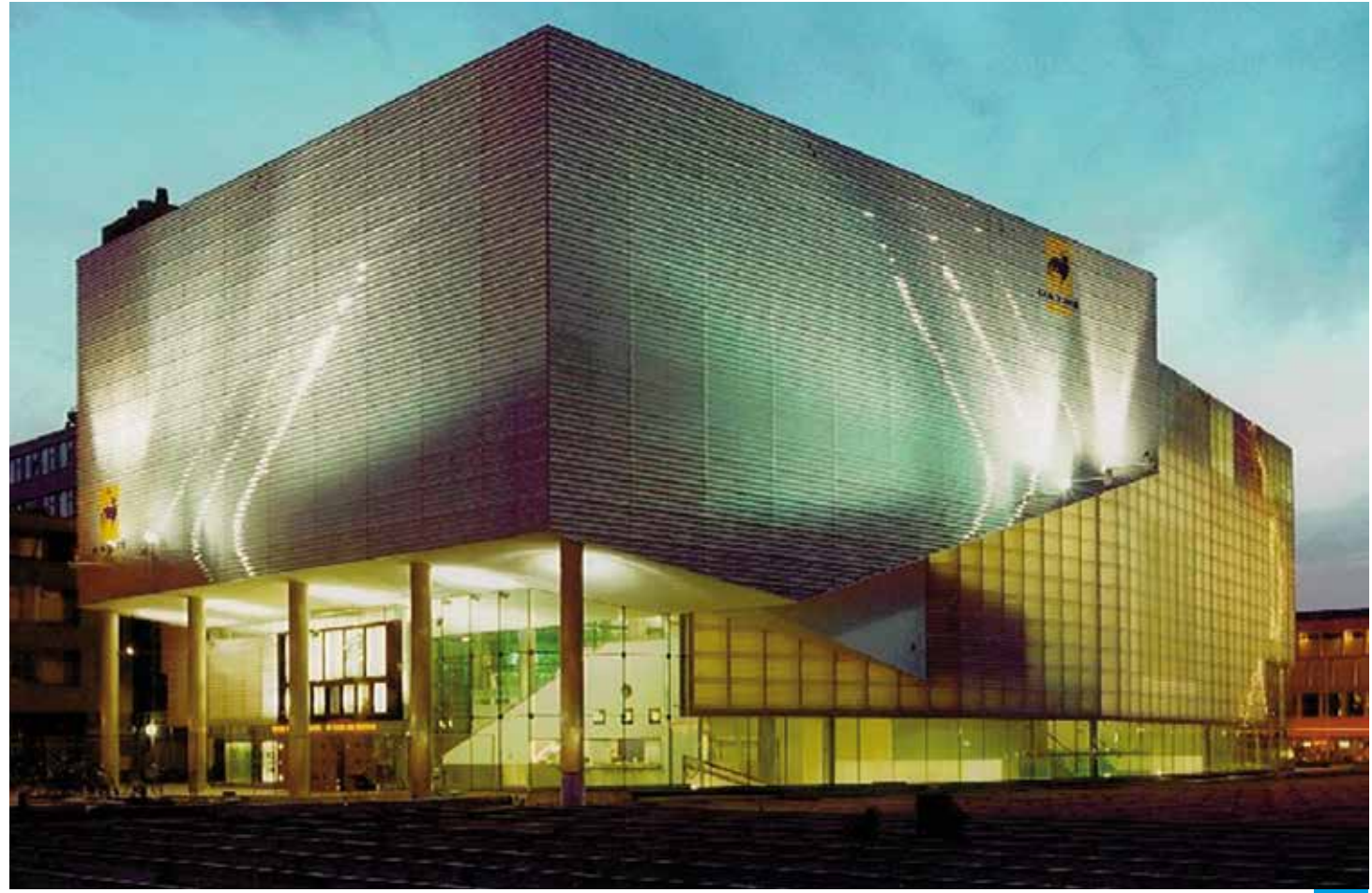
8

9
Wall Cladding Sport centre
LEXAN THERMOCLICK sheet
system

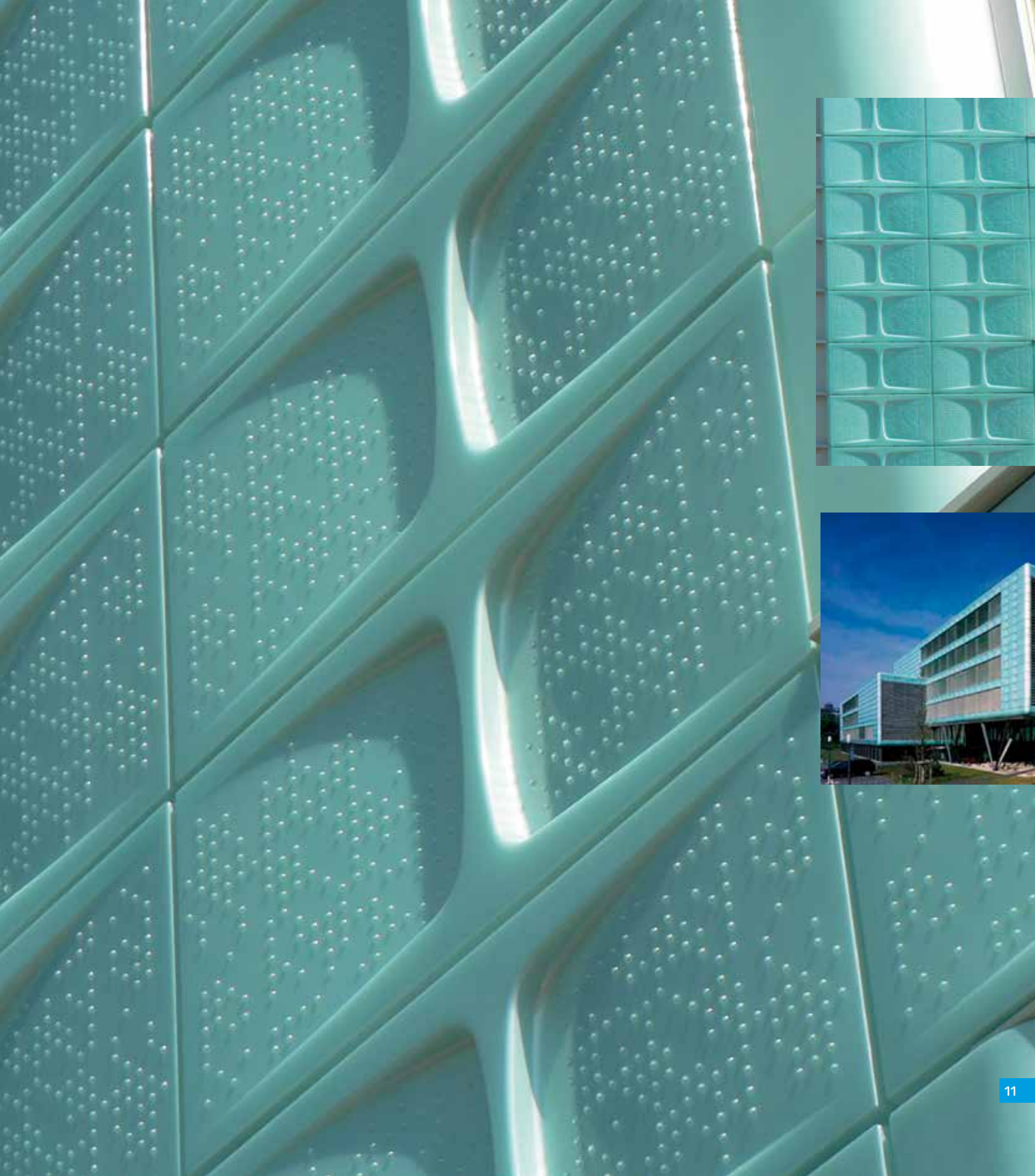


9

10
Theater Building, Rotterdam,
The Netherlands.



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

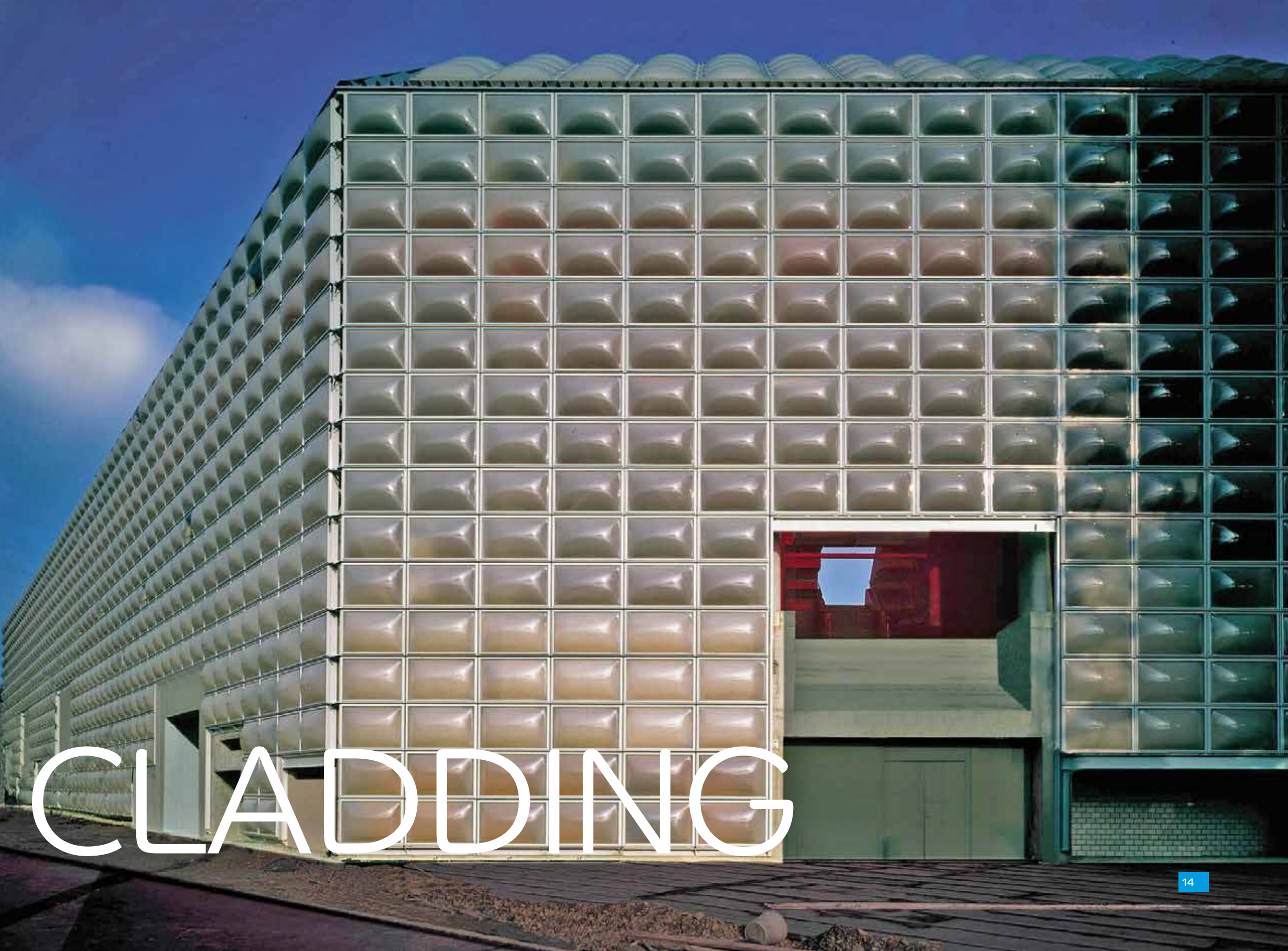
12



13

WALL

11



CLADDING



15



17

15-18
Hospital Interior
Wall Cladding
LEXAN™ CLINIWALL™ sheet

19
Kindergarden
Interior Wall Cladding
LEXAN™ CLINIWALL™ sheet

20
Medical Clinic Interior
Wall Cladding
LEXAN™ CLINIWALL™ sheet

16



18



19



20

INTERIOR WALL CLADDING

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...

SOUNDSCREENS

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



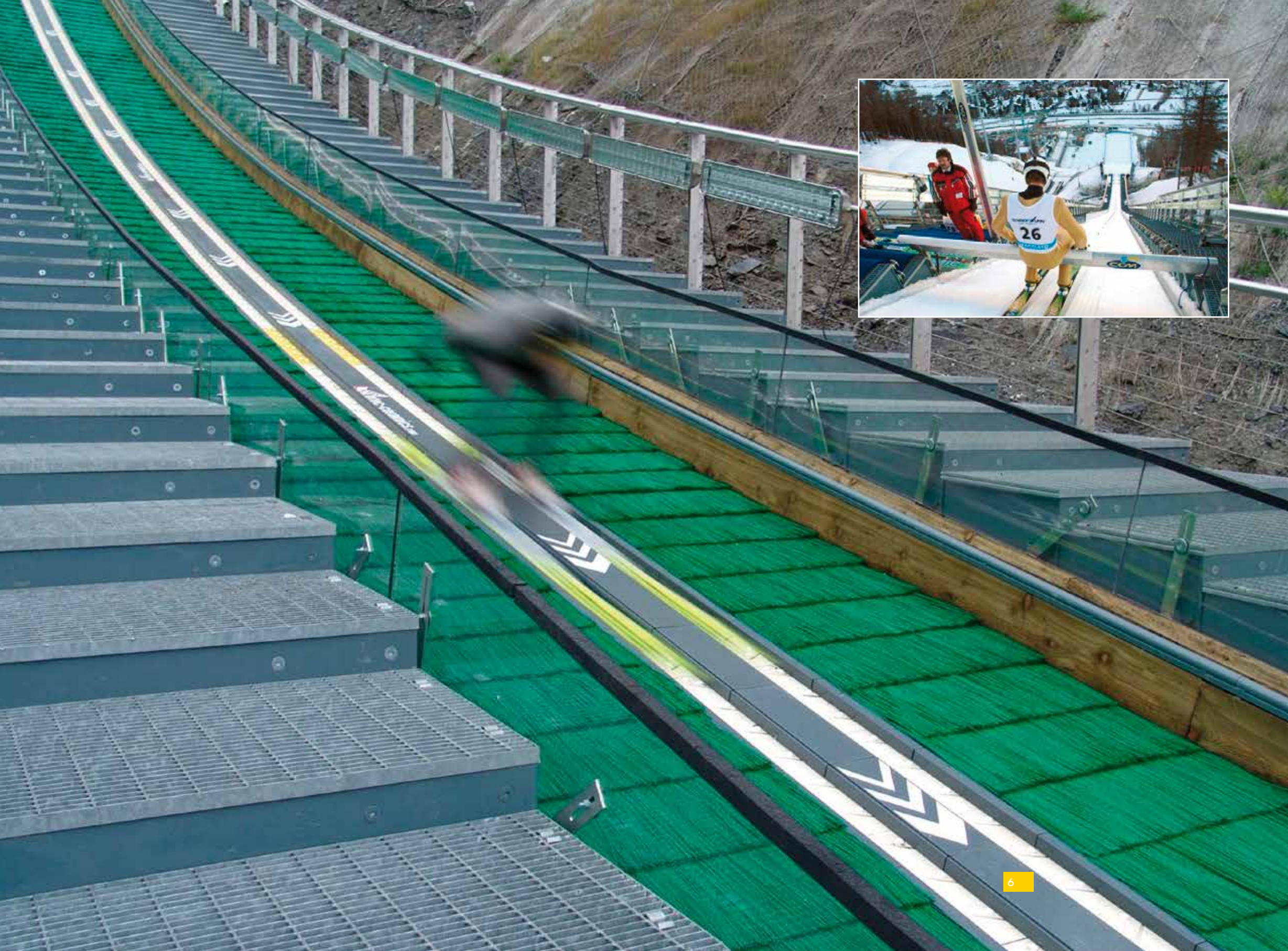
3



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

HOME CONSTRUCTION AND INTERIOR APPLICATIONS

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.

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 Virserum, 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

LARGE ARCHITECTURAL PROJECTS

Building on a legacy of leading-edge products and long-term experience in large architectural projects like stations and stadium glazing, SABIC Functional Forms 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.



LARGE 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 m² 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.

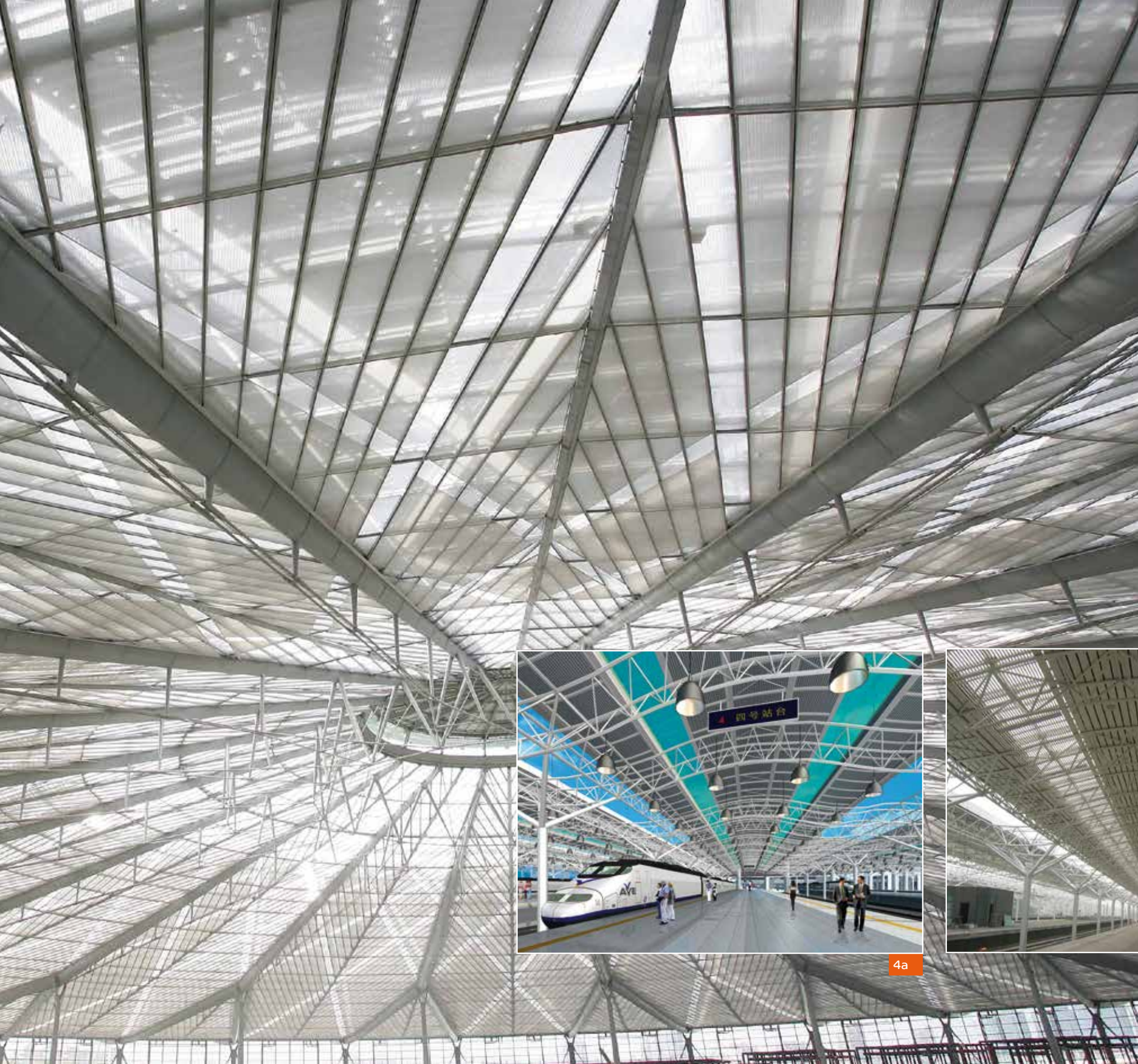
LEXAN sheet glazing materials can help to deliver measurable return on investment through ease of installation; lower insurance costs through resistance to break-ins, weather damage, and vandalism; and less need for replacement due to UV degradation, weathering, and breakage. Most of these products are 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's Functional Forms 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's Functional Forms, 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 m² 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

SHANGHAI 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's Functional Forms 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.

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 74,000m² 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.

7
Porto Dragoa Football
Stadium, Portugal
LEXAN™ THERMOCLEAR™ sheet



FING

WÖRTHERSEE STADIUM Klagenfurt - Austria

Newly built stadium, opened in September 2007.
Capacity: up to 30,000. 11,000 m² 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 35,200m² 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
27,000m² of LEXAN THERMO-
CLEAR™ sheet was used for the
most challenging engineering
feature of the stadium, the
300-metre span roof structure.
Suspended from a huge arch
structure, the roof is construc-
ted 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



JOHAN

15
Escalator Tunnels
Johan Cruijff Arena
LEXAN™ Solar Control
IR sheet

16
Johan Cruijff Arena
Football Stadium
LEXAN™ THERMOCLEAR™
sheet



15

Johan Cruijff Arena in Amsterdam, The Netherlands is Europe's first stadium with a sliding roof, made from transparent sheet. 20.000m² - The sliding roof was necessary to allow events to be staged regardless of the weather.

CRUIJFF ARENA

Johan Cruijff 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.



16



17



18

17
Soccer City Stadium Glazing
LEXAN™ EXELL™-D sheet

18
Soccer City Stadium Roofing
LEXAN™ EXELL™-D sheet

19
Soccer City Stadium by night
LEXAN™ EXELL™-D sheet

19





20



21



22



23

20
Arena Gremio, Brasil Roofing
LEXAN™ THERMOCLEAR™ sheet

21
Arena Da Baixada -
World cup stadium Brasil
Roofing
LEXAN™ THERMOCLEAR™ sheet

22-23
Arena Da Baixada -
World cup stadium Brasil
Façades
LEXAN™ THERMOCLICK™ sheet

DESIGN AND ENGINEERING SERVICES

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.





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's Functional Forms 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:

Architect	Design / Consultancy service Product advices Specification/ project requirements
Main contractor Engineer office	Computer analysis Prediction of sheet behavior during loading
Subcontractor Installer	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 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
Londen - UK

Engineering office:

Buro Happold
London – UK

Installation:

Williaam Cox
Dublin - Ireland

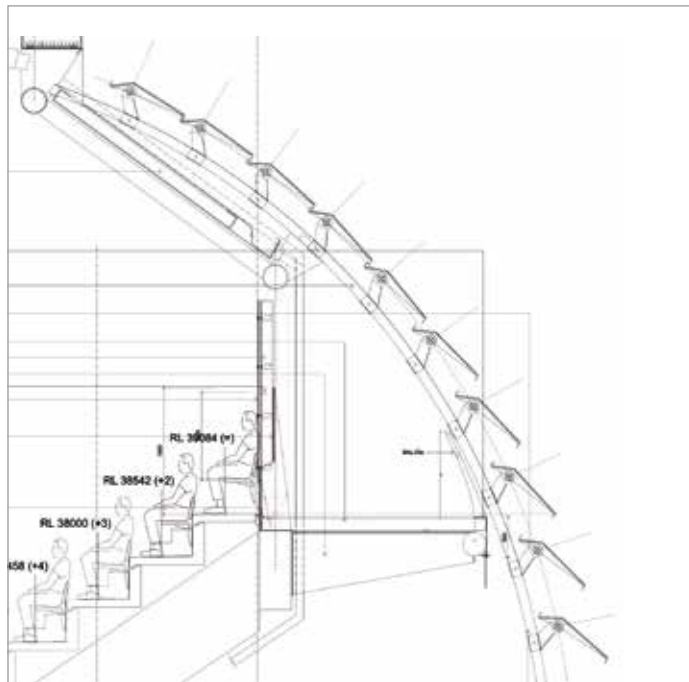


1
Engineering drawing of cold
line bended LEXAN sheet
louvers

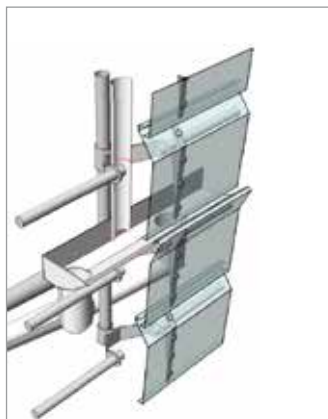
2
Engineering drawing of LEXAN
sheet louvers

3
LEXAN sheet louvers

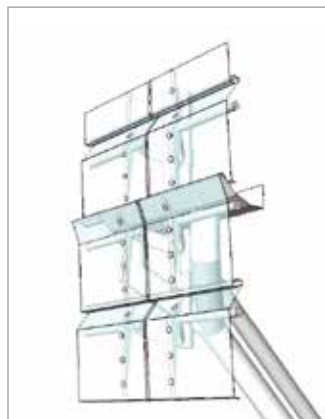
4
LEXAN™ EXELL-D™ sheet with
matte finish on the outside
surface to reduce reflection
and glare fixed with bolts
onto support profiles



1



2a



3b



3a



3b



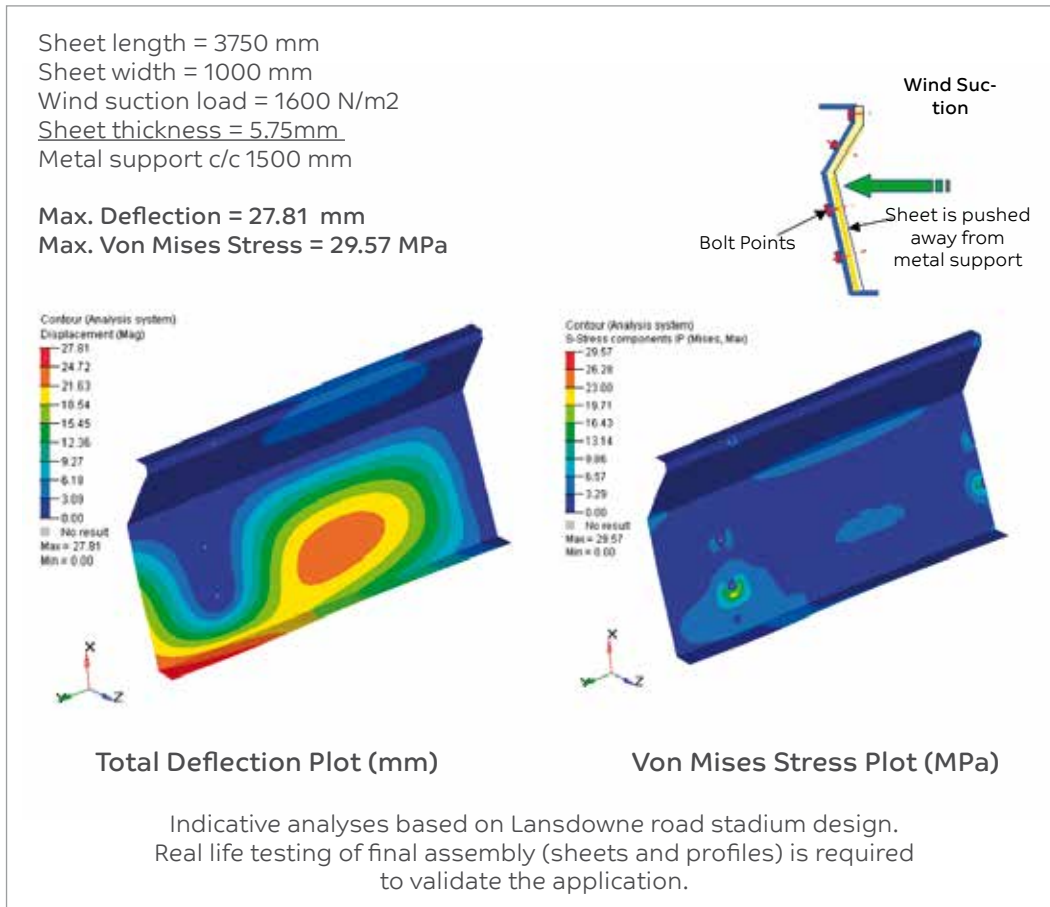
4

COMPUTER ANALYSIS

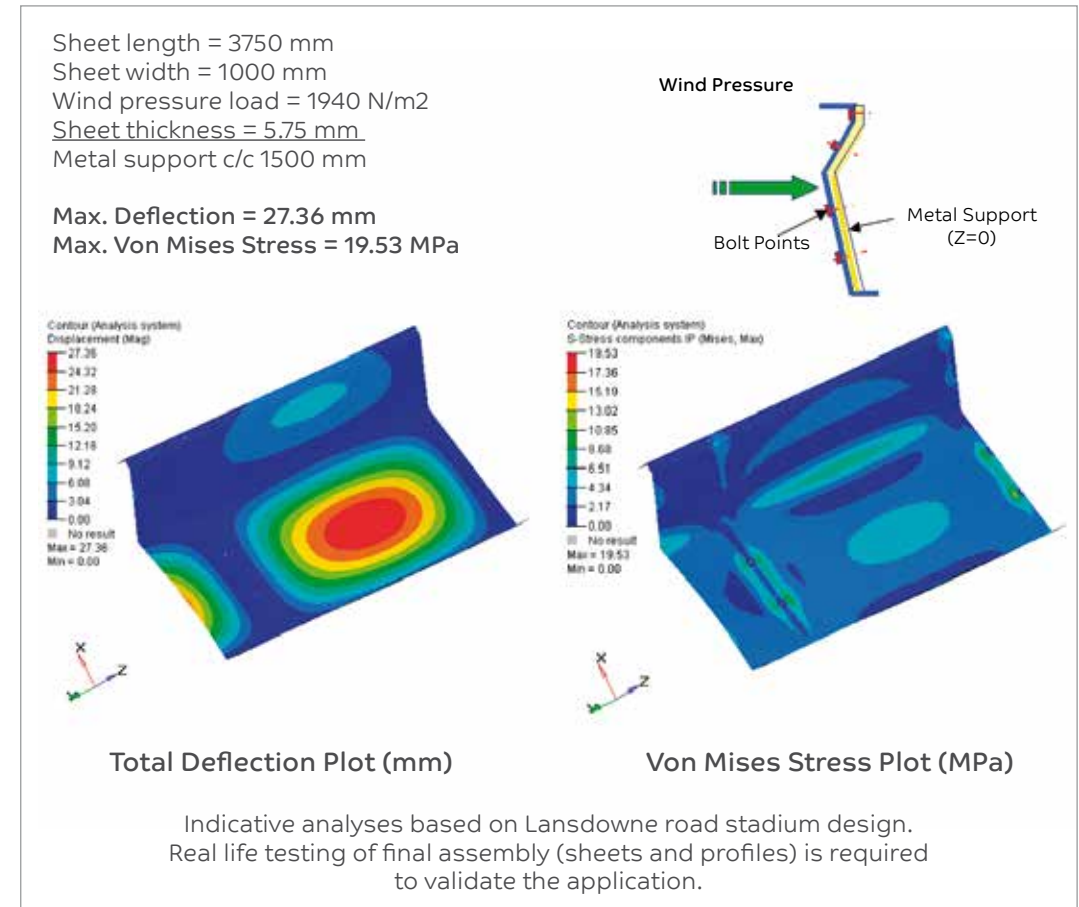
Prediction of Sheet Performance
During Wind Load

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 Functional Forms' 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

7
Roofing Structure of
Wörthersee Stadium

8
Aluminum and steel
profiles that are used in the
click system of the Wörthersee
Stadium, are absorbing
different thermal expansions.

9
Wörthersee Stadium
LEXAN™ THERMOCLEAR™
glazing profile overlap

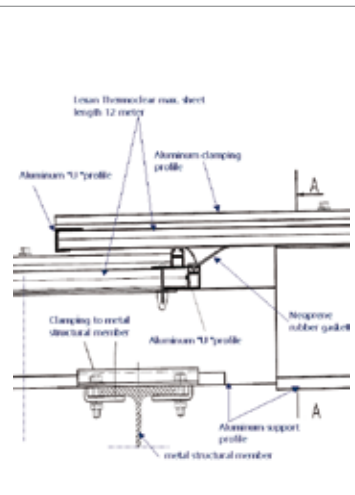
10
Alternative Butt joint
connection of LEXAN
THERMOCLEAR Sheet
on the short side



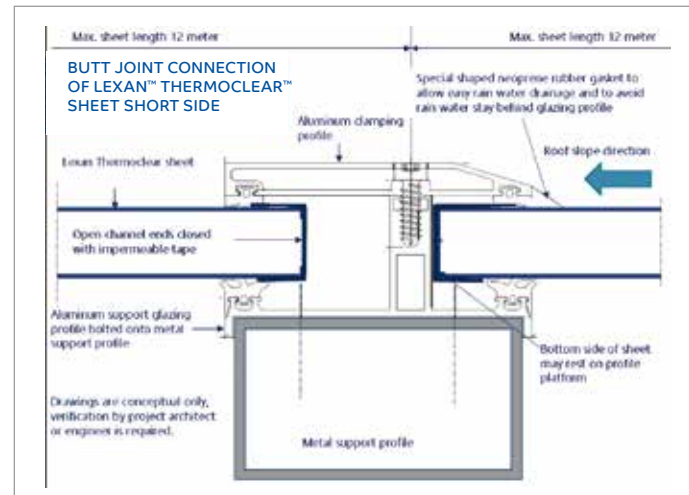
7



8



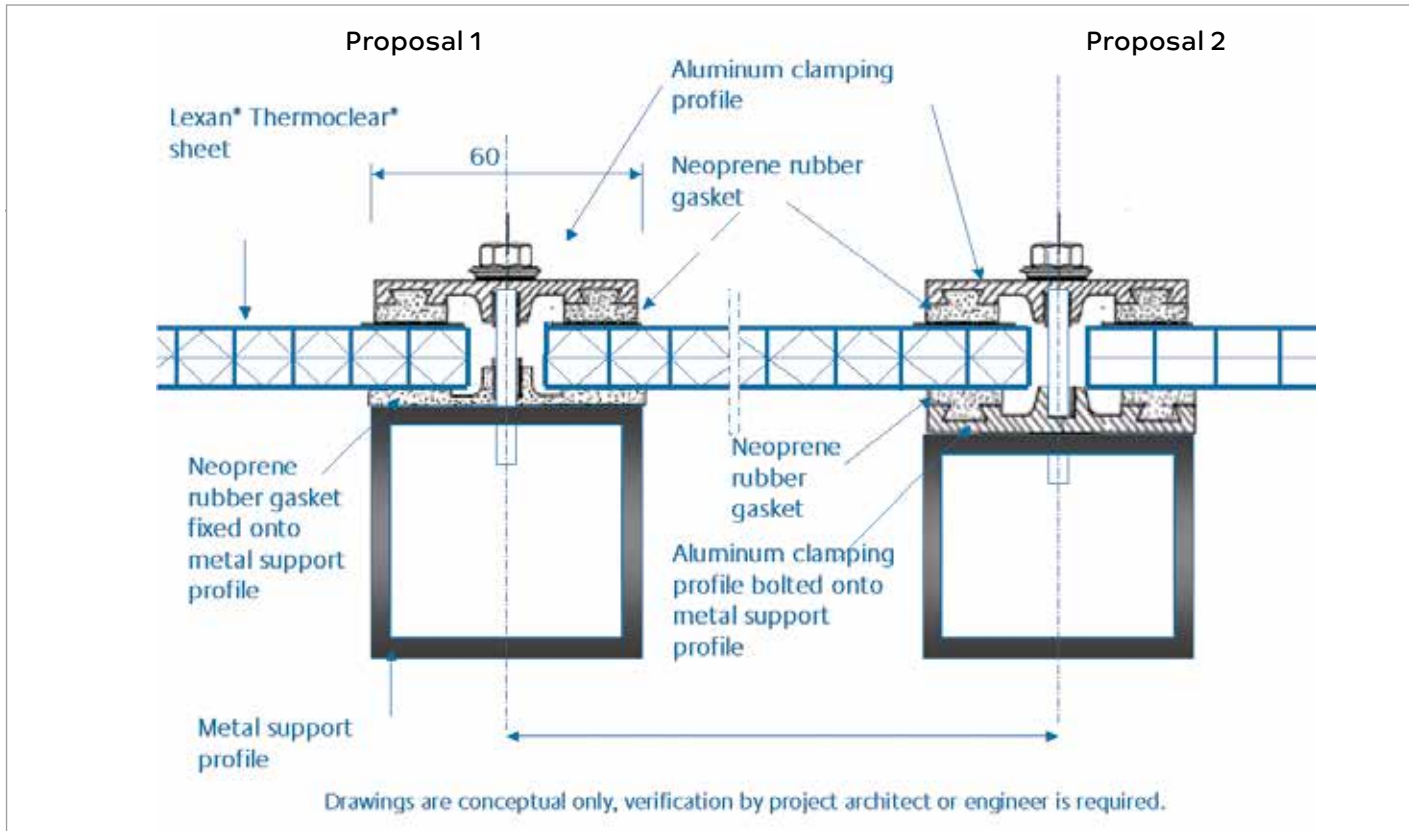
9



10

PROFILES

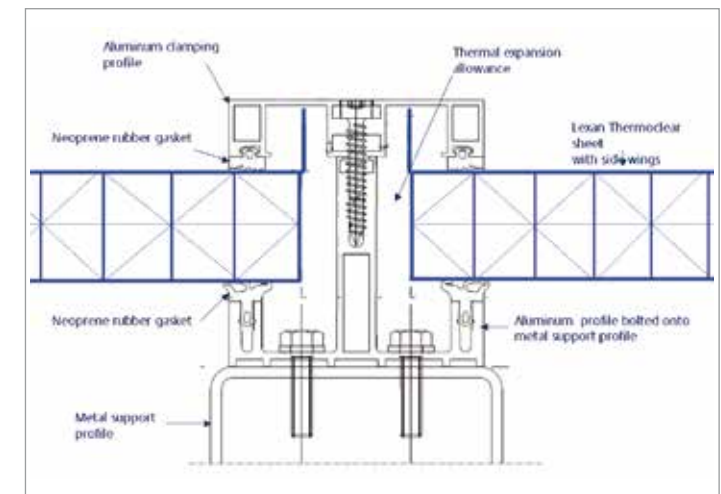
ALTERNATIVE LEXAN THERMOCLEAR SHEET GLAZING



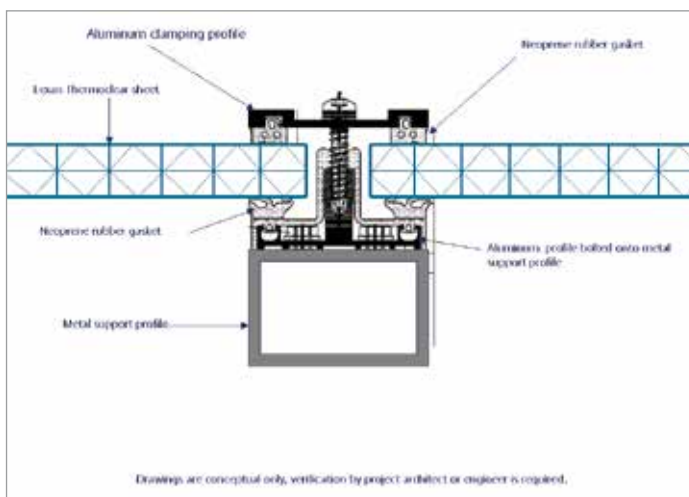
11

11
Alternative LEXAN™ THERMO-CLEAR™ sheet glazing proposals
- Aluminium clamping profile

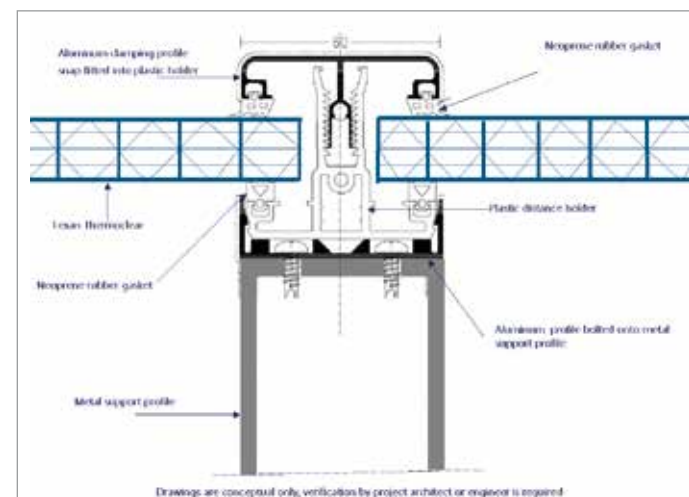
12
Different alternative glazing profiles



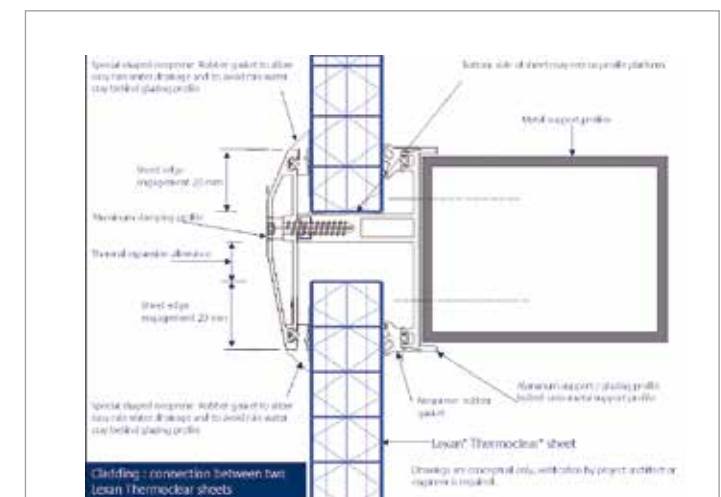
12c



12a



12b

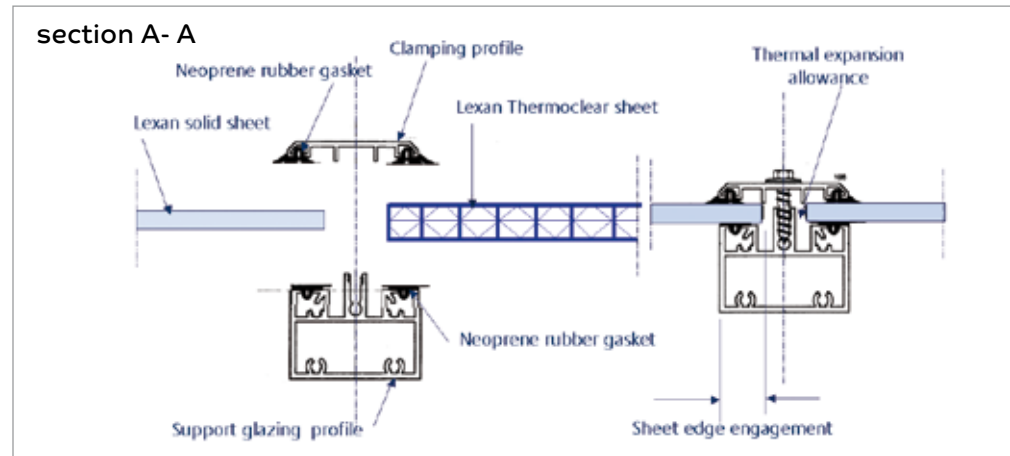
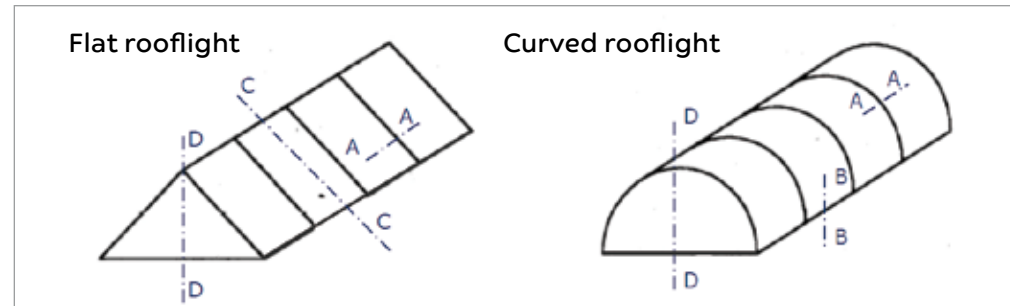


12d

ALUMINUM GLAZING PROFILES FOR ROOFLIGHTS

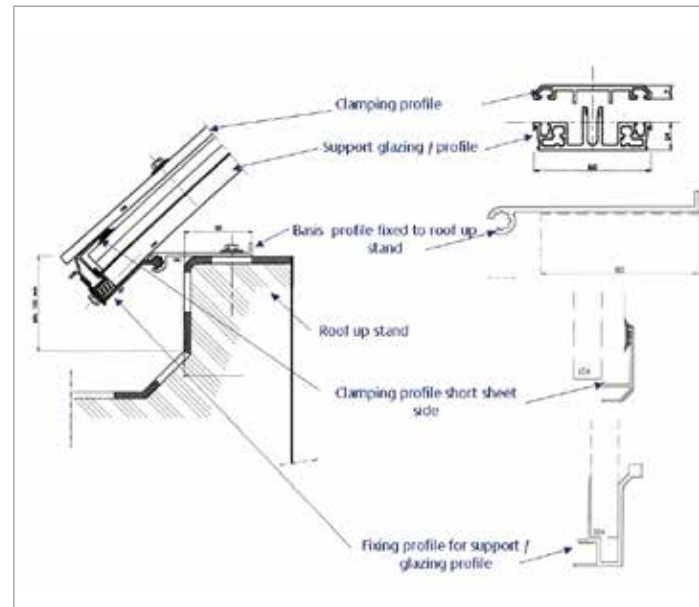
13
 Aluminum glazing profiles
 for roof lights
 - Different Aluminum profiles
 to install LEXAN™ sheet for
 roof lights

14
 Different Aluminum profiles
 to install LEXAN sheet for roof
 lights

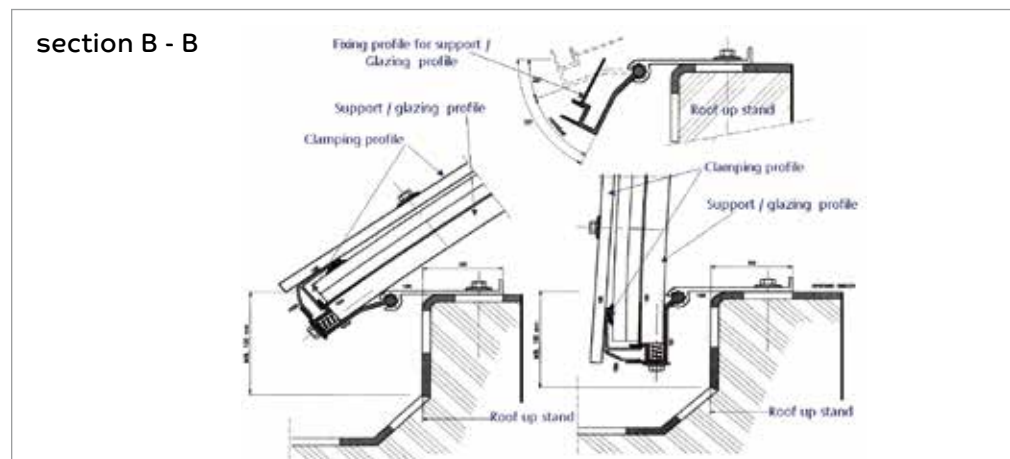


14a

14c



13



14b

14d



INSTALLATION

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 Functional Forms 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 Functional Forms offers customers services that extends from glazing material selection to profile design and installation guidelines.

SABIC Functional Forms operates a worldwide 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 Functional Forms 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 & CONTACT

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

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