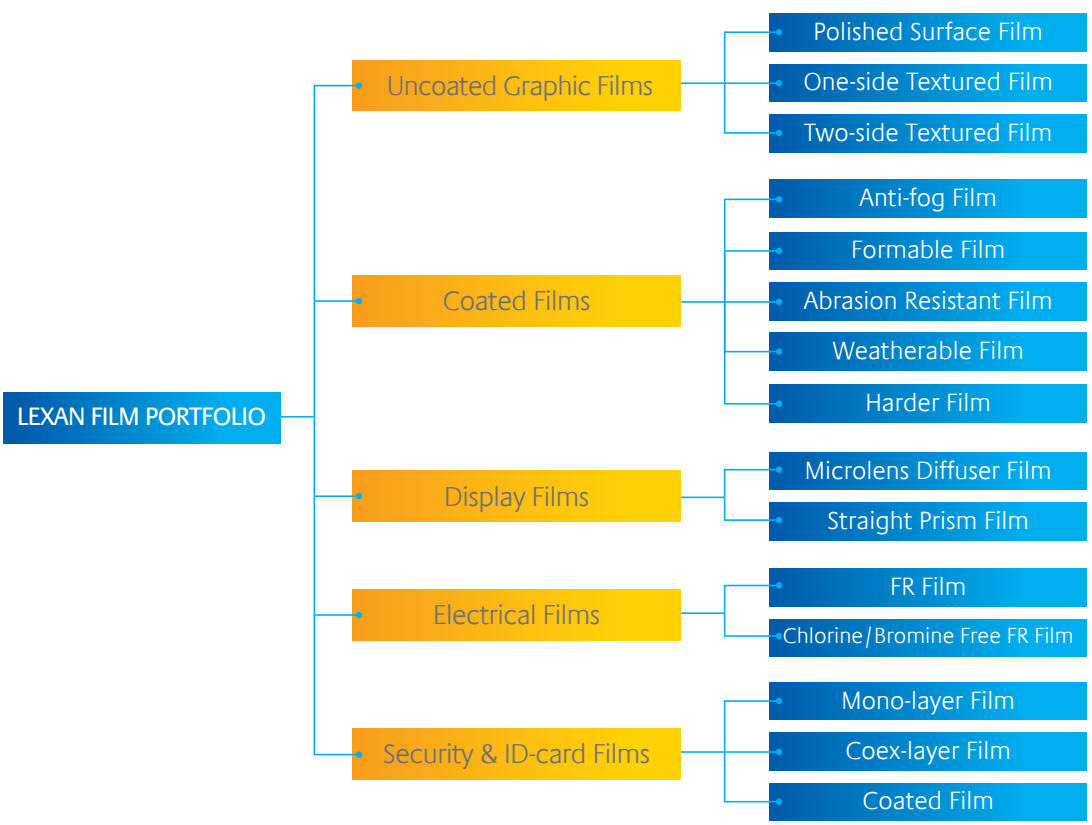
INNOVATIVE PLASTICS

LEXAN™ FILM PORTFOLIO

SPECIALTY FILM & SHEET

CHEMISTRY THAT MATTERS™

SABIC's Specialty Film & Sheet business offers high quality, engineered thermoplastic films across a wide variety of industries, ranging from graphics and consumer electronics to automotive. Our LEXAN™ Polycarbonate film portfolio is backed by advanced technical support and application development services around the world to meet our customers' global specification needs with local supply.



CONSTANTLY ADDING VALUE: PROVIDING MORE THAN JUST HIGH QUALITY PRODUCTS

Today's growing number of film applications with specific and increasing functionality in high-tech electronics call for innovation, not tradition. SABIC is dedicated to meet these challenges by using its LEXAN™, ULTEM™, VALOX™ and NORYL™ resins, extrusion, surface texturing and coating technologies to create high functional film products.

The company offers state of the art mono and multi-layer extrusion capabilities, in-line master sheeting, roll slitting and cut-to-size services. With our application development facilities, we provide lamination, folding, die-cutting; screen printing, laser-marking and 3D forming services to our Specialty Film & Sheet customers.

At SABIC, we are dedicated to meeting our customers' ever-changing needs with our unique high performance LEXAN film portfolio and supporting OEMs to reduce system costs, create innovative designs with better functionality and to create environmentally responsible materials. All our film products are RoHS and REACH certified and UL certifications can be found under the UL global database.

UNCOATED FILMS

For the graphics segment, a range of tailormade LEXAN™ polycarbonate graphic film products helps deliver top quality performance and virtually unlimited versatility. These materials are characterized by outstanding optical clarity and mechanical strength, consistent printability and ease of processing. Available in a wide choice of standard and high performance grades, these products offer a variety of surface finishes and textures.

POLISHED GRADES

LEXAN polished films offer 86% to 92% light transmission across all gauges. Some of these films are available in custom colors, subject to a minimum order quantity. In addition, various masking types are available to meet specific customer requirements.

POTENTIAL APPLICATIONS:

- In-mold decoration applications for automotive interiors, appliances and consumer electronics
- LED/LCD display windows
- Medical packaging

KEY BENEFITS:

- True color reproduction
- Excellent depth effect with no loss of vividness in second-surface printing
- FDA / USP Class VI compliance (LEXAN 8040 film)
- Chemical resistance and weathering (LEXAN SLX film)
- Easy formability
- Increased pencil hardness

Grade Names	Key features	Gauge Availability
LEXAN 8010(Q) Film (rolls)	- Standard clear polish/polish - True color reproduction - UV/non-UV stabilized	100-750 µm
LEXAN 8010(Q)SHT Film (Sheeted)	- Clear polished sheeted film - Q-type for best optical quality & stress control	500-1200 µm
LEXAN 8040 Film	- True color reproduction - High heat resistance - FDA approved, clear polish/polish	175-750 µm
LEXAN 6060 Film	- 2H pencil hardness (externally certified - SGS)	175-250 µm
LEXAN SLX 11010 Film - Polish/Polish	- UV resistant, polish/polish film - Chemical resistance - Retention of high color and gloss	250 - 750µm
LEXAN 60610 Film	- Co-ex polished sheeted film	500-1200 µm

TEXTURED GRADES

The range of LEXAN™ textured films offers broad design flexibility and aesthetic appeal. Either one-side or two-side textured products can be used to design 2D and 3D applications with nearly square corners, straight sides, narrow-width lines and flat plateaus. Key features of the films include outstanding dimensional stability and ductility.

POTENTIAL APPLICATIONS:

- Lighting and display applications
- Automotive dashboard and interior applications
- Consumer electronics

KEY BENEFITS:

- Specialty textures enabling:
  - Light diffusion and no "hot-spots" in back-lit applications
  - Scratch and wear resistance
  - Brushed metallic look
- Outstanding formability facilitating large-scale production using IMD
- Excellent printability without pre-treatment
- Excellent clean edge die-cut ability

Grade Names	Surface Property	Gauge Availability
Uncoated LEXAN Graphic Film grades – Textured on one surface		
8A35	Polished/Velvet	100-500 µm
8A13F	Polish/ Fine matte	175-250 µm
8A13E	Polish/ Matte ideal for tight graphic registration	75-500 µm
8A37	Polish/ Brushed	250-750 µm
8A73	Polish/ Matte light diffuser	250-500 µm
Uncoated LEXAN Graphic Film grades – Textured on both surfaces		
8B35 (E)	Matte/Velvet	75-500 µm
8B35F	Fine matte/Velvet	175-750 µm
8B36	Matte/Suede	250-500 µm
8B38	Very fine matte/Velvet	250-750 µm
Uncoated LEXAN SLX Film grades		
11A13	Polish/Matte	100-500 µm
11B35	Matte/Velvet	100-500 µm

Texture Guide	
Matte/Fine matte	Good printing surface. Not as smooth but offers increased scratch resistance compared to polished grade. It offers wet-out-window capability for automotive display applications.
Matte Light diffuser	Hides filaments and eliminates 'hot spots' in back-lit applications. The preferred finish for 'dead front' graphics. Offers reduced surface reflection and gloss.
Velvet	Hides scratches, fingerprints and marring for heavy-use applications. Also acts as a diffuser for "windowed" or back-lit applications.
Suede	Excellent in very heavy-wear applications. Resists abrasion while maintaining its attractive appearance.
Brushed	Unique brushed texture provides metallic appearance

COATED FILMS

LEXAN™ high performance coated films offer unique solutions for scratch resistance, weatherability, anti-glare and anti-fog applications. These films have excellent resistance to abusive cleaners, chemicals and UV, provide excellent clarity of graphics and light diffusion as well as ease of printing and die cutting.

POTENTIAL APPLICATIONS:

- Flat membrane switch overlays for gas pumps and outdoor labels
- Lenses for handheld devices and consumer electronics
- Overlays and IMD face plates for appliances and automotive interior applications
- Anti-fog lenses for goggles, eyewear and freezer door films for supermarkets

KEY BENEFITS:

- Excellent abrasion resistance and flexibility
- Resistance to abusive cleaners and chemicals
- Improved hardness versus uncoated films
- Variable gloss and printability
- High surface (pencil) hardness

Grades	Key features	Gauge Availability
LEXAN HPxxS Film	Abrasion resistance, First surface printable	175-750 µm
LEXAN HPxxW Film	Weatherable, Chemical resistance	175-750 µm
LEXAN HPxxX Film	Weatherable, Chemical resistance, First surface printable	175-750 µm
LEXAN HPxxE Film	Abrasion resistance, Flexible	175-750 µm
LEXAN HPxxT Film	Abrasion resistance, 2.5D Formable	175-750 µm
LEXAN OQ8DA Film	Dual coated PC sheeted film, chemical and abrasion resistance	500-1200 µm
LEXAN OQ6DA Film	Dual coated PC/PMMA film, high pencil hardness, chemical & abrasion resistance	500-1200 µm
LEXAN HPHAF Film	Anti-fog formable hard coated	175-500 µm
VALOX™ HPNGAF Film	Anti-fog	100 µm
VALOX HPNGFF Film	Anti-fog coating, with adhesive backing	100 µm

xx in the grade denotes the gloss or surface finish on the coated side
The attached table highlights the key features of the coated film grades with the available gloss/masking configurations

Surface Finish Guide		
92 gloss	Polished	High gloss, smooth, wet look finish
60 gloss	Very Fine Matte	Low glare – not as smooth as polished
40 gloss	Fine Matte	Lower surface reflection and gloss
12 gloss	Matte	Lowest surface reflection and gloss

DISPLAY FILMS

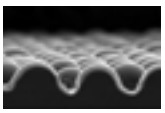
LEXAN™ Display films provide light diffusion and/or collimation while maximizing light transmission and LED hiding power for the LCD and LED back lighting industry. These products leverage SABIC's expertise in optical quality resins and optical quality film extrusion in a clean room environment.

POTENTIAL APPLICATIONS:

- Automotive LED displays such as dials, HVAC panels and GPS navigation
- Handheld devices such as smartphone and tablet
- Large LED/LCD displays for TV and monitors

KEY BENEFITS:

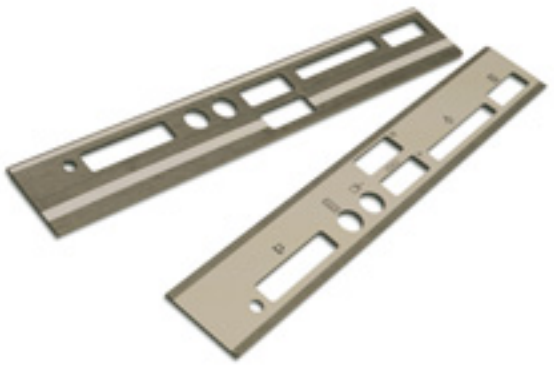
- Significant cost-out versus coated PET film products - up to 30%
- Lower material density - 15% lower versus PET
- Monolithic gauge to 500µm (No lamination required)
- Right balance of light transmission and hiding power
- Material re-use of conversion losses

Grade series	Texture	Key features	Gauge Availability
MB-grades Basic Lens Diffuser		- Excellent hiding power - Good luminance - Suitable for stackable format	200-350 µm
*PA Grades Straight Prism		- Straight prism, rounded tip - Matte backside for anti-scratch - Prism pitch at 200µm - Right balance collimation & moiré	300-500 µm

* Developmental Grade

FLAME RETARDANT FILMS

Clear or opaque LEXAN™ FR films are flame retardant polycarbonate materials, which offer consistent properties for insulation and printability. These include puncture resistance, low moisture absorption, high thermal performance and excellent dielectric strength. It is available in a variety of surface textures and offers reliable ease of fabrication with its formability and dimensional stability at high temperatures.



POTENTIAL APPLICATIONS:

- Heat/dielectric insulation
- Die-cut insulators and spacers
- Labels and overlays
- Printed circuit boards
- EMI shielding

KEY BENEFITS:

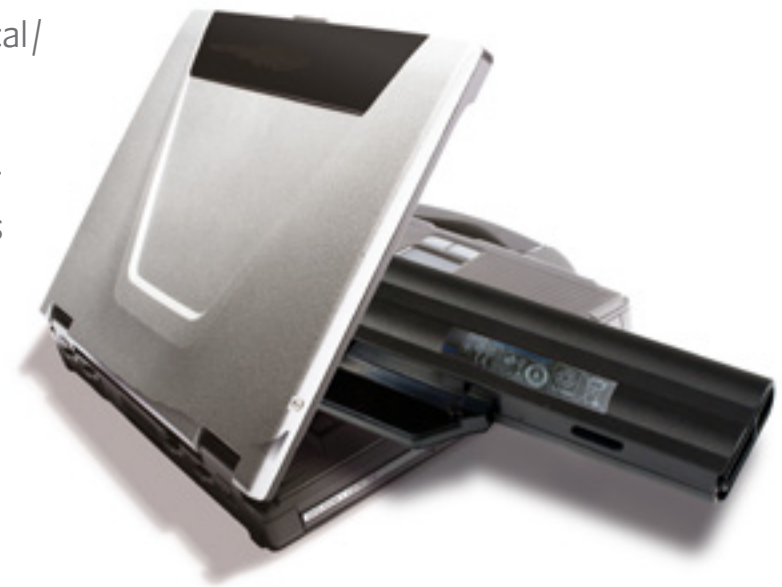
- Flame resistance: UL94 V-0. VTM-0; HWI, HAI, CTI performance; meeting UL-1950, IEC950
- Compliance with many of the environmental standards
- Excellent thermal and electrical insulation properties
- High mechanical strength
- Easy, cost-effective fabrication
- Compatibility with adhesives

Grade Names	Key features	Gauge Availability	UL-rating/Gauge
LEXAN FR60 Film	Clear Polish / Polish surfaces	125-750 µm	VTM-0 / 0.125mm V-0 / 0.2 mm
LEXAN FR63 Film	Translucent Matte / Polish surfaces	175-500 µm	VTM-0 / 0.125mm V-0 / 0.2 mm
LEXAN FR65 Film	Translucent Velvet / Matte surfaces	175-500 µm	VTM-0 / 0.125mm V-0 / 0.2 mm
LEXAN FR83 Film	Translucent Matte / Polish surfaces (Black & Clear Translucent Colors)	50-175 µm	VTM-0 / 0.05mm
LEXAN FR700 Film	Opaque black Velvet / Fine Matte surfaces	250-750 µm	VTM-0 / 0.175mm V-0 / 0.25 mm
LEXAN FR25A Film	Opaque black Velvet / Polish surfaces (Black and White Colors)	250-750 µm	VTM-0 / 0.175mm V-0 / 0.25 mm
VALOX™ FR1 Film	Matte / Polish surfaces	75-750 µm	VTM-0 / 0.125mm V-0 / 0.625 mm

UL file numbers: EU-E45329, USA-E121562, China-E207780

CHLORINE & BROMINE FREE FR FILMS

These environmentally responsible, UL compliant, translucent or opaque films deliver non-brominated, non-chlorinated, flame retardant performance at various gauges range, enabling electrical/ electronics OEMs to go beyond current enviromental directives by voluntarily eliminating halogenated additives in their products while meeting the requirements of the European Union's Restriction of Hazardous substances (RoHs) and Waste electrical and electronic equipment (WEEE 2006) directives.



POTENTIAL APPLICATIONS:

- Heat/dielectric shielding and insulation barriers
- EMI shielding
- Die-cut insulators and spacers
- Printed circuit boards for Desktops and Servers
- Battery packs and adaptors forcomputers, laptops, mobile phones

KEY BENEFITS:

- Non-halogenated (no Chlorine or Bromine) films
- UL-94 recognition, VTM-0 to V-0
- Excellent puncture resistance
- Excellent thermal, electrical and mechanical properties
- Increased chemical and hydrolytic resistance (NORYL™ EFR film)
- Increased heat resistance (ULTEM™ film)

Grade Names	Key features	Gauge Availability	UL-rating/Gauge
LEXAN™ EFR63 Film	Clear translucent Matte / Polish surfaces	125-500 µm	VTM-0 / 0.1 mm V-2 / 0.43 mm
LEXAN EFR65 Film	Clear translucent Velvet / Matte surfaces	*50-500 µm **125-500 µm	VTM-0 / 0.1mm V-2 / 0.43 mm
LEXAN EFR85 Film	Black opaque Velvet / Polish surfaces	175-750 µm	VTM-0 / 0.175 mm V-0 / 0.375 mm
LEXAN EFR95 Film	Velvet / Fine Matte surfaces (Black and White Colors)	175-750 µm	VTM-0 / 0.175 mm V-0 / 0.375 mm
NORYL EFR735 Film	Matte / Fine Matte surfaces	150-750 µm	VTM-0 / 0.05 mm V-0 / 0.25 mm RTI 130 °C at 0.375 mm & above
ULTEM 1000B Film	Matte / Matte; Polish / Matte surfaces	50-750 µm	VTM-0 / 0.025 mm V-2 / 0.2 mm

UL file numbers: EU-E45329, USA-E121562, China-E207780
*50-500 µm available for black color
**125-500 µm available for natural color

SECURITY DOCUMENTS AND ELECTRONIC ID-CARD FILMS

SABIC's LEXAN™ SD film portfolio has been specially designed for easy manufacturing and lamination of complex secure ID cards. The portfolio includes a lasermarkable grade, a bright white (opaque) grade, a clear grade for the cover or intermediate layers, co-extruded film and flexible hard-coated film. These products directly address accelerating industry trends calling for more and thus thinner card layers to accommodate additional safety features, provide easy processing and enhanced durability for ID cards and other security documents.

POTENTIAL APPLICATIONS:

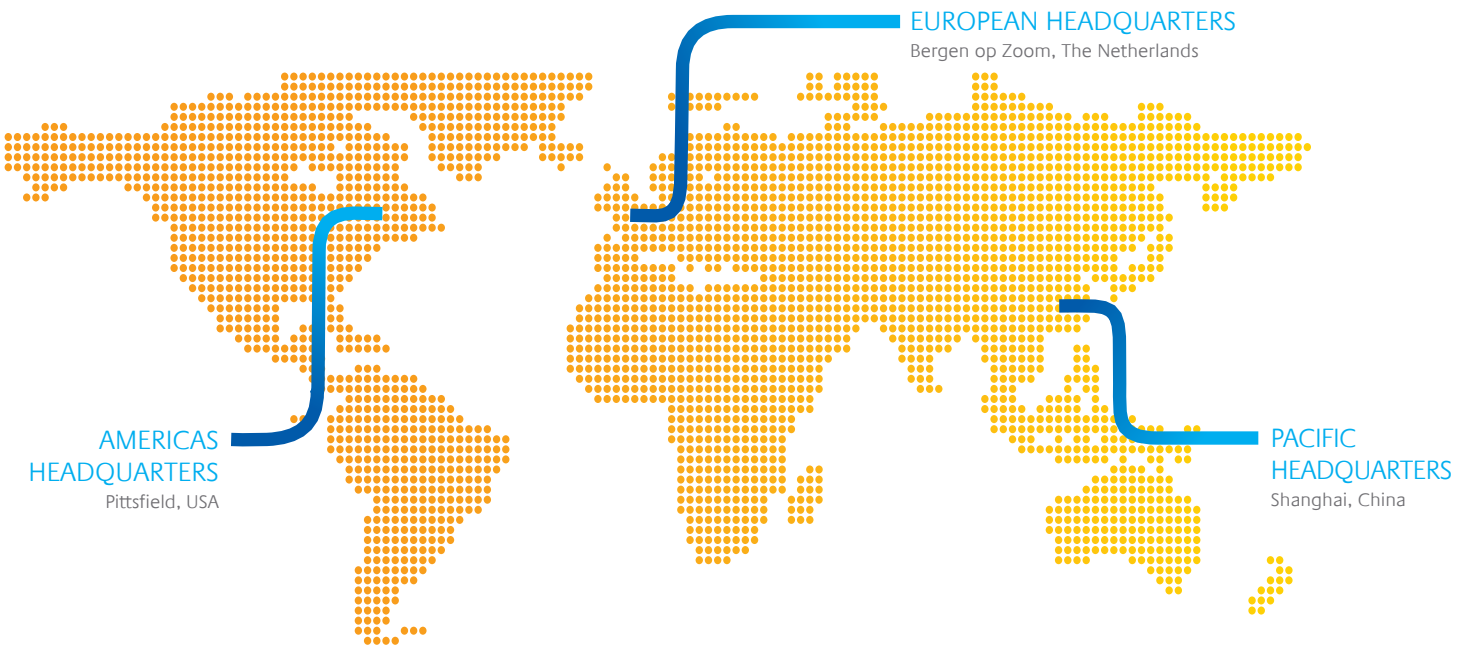
- (e-)identity cards,
- drivers' licenses,
- e-passport data pages,
- border crossing cards,
- residency permits,
- smart card inlays,
- tachometer cards,
- healthcare cards

KEY BENEFITS:

- Long term durability of cards (up to 10 years)
- Optimal lamination of different filmlayers without use of adhesives
- Precise gauge average and gauge tolerance (± 5% max from 50 - 249 µm and ±2.5% max from 250µm)
- Excellent laser markability when exposed to 1064nm laser-equipment
- Designed to be printed prior to lamination

Grade Names	Key Features	Gauge Availability
LEXAN SD8B14 film	Clear 2 side textured monolithic PC film for overlays or intermediate layers.	30-400 µm
LEXAN SD8B24 film	Bright white, opaque 2 side textured monolithic PC film for core layers.	50-440 µm
LEXAN SD8B94 film	Clear laser markable 2 side textured monolithic PC film for high contrast laser personalization	30-150 µm
LEXAN SDCX film	Clear or white co-extruded films for easy processing and laser marking	150 µm
LEXAN SC8A12E film	One side flexible hard coated clear overlay	105 µm
LEXAN SC8A92E film	One side flexible hard coated clear laser markable overlay	105 µm

GLOBAL COMPANY WITH LOCAL SERVICES & SUPPLY



SABIC'S SPECIALTY FILM & SHEET BUSINESS IS COMMITTED TO ITS CUSTOMERS AROUND THE WORLD WITH A PORTFOLIO OF VALUE-ADDED SPECIALTY FILM MATERIALS, APPLICATION SUPPORT AND WORLDWIDE SERVICES.

Specialty Film & Sheet business operates a worldwide network of sales, distribution, research, manufacturing and technical service facilities. With all twelve ISO certified manufacturing sites across the USA, Canada, the Netherlands, Italy, Austria, China, Malaysia, India and Brazil, the company serves customers around the world in a broad spectrum of industries and applications. As a business unit of SABIC, Specialty Film & Sheet benefits from global cross-business resources and expertise. From its network of technical centers in in the United States, the Netherlands, Saudi Arabia, China, Japan, Korea and India, the company provides a variety of services. These include hands-on engineering and technical support that extends from right material selection to characterization of mechanical, thermal, UV/heat aging data, advanced light measurements, optical modeling to part design and installation guidelines. The company also offers a local team, complete supply chain and distribution organization to ensure a reliable source of materials to its customers wherever their manufacturing site is located.

SABIC ranks among the world's top petrochemical companies, and is a global market leader in the production of polyethylene, polypropylene, advanced thermoplastics, glycols, methanol and fertilizers. SABIC operates in more than 40 countries across the world with 33,000 employees worldwide. It has significant research resources with 18 dedicated technology & innovation facilities in Saudi Arabia, the USA, the Netherlands, Spain, India and China.

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