A solid portfolio
SABIC Innovative Plastics solid sheet products have the potential for providing value-added solutions across a wide variety of industries, including aerospace, transportation, electrical and electronics, building and construction, material handling, telecommunications and business machines. These solutions are founded on a portfolio of high quality materials backed by advanced technical support around the world.

Based on high performance Lexan® polycarbonate and Ultem® polyetherimide resins, the broad portfolio of solid sheet products is helping customers around the world to develop lightweight, durable parts with tailor-made performance.

The company offers specialized sheet solutions with features like optical quality, high performance coatings, flame retardancy and others.

Advances in product and processing technology keep in step with application requirements and increasingly stringent industry standards. The SABIC Innovative Plastics’ Polymer Processing Development Center in the USA and technical centers in the Netherlands, Japan, China, Korea and India help keep customers at the leading edge of sheet technology. Furthermore, as a business unit of the Saudi Arabia Basic Industries Corporation, SABIC Innovative Plastics benefits from global cross-business resources and expertise.
Developed in 1953, Lexan polycarbonate resin is an amorphous engineering thermoplastic, which is characterized by high levels of mechanical, optical, electrical and thermal properties. Lexan resin is one of the most widely used engineered materials in the world and has contributed to product revolutions in virtually every industry.

Typical properties of the Lexan sheet includes:
- High impact strength (figure 1)
- Inherent “water-clear” transparency
- Dimensional stability at elevated temperatures
- Flame resistance
- FDA compliance
- Light weight (figure 2)
- Weatherability
- Formability

From man’s first steps on the moon to laptop computers, SABIC Innovative Plastics’ Lexan resins—one of the most versatile materials in the world—has been an important part of our lives. It has helped make cars safer and lighter; enabled the digitization of music and film as CDs and DVDs; and ushered in new design trends in computers, cell phones and literally hundreds of other products. Lexan resin is widely used in sporting and boating equipment, building and construction materials, commercial and military aircraft and outdoor signage. It also plays a vital role in the security industry in the form of Lexgard® laminated bullet-resistant window glazing.
The solid sheet product line of SABIC Innovative Plastics, Specialty Film & Sheet is categorized in the product families

**High optical quality sheet**
Clear added-value performance

**Lexan® sheet**
Standard, UV-resistant, flame retardant, and other specialized products

**Lexan Margard® sheet**
Specialized coated products

**Gepax® sheet**
Opaque product for thermoformed applications

**Ultem® sheet**
Highly engineered products based on PEI
Lexan® sheet

Broad design versatility
Lexan polycarbonate resin is a naturally transparent, ‘water-clear’ material with excellent aesthetic properties, high impact strength and ease of design and formability. Building on the unique properties of this high performance engineering material, SABIC Innovative Plastics has developed a range of sheet materials in the following categories:

- General purpose
- Textures
- Optical quality
- UV resistance
- Solar control
- Sign
- Flame retardancy

Graph 1
Lexan sheet segments

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<tr>
<th>Family name</th>
<th>Grade</th>
<th>Segments and applications</th>
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Lexan® 9030/9034 sheet
Lexan 9030/9034 is the standard grade of Lexan polycarbonate sheet offering excellent clarity, high impact resistance, and formability.

Lexan 9034HO sheet
Improved optical quality sheet over standard 9030/9034 grades.

Lexan SL2030 sheet
Thin gauge sheet for visor applications

Lexan V200 sheet
Thin gauge clear sheet specifically designed for printed vending front applications.

Lexan 9440 sheet
US Federal Department of Agriculture (FDA) compliance for a wide range of food applications including trays and food preparation components.

Lexan LT300/DSP155 sheet
Non-aesthetic sheet for industrial applications with low requirements for aesthetics but still provides the toughness of Lexan sheet.

Textures

Lexan sheet comes in a variety of textures and surface patterns for the purpose of light diffusion, privacy, and 3D printing.

Lexan 90316 sheet Prismatic K40
Prismatic textures excellent for lighting applications.

Lexan 90317 sheet Prismatic K12
Prismatic textures excellent for lighting applications.

Lexan 90318 Protect-a-Glaze sheet
Translucent pebble-finished privacy glazing for vertical and overhead applications.

Lexan Exell® D · ST sheet
One sided textured two sided UV sheet.

Lexan LV200 Lenticular sheet
Extruded with pitched grooves specifically designed to serve the vending market. This sheet can be back printed to give the appearance of a 3D graphic.
SABIC Innovative Plastics has been a key supplier of Lexan® optical quality sheet products to the optical industry for many years. Top-of-the-range high optical quality Lexan and Lexan Margard® sheet meet the highest requirements with regard to black specks, bubbles, lints and fibers, distortion and ripple. Also these products are in compliance with DIN 52305 A AZ requirements.

**Lexan ULG1003 sheet**
This grade offers the highest optical quality in the solid sheet range, with light transmission values, depending on the thickness of the sheet. This uncoated material can be used in flat or curved applications.

**Lexan XL10 sheet**
UV resistant surface on one side. Offers a 10 year limited written warranty against breakage, yellowing and loss of light transmission. Suitable for overhead and vertical glazing. Vacuum formable for dome skylights applications.

**Lexan LT300XL sheet**
Thin gauge sheet with UV resistant cap layer. Can be a good fit for dome skylights where UV protection is important.

**Lexan Exell® D sheet**
UV resistant surface on both sides. Same characteristics as Lexan XL10 sheet.

Also available, Lexan Solar Control solid sheet, grade name called Lexan Exell D SC IR sheet.
SABIC Innovative Plastics, Specialty Film and Sheet, has developed new heat management glazing, which makes use of a new and innovative technology platform. Instead of being translucent or opaque as previous products, the Lexan Solar Control IR* sheet is transparent with a light green tint, which blocks near infrared heat but lets in high levels of light. Proprietary resin additives are used to manage heat instead of expensive and fragile coatings, which can be damaged during handling and installation. Because the additive technology is inherent to the polymer, solar control properties are permanent and sheets are UV protected on both sides, which can help installers reduce losses due to installation errors.

This innovative solar control glazing product in solid polycarbonate sheet significantly reduces solar transmission while simultaneously offering high levels of light transmission, helping save energy costs for cooling and lighting buildings (see fig. 3 and 4). Furthermore, its superior UV resistance and toughness is backed by a 10 year limited written warranty against reduction of light or solar transmission properties, yellowing and breakage due to hail impact.

Lexan Solar Control IR sheet offers excellent design freedom due to its ability to be cold formed or thermoformed (vacuum or blow form) without losing impact or weathering properties. It could be an excellent candidate for a broad range of glazing applications including roof domes, skylights, walkways, conservatories and a range of public transportation applications such as train and bus glazing.

Lexan solid and multiwall sheets have the highest transmission in the visible part of the light.

Lexan Solar Control IR sheet selectively blocks the near infra-red region of the light, therefore reduces the heat build up.
Sign products

SABIC Innovative Plastics, Specialty Film & Sheet's sign product portfolio includes some of the toughest and most versatile Lexan® polycarbonate material available. Formulated in a rainbow of colors and textures, they help fabricators create signage that promotes a strong and lasting impression. From tradeshow booths and point of purchase displays to store fixtures and outdoor pole signs, our products offer value-added features to meet even the most exacting design and performance requirements, including UL requirements for indoor and exterior lighted signs. Lexan sheet for sign applications can be thermoformed, screen printed or decorated with vinyl graphics.

**Lexan S100 and S300 sheet**
Clear S100 (polished both sides) and S300 (matte one side) sheet are excellent candidates for many interior sign applications and readily accept most forming techniques. Second surface graphics are protected against fading and wear. Both products offer a 5 year limited written warranty against breakage.

UV resistant sign products

**UV resistant sign products**

**Lexan SG305 sheet**
Lexan SG305 is a one side matte textured sheet and provides UV protection on both two sides. It is suited for all flat and formed signs where reduced reflection and glare is required. Also, second surface graphics are protected against fading and wear. Lexan SG305 sheet offers a 10 year limited written warranty against breakage, yellowing and loss of light transmission.

**Lexan SG308 sheet**
Clear SG308 is matte textured on the UV resistant side. It is for all types of thermoformed or flat signs where reduced reflection and glare are required. Second surface graphics are protected against fading and wear. Backed by a limited 5 year warranty against breakage, yellowing and loss of light transmission.

**Lexan SGC100 sheet**
Clear Lexan SGC100 sheet (polish/polish) has a proprietary, UV resistant surface on one side. It is backed by a 10 year limited written warranty against breakage, yellowing and loss of light transmission. Ideally suited for second surface decorated white signs or whenever color shift is objectionable.

**Lexan SG404 sheet**
Lexan SG404 sheet (polish/polish) is a pigmented UV resistant sign material. It provides outstanding weatherability for colors and offers a 5 year limited written warranty against breakage and surface failure.

**Lexan SG410 sheet**
Lexan SG410 sheet (polish/polish) is a pigmented sheet with a proprietary advanced UV protective top surface. Lexan SG410 sheet provides superior weatherability and offers a 10 year limited written warranty against yellowing, breakage and surface failure.
Lexan® Exell® D FR sheet
This UV resistant transparent sheet has been specifically developed to meet the flammability requirements of the European building and construction market.

Lexan F2000/F2100 sheet
Lexan F2000/F2100 is a transparent, formable sheet, which combines the characteristics of Lexan clear sheet with good flammability. It is widely used in a variety of applications in the aerospace, electrical, electronics, building and construction and transportation industries.

Lexan F6000 sheet
Lexan F6000 is a flame retardant opaque sheet range, which is available in both standard and custom colors. In addition to its excellent FR properties, it offers high impact resistance, good stiffness and strength and excellent formability. It is used in applications as diverse as aircraft interior cladding, electronics housings and train seat cladding. Available in a variety of colors and textures. The materials meets a variety of rail, UL, aircraft standards depending on application and country.

Lexan 9000 sheet (opaque)
Lexan 9000 sheet has excellent low temperature impact, chemical resistance and ductility after weathering. Its ECO compliant flame retardant package makes it excellent for outdoor enclosures. Highest VL compliance of Lexan family with 5VA rating ≥ 3mm/.119”.

Lexan 9030V sheet
UL flame classified depending on gauge.

Lexan 9600 sheet
This transparent sheet combines formability with excellent flame retardant properties, typically used in the transportation (aerospace) and electrical/electronic industries for applications such as light diffusers and dust cover panes.

Also available

• Lexan 9030FR sheet
This transparent sheet has been specifically developed to meet the flammability requirements of the European building and construction market.
In addition to the inherent characteristics of a polycarbonate material, Lexan Margard sheet has a proprietary hard surface coating, on one or two sides, which provides a high level of resistance to abrasion and weathering. The products are backed by a 5 or 10 year limited warranty against loss of light transmission and coating failure and by a 10 year limited warranty against breakage.

The Lexan Margard sheet family can be grouped as follows:
- Products for flat applications
- Products for formable applications
- Anti fog products
- Flame retardant products

### Lexan Margard sheet Family name

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<th>General purpose</th>
<th>Visors</th>
<th>Appliance front panels</th>
<th>Aircraft windows</th>
<th>Trans (frost) glazing</th>
<th>BV glazing</th>
<th>Signs</th>
<th>Bus shelters</th>
<th>Laminated safety glazing</th>
<th>Ice hockey visors</th>
<th>Motorcycle visors</th>
<th>Motorcycle windshields</th>
<th>Ski goggles</th>
<th>Specialty vehicle glazing</th>
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Lexan* Margard* MRA3 sheet
With its inherent high impact resistance, clarity and guaranteed durability, this grade helps to maintain safety and a clear view in indoor applications such as machine guards and glazing for operator windows. As well as helping to improve safety in the workplace, this unique material is very light and can be cut to size on site using conventional workshop tools.

Lexan Margard MR5E sheet
Abrasion and UV resistant Lexan Margard MR5E sheet is typically used in anti vandal glazing, security glazing, safety screens and acoustic screens. It is guaranteed not to shatter or splinter and its unique surface coating resists graffiti and enables easy restoration. It is backed by a 10 year warranty against breakage and a 5 year limited warranty against yellowing, loss of light transmission and coating failure. Due to its mar-resistant coating, it is suited for flat applications only.

Lexan Margard MR10/MR101/MR10XL sheet
With exclusive abrasion-resistant Margard II surface on both sides. Offers 10-year limited written warranty against breakage, yellowing, loss of light transmission and coating delamination. Excellent for high traffic areas like architectural glazing for schools and for forced entry protection.

Lexan Margard HLG5 sheet
This one-side hard coated lamination grade is suited for flat glass-clad PC/glass PC laminates, PC laminates and fascias. In addition to its optical qualities, this grade provides exceptional abrasion resistance, excellent weatherability and outstanding impact resistance.

Lexan Margard HLGA3 sheet
This “Best in Class” abrasion-resistant material is one-side anti-abrasion coated and non-UV protected. It is typically used in applications such as automotive glass/PC laminates, asymmetrical glass/PC laminates and fascias.

Lexan FRA25C/FRA236C sheet
Offers abrasion and UV resistant surface on both sides. Designed for dual-glazed rail applications meeting US Federal Rail Authority Type I and II ratings. FRA25C/FRA236C is available for use in component systems only.

Lexan FRA460 sheet
Offers abrasion, UV resistant surface on both sides. Designed for single glazed rail applications meeting US Federal Rail Authority Type I and II ratings.

Lexan Margard MRT sheet
Offers exclusive abrasion-resistant Margard surface on both sides. This is a transportation version of MR10 grade where specific ripple orientation is required. Can be excellent candidate for window glazing for off-road vehicles and buses.

Lexan Soundglaze* SC sheet
This extremely tough, UV protected material provides excellent sound insulation properties for a range of demanding urban, road, rail and airport noise reduction barriers. Due to its proprietary hard coating, Lexan Soundglaze SC sheet provides exceptional abrasion resistance and resistance to substances such as oils, paints and aggressive cleaning products, which enables it to resist graffiti and allow repeated cleaning. Its proprietary UV protection is not affected if bent or curved. This material is backed by a ten year limited warranty against breakage and a five year limited warranty against yellowing and loss of light transmission.

Figure 5
Taber abrasion
ASTM D1044 test at 500 cycles
Lexan® Margard® CTG sheet family
• Lexan Margard CTG-E sheet is a transparent, two side hard coated material offering good abrasion resistance, optical quality and impact resistance. This thin gauge grade can be formed and an excellent candidate for visor and goggle applications.
• Lexan Margard CTG sheet is a two side formable hard coated visor grade
• Lexan Margard CTG-AF sheet (See Anti Fog)

Lexan Margard FMR5 XT sheet
This extremely tough, two side hard coated, formable glazing grade is typically used for revolving doors, partitions, skylights and barrel vaults.

Lexan Margard FMRT102 sheet
One side, hard coated formable lamination sheet. Formable mar resistant “T” version indicates higher shrinkage and optical tolerances.

Lexan Margard FMR604 sheet
This one side, hard coated formable lamination sheet offers flame retardant properties for aircraft interior applications such as dust covers, (see flame retardant section)
**Anti fog products**

**Lexan® Margard® MRFAF1 sheet**  
This grade has a one side formable hard coat and one side anti fog coating. This provides anti fog properties and impact resistance.

**Lexan Margard MRFAF2 sheet**  
This drape formable grade has anti fog coating on both sides, combined with abrasion and impact resistance.

**Lexan Margard CTG-AF sheet**  
This formable, thin gauge sheet offers anti fog properties on one side and SABIC Innovative Plastics’ proprietary formable coating on the other side. These products can be used for goggles, safety shields, gauges, appliances and windscreens.

![Figure 6](image)

*Figure 6*  
The unique proprietary technology applied to Lexan sheet blocks the UV rays of sunlight

![Figure 7](image)

*Figure 7*  
Anti fog products

**Tough anti scratch UV resistant**

Lexan sheet used for the visor industry, provides high impact resistance, optical clarity, UV protection and abrasion resistance.

**Figure 7** Lexan polycarbonate sheet is one of the toughest, transparent materials, which can withstand impact from many kinds of objects without shattering. Its proven energy absorption characteristics are maintained at sub zero winter temperature down to -20°C (-4°F). As seen in figure 7, Lexan sheet performs better than other non polycarbonate materials with respect to brittleness, as measured under the ISO 6603/1 flex plate impact test at -20°C conducted by SABIC Innovative Plastics.
**Lexan® Margard® MR5EFR sheet**
This material combines the properties of Lexan Margard MR5E sheet with flame retardancy.

**Lexan FMR604 sheet**
This is a flame retardant, drape and cold formable sheet with a two side scratch resistant coating. Its toughness, abrasion resistance and optical clarity make it particularly well suited to applications in the transportation, aerospace and electrical/electronic industries. Complies with UL flame ratings.

**Lexan MRAC sheet**
Margard coated flame retardant sheet offering excellent impact resistance and abrasion resistance. Complies with FAA FAR 25.853 A & B requirements. It should be used in flat, vertical applications and has been developed to provide superior abrasion and chemical resistance for aircraft window dust covers.
Adding a touch of color
Opaque Gepax sheet products combine excellent impact performance and stiffness with ease of thermoforming or cold forming. They offer a consistent high quality surface and provide cost-effective part differentiation through wide color availability. Furthermore, Gepax sheet is available in a range of textured surfaces that increase abrasion resistance.

Widely used for enclosures requiring UL compliance, the range of Gepax sheet products provides cost effective design flexibility for both small to medium size production runs. Inherently lightweight and easy to fabricate, each sheet type offers a different balance of key properties to meet specific application requirements.

Gepax 7000 sheet
This grade is noted for its high impact performance and good stiffness over a wide temperature range.

Gepax 7200 sheet
In addition to its excellent mechanical and thermal properties, this grade is flame retarded.

Gepax 8000 sheet
With their excellent UV resistance, high color stability and extremely high impact performance, these grades are suitable for outside enclosures.

Gepax 8200 sheet
With excellent UV resistance, high color stability and flame retardant product.

<table>
<thead>
<tr>
<th>Family name</th>
<th>Grade</th>
<th>Segments and applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gepax sheet</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>Gepax sheet</td>
<td>7000</td>
<td></td>
</tr>
<tr>
<td>Gepax sheet</td>
<td>7200</td>
<td></td>
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<tr>
<td>Gepax sheet</td>
<td>8000</td>
<td></td>
</tr>
<tr>
<td>Gepax sheet</td>
<td>8200</td>
<td></td>
</tr>
</tbody>
</table>
Cutting edge performance
With its flame, smoke and toxicity compliance, exceptional strength and modulus at elevated temperatures, broad chemical resistance and stiffness, light weight Ultem sheet is proven in a growing range of demanding applications. Used by leading airline and rail OEMs, this high performance engineering material provides cutting edge performance and satisfies both safety issues and eco label concerns.

Ultem 1668A sheet for aircraft interiors
This latest generation material has been specifically developed for use in aircraft interiors, including seating and flight deck components, galleys, stow bins and sidewalls. This inherently flame retardant material meets all commercial aircraft interior requirements. This includes an OSU heat release rate below 65/65, compliance with FAA NBS smoke and flammability testing and toxicity standards BSS7239 and ABD0031.

This grade also offers aircraft OEMs exceptional impact resistance, high long-term heat resistance, (HDT of 202°C / 395°F), chemical resistance and consistent formability. It can be thermoformed, pressure formed, twin-sheet formed or used in flat or cold-formed applications.

Ultem 1613V sheet
This grade is established for use in aircraft interiors as it offers outstanding heat release rate and an HDT of 193°C (380°F).

Ultem R16SG00/R16SG29 sheet for railway interiors
This innovative material has been developed to meet stringent U.S. Federal Railroad Administration (FRA) and various European flammability requirements for passenger train interior components, including cladding and train window masks. In addition to satisfying flame, smoke and toxic emission regulations, the material’s excellent chemical resistance allows repeated cleaning to help maintain part aesthetics.

Graph 4
Ultem sheet matrix

<table>
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<th>Family Name</th>
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<td>1668L</td>
</tr>
<tr>
<td>Ultem sheet</td>
<td>1668L</td>
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<tr>
<td>Ultem sheet</td>
<td>R16SG00</td>
<td></td>
</tr>
<tr>
<td>Ultem sheet</td>
<td>1613V</td>
<td></td>
</tr>
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</table>

Figure 8
Heat deflection temperature
ASTM D648 test at 66 psi, 0.46 Mpa

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<tr>
<th>Ultem 1668A sheet</th>
<th>Temp. °F</th>
<th>Temp. °C</th>
</tr>
</thead>
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<tr>
<td>Ultem 1613V sheet</td>
<td>380</td>
<td>193</td>
</tr>
<tr>
<td>PVC/Acrylic</td>
<td>173</td>
<td>78</td>
</tr>
</tbody>
</table>

Figure 9
Weight savings
Part size 635mm x 635mm (25” x 25”)
Part gauge 2mm(0.080 ”)

<table>
<thead>
<tr>
<th>Part weight kg</th>
<th>Part weight lb</th>
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<tr>
<td>Ultem 1668A sheet</td>
<td>1.05</td>
</tr>
<tr>
<td>PVC/Acrylic</td>
<td>1.21</td>
</tr>
<tr>
<td>PPSU</td>
<td>1.13</td>
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</tbody>
</table>

Up to 14% part weight savings in a large airplane with 1,000 parts (possible saving of 150 kg (328 lb))
<table>
<thead>
<tr>
<th>Resin type</th>
<th>Hard coating</th>
<th>UV resistance</th>
<th>Flammability</th>
<th>Formability</th>
<th>Optical quality</th>
<th>Surface finish</th>
<th>Product name</th>
<th>Manufacturing pole</th>
</tr>
</thead>
<tbody>
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<td>Lexan®</td>
<td>No-hard coating</td>
<td>Non-UV resistant</td>
<td>Non-FR</td>
<td>Thermoformable</td>
<td>High optical</td>
<td>Polished</td>
<td>Lexan SG1903 sheet</td>
<td>EUR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Standard optical quality</td>
<td>Lexan 903100 sheet US</td>
<td>High optical</td>
<td>US</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Lexan 903100 sheet US</td>
<td>General purpose standard PC grade</td>
<td>US</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Lexan 903100 sheet US</td>
<td>General purpose standard thin gauge PC sheet</td>
<td>EUR</td>
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<td>Lexan 80100 sheet US</td>
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<td>US</td>
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<td></td>
<td>Lexan 80100 sheet US</td>
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<td>US</td>
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<td>Flame retardant grade passing specific requirements</td>
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<td></td>
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<td>SC - Translucent Color, weatherable</td>
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<td>SC - Matte texture weatherable</td>
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<td>Lexan SG100 sheet US</td>
<td>SC - Translucent, best weatherability</td>
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</tbody>
</table>

**Graph 5 Solid sheet family tree**
SABIC Innovative Plastics Specialty Film and Sheet business is a leading supplier of high performance engineering film and sheet products, serving customers around the world in a broad spectrum of industries and applications. The sheet product line includes a wide diversity of structures, ranging from solid sheet, multi-wall sheet and corrugated sheet, through to coated sheet and laminations and combinations of each of these.

Recognized as a center of excellence, the Polymer Processing Development Center in the USA is equipped with state-of-the-art laboratories and facilities for printing, drape forming, thermoforming and prototype testing. Engineers, designers and technologists explore and extend the boundaries of sheet application development through sophisticated material analysis and advanced processing technology.

With satellite development centers in the Netherlands, Japan, China, Korea and India, SABIC Innovative Plastics Specialty Film and Sheet offers customers around the world access to this full range of laboratory, testing and design services, complemented by local hands-on technical support.

A part of Saudi Arabia Basic Industries Corporation, SABIC Innovative Plastics, Specialty Film and Sheet was established in 1968 and now operates a worldwide network of sales, research, manufacturing and technical service facilities. With thirty eight manufacturing sites across the US, Canada, the Netherlands, Italy, Austria, China and Japan, the company serves customers around the world in a broad spectrum of industries and applications. These include aircraft, appliances, automotive, building and construction, business machines, electrical and lighting, furnishing, greenhouse, industrial roofing, medical, electronics, telecommunications and packaging.
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