



ESPECIFICACIONES TÉCNICAS DE LOS PRODUCTOS OFERTADOS
Láminas de policarbonato para elaboración de tarjetas electrónicas

ESPECIFICACION	REQUERIMIENTO	PRODUCTO OFERTADO
Superficie mate (blancos y transparentes):	Rugosidad (R3z) en rangos de 0,3 - 5,5µm entre picos y valles de la superficie	SI CUMPLE
Superficie terciopelo (blancos y transparentes):	Rugosidad (R3z) en rangos de 8 - 16 µm entre picos y valles de la superficie	SI CUMPLE

REQUISITO	ESPECIFICACIÓN	PRODUCTO OFERTADO
RESTRICCIÓN DE SUSTANCIAS PELIGROSAS (RoHS) v2 Para todos los sustratos (Certificados)	Mercurio (Hg), Plomo(Pb) Cromo exavalente (Cr6+) Bifenilos polibromados (PBB) Éteres Difenil polibromados (PBDE) Bis (2-etilhexil) ftalato (DEHP) Telaftalato de bencil butilo (BBP) Telaftalato de dibutilo (DBP) Diisobutil telaftalato (DIBP)	Menor a 0,1% del peso residual SI CUMPLE CERTIFICADO ANEXO PARA TODOS LOS PRODUCTOS LEXAN OFERTADOS EU RHOS 2.0
	Cadmio y sus componentes	Menor a 0,01% del peso residual SI CUMPLE

Se adjunta copia simple del certificado que la valida la información de la tabla anterior del 6 de enero del 2020 firmado por Mr. Gregory Porta

ESPECIFICACION DE POLICARBONATO DE 220 µm, núcleo:

REQUISITO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Identificación del Producto:	Indicar el fabricante del producto Indicar el código del producto propuesto	SABIC LEXAN SD8B24
Grosor Nominal	220µm +/- 5%	220µm +/- 5%
Superficie	Mate-Mate/ Mate-Terciopelo	SI CUMPLE Mate-Terciopelo
Tamaño	500mm x 600mm	500mm x 600mm
Resistencia a la tracción	Paralelo (MD): > 11N/mm (50Mpa) Trasversal (CD): > 11N/mm (50Mpa)	SI CUMPLE SI CUMPLE
Elongación antes de la rotura:	> 10%	SI CUMPLE
Contracción:	Paralelo a Temp. 130°C, Tiempo 30 min: máximo 0,5% Trasversal a Temp. 130°C, Tiempo 30 min: máximo 0,5%	SI CUMPLE SI CUMPLE
Vicat	De 140°C a 150°C	SI CUMPLE
Color	Blanco Mate L*a*b* L: 95 ± 2 a:-0,5 ± 2 b:-2,0 ± 2	SI CUMPLE
Densidad	De 1,30 a 1,40 g/cm3	SI CUMPLE
Opacidad	≥ 95%	SI CUMPLE
Laminación	Adecuado para laminación con otras láminas de policarbonato.	SI CUMPLE
Temperatura de Laminación	Entre 160 y 200°C	SI CUMPLE
Campo de aplicación	Núcleo para tarjetas RFID multicapa de larga duración (long life 10 años).	SI CUMPLE
Hoja de datos	La hoja de datos debe ser entregada con las características mecánicas del producto.	SI CUMPLE, ADJUNTO

ESPECIFICACION PARA POLICARBONATO DE 125 µm, spacer

REQUISITO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Identificación del Producto:	Indicar el fabricante del producto Indicar el código del producto propuesto	SABIC LEXAN SD8B24
Grosor Nominal	125 µm +/- 5%	125 µm +/- 5%
Superficie	Mate-Mate/ Mate-Terciopelo (Matt-Matt / Matt-Velvet)	SI CUMPLE Mate-Terciopelo
Tamaño	500mm x 600mm	500mm x 600mm
Resistencia a la tracción	Paralelo (MD): > 6N/mm (50Mpa) Trasversal (CD): > 6N/mm (50Mpa)	SI CUMPLE SI CUMPLE
Elongación antes de la rotura:	> 10%	SI CUMPLE
Contracción:	Paralelo a Temp. 130°C, Tiempo 30 min: máximo 0,5% Trasversal a Temp. 130°C, Tiempo 30 min: máximo 0,5%	SI CUMPLE SI CUMPLE
Vicat	De 140°C a 150°C	SI CUMPLE
Color	Blanco Mate L*a*b* L: 94 ± 2 a:-0,5 ± 2 b:-2,0 ± 2	SI CUMPLE SI CUMPLE SI CUMPLE
Densidad	De 1,30 a 1,40 g/cm3	SI CUMPLE
Opacidad	≥ 87%	SI CUMPLE
Laminación	Adecuado para laminación con otras láminas de policarbonato.	SI CUMPLE
Temperatura de Laminación	Entre 160 y 200°C	SI CUMPLE
Campo de aplicación	Core para tarjetas RFID multicapa de larga duración (long life 10 años).	SI CUMPLE
Hoja de datos	La hoja de datos debe ser entregada con las características mecánicas del producto.	SI CUMPLE, ADJUNTO

ESPECIFICACION PARA POLICARBONATO DE 100 µm SPACER

REQUISITO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Identificación del Producto:	Indicar el fabricante del producto Indicar el código del producto propuesto	SABIC LEXAN SD8B24
Grosor Nominal	100 µm +/- 5%	100 µm +/- 5%
Superficie	Mate-Mate/ Mate-Terciopelo	SI CUMPLE Mate-Terciopelo
Tamaño	500mm x 600mm	500mm x 600mm
Resistencia a la tracción	Paralelo (MD): > 5N/mm (50Mpa) Trasversal (CD): > 5N/mm (50Mpa)	SI CUMPLE SI CUMPLE
Elongación antes de la rotura:	> 10%	SI CUMPLE
Contracción:	Paralelo a Temp. 130°C, Tiempo 30 min: máximo 0,5%	SI CUMPLE



ESPECIFICACIONES TÉCNICAS DE LOS PRODUCTOS OFERTADOS

Láminas de policarbonato para elaboración de tarjetas electrónicas

Vicat	Trasversal a Temp. 130°C, Tiempo 30 min: máximo 0,5% De 140°C a 150°C	SI CUMPLE
Color	Blanco Mate L*a*b* L: 94 ± 2 a: -0,5 ± 2 b: -2,0 ± 2	SI CUMPLE SI CUMPLE SI CUMPLE
Densidad	De 1,30 a 1,40 g/cm ³	SI CUMPLE
Opacidad	≥ 85%	SI CUMPLE
Laminación	Adecuado para laminación con otras láminas de policarbonato.	SI CUMPLE
Temperatura de Laminación	Entre 160 y 200°C	SI CUMPLE
Campo de aplicación	Core para tarjetas RFID multicapa de larga duración (long life 10 años).	SI CUMPLE
Hoja de datos	La hoja de datos debe ser entregada con las características mecánicas del producto.	SI CUMPLE, ADJUNTO

ESPECIFICACION DE POLICARBONATO OVERLAY OFFSET 125 µm , TRANSPARENTE :

REQUISITO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Identificación del Producto:	Indicar el fabricante del producto Indicar el código del producto propuesto	SABIC LEXAN SD8B14
Grosor Nominal	125 µm +/- 5%	125 µm +/- 5%
Superficie	Mate-Mate/ Mate-Terciopelo. Superficie mate con tratamiento de corona o similar para que se garantice que es apta en procesos de impresión offset con tintas de curado UV y serigrafía con tinta bicromática de curado UV. La superficie en la que se garantiza la impresión debe ser indicada por el fabricante.	SI CUMPLE, MATE-TERCIOPELO
Calidad de la superficie	Sin polvo ni fibras. Rasguños (defecto <=1mm max 5/m2) Contaminación (punto 100 < size <= 350 µm max 1/dm2) Contaminación (punto 350 < size <= 635µm max 7/m2)	SI CUMPLE
Tamaño	500mm x 600mm	500mm x 600mm
Resistencia a la tracción	Paralelo (MD): > 6N/mm (50MPa) Trasversal (CD): > 6N/mm (50MPa)	SI CUMPLE SI CUMPLE
Elongación antes de la rotura:	> 10%	SI CUMPLE
Contracción:	Paralelo a Temp. 130°C, Tiempo 30 min: máximo 0,5% Trasversal a Temp. 130°C, Tiempo 30 min: máximo 0,5%	SI CUMPLE SI CUMPLE
Vicat	De 140°C a 150°C	SI CUMPLE
Densidad	De 1,2 a 1,25 g/cm ³	SI CUMPLE
Transmisión de luz	≥ 85% (antes y luego de laminar)	SI CUMPLE
Laminación	Adecuado para laminación con otras láminas de policarbonato.	SI CUMPLE
Temperatura de Laminación	Entre 160 °C y 200°C	SI CUMPLE
Campo de aplicación	Lámina transparente para impresión para tarjetas RFID multicapa de larga duración (long life 10 años).	SI CUMPLE
Ablación Láser	La capa no debe reaccionar durante la personalización de la tarjeta, y el láser debe personalizar la capa inferior	SI CUMPLE
Hoja de datos	La hoja de datos debe ser entregada con las características mecánicas del producto.	SI CUMPLE, ADJUNTO

ESPECIFICACION DE POLICARBONATO OVERLAY LASEREABLE 50 µm

REQUISITO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Identificación del Producto:	Indicar el fabricante del producto Indicar el código del producto propuesto	SABIC LEXAN SD8B94L
Grosor Nominal	50 µm +/- 5%	50 µm +/- 5%
Superficie	Mate-Mate/ Mate-Terciopelo	SI CUMPLE MATE-TERCIOPELO
Calidad de la superficie	Sin polvo ni fibras. Rasguños (defecto <=1mm max 5/m2) Contaminación (punto 100 < size <= 350µm max 1/dm2) Contaminación (punto 350 < size <= 635µm max 7/m2)	SI CUMPLE
Tamaño	500mm x 600mm	500mm x 600mm
Resistencia a la tracción	Paralelo (MD): > 2,5N/mm (50MPa) Trasversal (CD): > 2,5N/mm (50MPa)	SI CUMPLE SI CUMPLE
Elongación antes de la rotura:	> 10%	SI CUMPLE
Contracción:	Paralelo a Temp. 130°C, Tiempo 30 min: máximo 0,5% Trasversal a Temp. 130°C, Tiempo 30 min: máximo 0,5%	SI CUMPLE SI CUMPLE
Vicat	De 140°C a 150°C	SI CUMPLE
Densidad	De 1,2 a 1,25 g/cm ³	SI CUMPLE
Transmisión de luz	≥ 87% (antes y luego de laminar)	SI CUMPLE
Laminación	Adecuado para laminación con otras láminas de policarbonato.	SI CUMPLE
Temperatura de Laminación	Entre 160 y 200°C	SI CUMPLE
Campo de aplicación	Overlay para ablación láser en escala de gris en tarjetas RFID multicapa de larga duración (long life 10 años).	SI CUMPLE
Ablación Láser	La capa debe permitir durante la personalización de la tarjeta excelente definición de imágenes en escala de grises a resoluciones superiores a 600 DPI, efectos táctiles, impresión de microtextos.	SI CUMPLE
Hoja de datos	La hoja de datos debe ser entregada con las características mecánicas del producto.	SI CUMPLE, ADJUNTO

ESPECIFICACION DE POLICARBONATO OVERLAY TÁCTIL 50 µm

REQUISITO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Identificación del Producto:	Indicar el fabricante del producto Indicar el código del producto propuesto	SABIC LEXAN SD8B14
Grosor Nominal	50 µm +/- 5%	50 µm +/- 5%
Superficie	Mate-Mate/ Mate-Terciopelo	SI CUMPLE MATE-TERCIOPELO
Calidad de la superficie	Sin polvo ni fibras. Rasguños (defecto <=1mm max 5/m2) Contaminación (punto 100 < size <= 350µm max 1/dm2) Contaminación (punto 350 < size <= 635µm max 7/m2)	SI CUMPLE
Tamaño	500mm x 600mm	500mm x 600mm
Resistencia a la tracción	Paralelo (MD): >2,5N/mm (50MPa)	SI CUMPLE



ESPECIFICACIONES TÉCNICAS DE LOS PRODUCTOS OFERTADOS

Láminas de policarbonato para elaboración de tarjetas electrónicas

	Trasversal (CD): > 2,5N/mm (50MPa)	SI CUMPLE
Elongación antes de la rotura:	> 10%	SI CUMPLE
Contracción:	Paralelo a Temp. 130°C, Tiempo 30 min: máximo 0,5% Trasversal a Temp. 130°C, Tiempo 30 min: máximo 0,5%	SI CUMPLE SI CUMPLE
Vicat	De 140°C a 150°C	SI CUMPLE
Densidad	De 1,2 a 1,25 g/cm3	SI CUMPLE
Transmisión de luz	≥ 87% (antes y luego de laminar)	SI CUMPLE
Laminación	Adecuado para laminación con otras láminas de policarbonato.	SI CUMPLE
Temperatura de Laminación	Entre 160 y 200°C.Overlay protector y para generar efectos táctiles, lentes CLI/MLI durante el proceso de termoformado en tarjetas RFID multicapa de larga duración (long life)	SI CUMPLE
Campo de aplicación	Overlay protector y para generar efectos táctiles, lentes CLI/MLI durante el proceso de termoformado en tarjetas RFID multicapa de larga duración (long life).	SI CUMPLE
Ablación Láser	La capa no debe reaccionar durante la personalización de la tarjeta, y el láser debe personalizar la capa inferior	SI CUMPLE
Hoja de datos	La hoja de datos debe ser entregada con las características mecánicas del producto.	SI CUMPLE, ADJUNTO

CONDICIONES DE ENVÍO

REQUERIMIENTO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Condiciones de Recepción	<ul style="list-style-type: none"> • Cada material debe ser empacado y embalado, para que no sea afectado por agentes contaminantes como polvo; pelusas, entre otros, durante el transporte y almacenamiento. • Cada material debe ser debidamente embalado en pallets que faciliten su movilización con maquinaria, cuyo peso individual no exceda de 600 kilos • En el caso de apilamiento, el pallet debe tener una cubierta dura en la parte superior para soportar el peso de otro pallet, para evitar daños en el pallet inferior. Considerar una cantidad máxima de apilamiento de 2 pallets. • Cada pallet debe estar etiquetado en al menos 2 lugares diferentes y debidamente protegidos. Deberá contener: <ul style="list-style-type: none"> ↳ Tipo de material: (Ejemplo: Policarbonato blanco 100 um (4.000).) ↳ Peso neto y cantidad. Ejemplo: 435 Kg./3360 hojas. ↳ Número de pallet del envío total (Ejemplo: Pallet 4 de 20 pallets) 	SI CUMPLE

Adicionalmente deberá presentar como adjunto a este formulario:

• Certificados de restricción de sustancias peligrosas (RoHS) v2 para todos los sustratos	PRODUCTO OFERTADO
• Adicionalmente deberá adjuntar todas las hojas de datos de los productos propuestos	SI CUMPLE, ADJUNTO

REQUERIMIENTO	ESPECIFICACIÓN	PRODUCTO OFERTADO
Garantía Técnica:	<p>La garantía técnica de de láminas de policarbonato será de al menos 1 año calendario a partir de la recepción de este insumo en las mismas características descritas en las especificaciones técnicas y en perfectas condiciones físicas, para su uso inmediato además de su operabilidad y compatibilidad con los procesos de impresión offset, impresión serigráfica, termolaminado, troquelado, numeración láser y su posterior personalización mediante impresoras de termotransferencia que se realizan.</p> <p>El proveedor está en la obligación de reponer sin ningún costo para el IGM, la totalidad de láminas de policarbonato que presente fallas de fabricación, embalaje y/o sufra daño en su transportación en 30 días calendarios contados a partir de la notificación por parte del IGM. Los costos serán asumidos por el proveedor y la entrega deberá realizarse en la Bodega Central del IGM en Quito Ecuador.</p>	SI CUMPLE

SIMÓN DAVALOS OCHOA
 APODERADO
 QUITO, 14 DE NOVIEMBRE DEL 2022

LEXAN™ SD8B94L FILM

PRODUCT DATASHEET

DESCRIPTION

LEXAN™ SD8B94L Film is a one side fine velvet (FV), one side fine matt (FM) clear transparent laser markable polycarbonate film that has specifically been designed to be used in government security documents, such as passport data pages, ID cards, driver licenses, ... It offers excellent printability and ease of processing (laminating, die-cutting, hot stamping). LEXAN™ SD8B94L Film is available in gauges ranging from 50-150µm.

TYPICAL PROPERTY VALUES

PROPERTY	ASTM TEST METHOD	UNITS (USCS)	VALUE	ISO TEST METHOD	UNITS (SI)	VALUE
MECHANICAL						
Tensile Strength @ Yield	ASTM D882	psi	8122	ISO 527	MPa	56
Ultimate	ASTM D882	psi	8122	ISO 527	MPa	56
Tensile Modulus	ASTM D882	psi	311 x10 ³	ISO 527	MPa	2150
Tensile Elongation at Break	ASTM D882	%	85	ISO 527	%	85
Tear Strength						
Initiation	ASTM D1004	lbf	12	ASTM D1004	N	52
Propagation	ASTM D1938	lbf	0.6	ASTM D1938	N	2.8
THERMAL						
Coefficient of Thermal Expansion, flow	ASTM E831	(x 10 ⁻⁵ / °F)	4.3	ISO 11359	(x 10 ⁻⁵ / °C)	7.8
Glass Transition Temperature	ASTM D3418	°F	298	ISO 11357	°C	148
Vicat Softening Temperature, B50	ASTM 1525	°F	297	ISO 306	°C	147
Heat Deflection Temp. Af 120°C/h	ASTM D648	°F	261	ISO 75 Modified	°C	127
Shrinkage at 130°C, 30min	Internal method	%	0.14	Internal method	%	0.14
PHYSICAL						
Density	ASTM D792	slug/ft ³	2.33	ISO 1183	g/cm ³	1.20
Water Absorption, 24 hrs.	ASTM D570	% change	0.17	ISO 62	% change	0.17
Surface Roughness Ra		µin	30 [FM]	ISO4288	µm	0.75 [FM]
			102 [FV]			2.6 [FV]
Surface Roughness R3z		µin	150 [FM]	ISO4288	µm	3.8 [FM]
			547 [FV]			13.9 [FV]
Surface Tension	Dyne solutions	Dyne/cm	40 [FM]	Dyne solutions	Dyne/cm	40 [FM]
			38 [FV]			38 [FV]
OPTICAL						
Light Transmission	ASTM D1003	%	87.8	ASTM D1003	%	87.8
Color: b-value	CIELab, Reflection, D65, 10°		2.43	CIELab, Reflection, D65, 10°		2.43

◆ These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local SABIC representative or the SABIC Quality Services Department. Reported Values are based on 0.250 mm (0.010") thickness film, except for the Coefficient of thermal expansion, Vicat softening temperature, Heat deflection temperature and water absorption, which are based on molded parts.

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MANUFACTURING SPECIFICATIONS

NOMINAL GAUGE RANGES	MIN./MAX LIMIT OF NOMINAL
0.050 - 0.150 mm	± 5%

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LEXAN™ SD8B14 FILM

PRODUCT DATASHEET

DESCRIPTION

LEXAN™ SD8B14 Film is a one side fine velvet (FV), one side matt (M) clear transparent polycarbonate film that is typically used in governmental documents, such as passport data pages, ID cards, driving licenses, ... It offers great printability and ease of processing (laminating, die-cutting, embossing). LEXAN™ SD8B14 Film is available in gauges ranging from 30 - 400µm.

TYPICAL PROPERTY VALUES

PROPERTY	ASTM TEST METHOD	UNITS (USCS)	VALUE	ISO TEST METHOD	UNITS (SI)	VALUE
MECHANICAL						
Tensile Strength @ Yield	ASTM D882	psi	8122	ISO 527	MPa	56
Ultimate	ASTM D882	psi	8122	ISO 527	MPa	56
Tensile Modulus	ASTM D882	psi	311 x10 ³	ISO 527	MPa	2150
Tensile Elongation at Break	ASTM D882	%	85	ISO 527	%	85
Tear Strength						
Initiation	ASTM D1004	lbf	12	ASTM D1004	N	52
Propagation	ASTM D1938	lbf	0.6	ASTM D1938	N	2.8
THERMAL						
Coefficient of Thermal Expansion, flow	ASTM E831	(x 10 ⁻⁵ / °F)	4.2	ISO 11359	(x 10 ⁻⁵ / °C)	7.5
Glass Transition Temperature	ASTM D3418	°F	298	ISO 11357	°C	148
Vicat Softening Temperature, B50	ASTM 1525	°F	295	ISO 306	°C	146
Heat Deflection Temp. Af 120°C/h	ASTM D648	°F	262	ISO 75 Modified	°C	128
Shrinkage at 130°C, 30min	Internal method	%	0.17	Internal method	%	0.17
PHYSICAL						
Density	ASTM D792	slug/ft ³	2.33	ISO 1183	g/cm ³	1.20
Water Absorption, 24 hrs.	ASTM D570	% change	0.09	ISO 62	% change	0.09
Surface Roughness Ra		µin	35 [M]	ISO4288	µm	0.9 [M]
			91 [FV]			2.3 [FV]
Surface Roughness R3z		µin	165 [M]	ISO4288	µm	4.2 [M]
			484 [FV]			12.3 [FV]
Surface Tension	Dyne solutions	Dyne/cm	44 [M]	Dyne solutions	Dyne/cm	44 [M]
			37 [FV]			37 [FV]
OPTICAL						
Light Transmission	ASTM D1003	%	87	ASTM D1003	%	87
Color: b-value	CIE Lab, Reflection, D65, 10°		1.75	CIE Lab, Reflection, D65, 10°		1.75

- ◆ These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local SABIC representative or the SABIC Quality Services Department. Reported Values are based on 0.250 mm (0.010") thickness film, except for the Coefficient of thermal expansion, Vicat softening temperature, Heat deflection temperature and water absorption, which are based on molded parts.

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MANUFACTURING SPECIFICATIONS

NOMINAL GAUGE RANGES	MIN./MAX LIMIT OF NOMINAL
0.030 mm	± 10%
0.050 – < 0.250 mm	± 5%
0.250 – 0.400 mm	± 2.5%

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LEXAN™ SD8B24 FILM

PRODUCT DATASHEET

DESCRIPTION

LEXAN™ SD8B24 film is a one side fine velvet (FV), one side fine matte [FM] white opaque polycarbonate film that is typically used in governmental documents, such as passport data pages, ID cards, driving licenses, etc. It offers great printability and ease of processing (laminating, die-cutting, embossing). LEXAN SD8B24 film is available in gauges ranging from 50 – 620 µm and in color WH9B246.

TYPICAL PROPERTY VALUES

PROPERTY	ASTM TEST METHOD	UNITS (USCS)	VALUE	ISO TEST METHOD	UNITS (SI)	VALUE
MECHANICAL						
Tensile Strength @ Yield	ASTM D882	psi	7542	ISO 527	MPa	56
Ultimate	ASTM D882	psi	7687	ISO 527	MPa	56
Tensile Modulus	ASTM D882	psi	355 x10 ³	ISO 527	MPa	2450
Tensile Elongation at Break	ASTM D882	%	50	ISO 527	%	50
Tear Strength						
Initiation	ASTM D1004	lbf	12	ASTM D1004	N	53
Propagation	ASTM D1938	lbf	0.6	ASTM D1938	N	2.5
THERMAL						
Coefficient of Thermal Expansion, flow	ASTM E831	(x 10 ⁻⁵ / °F)	3.9	ISO 11359	(x 10 ⁻⁵ / °C)	7.1
Glass Transition Temperature	ASTM D3418	°F	300	ISO 11357	°C	149
Vicat Softening Temperature, B50	ASTM 1525	°F	297	ISO 306	°C	147
Heat Deflection Temp. Af 120°C/h	ASTM D648	°F	270	ISO 75 Modified	°C	132
Shrinkage at 130°C, 30min	Internal method	%	0.10	Internal method	%	0.10
PHYSICAL						
Density	ASTM D792	slug/ft ³	2.6	ISO 1183	g/cm ³	1.34
Water Absorption, 24 hrs.	ASTM D570	% change	0.12	ISO 62	% change	0.12
Surface Roughness Ra		µin	35 [FM]	ISO4288	µm	0.9 [FM]
			87 [FV]			2.2 [FV]
Surface Roughness R3z		µin	173 [FM]	ISO4288	µm	4.4 [FM]
			465 [FV]			11.8 [FV]
Surface Tension	Dyne solutions	Dyne/cm	44 [FM]	Dyne solutions	Dyne/cm	44 [FM]
			39 [FV]			39 [FV]

PROPERTY	ASTM TEST METHOD	UNITS (USCS)	VALUE	ISO TEST METHOD	UNITS (SI)	VALUE
OPTICAL			WH9B246			WH9B246
Light Transmission	ASTM D1003	%	2.14	ASTM D1003	%	2.14
Optical density			1.67			1.67
Color:	CIE Lab, Reflection,			CIE Lab, Reflection,		
L-value	D65, 10°		94.79	D65, 10°		94.79
a-value			-0.09			-0.09
b-value			-2.31			-2.31

- ◆ These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local SABIC representative or the SABIC Quality Services Department. Reported Values are based on 0.250 mm (0.010") thickness film, except for the Coefficient of thermal expansion, Vicat softening temperature, Heat deflection temperature and water absorption, which are based on molded parts.

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MANUFACTURING SPECIFICATIONS

NOMINAL GAUGE RANGES	MIN./MAX LIMIT OF NOMINAL
0.050 - < 0.250 mm	± 5%
0.250 – 0.620 mm	± 2.5%

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January 6, 2020, Houston TX, USA Version 5.8

Subject: Status of our products with respect to RoHS/ELV

Dear Most Valued Customer

Thank you for using SABIC products.

SABIC has its manufacturing facility in about 60 locations across 35 countries in the world. We manufacture and/or sell,

- (i) CYCOLAC™, CYCOLOY™, EXTEM™, GELOY™, LEXAN™, NORYL™, NORYL GTX™, NORYL PPX™, ULTEM™, SILTEM™, VALOX™, XENOY™, XYLEX™ resins, and
- (ii) LEXAN™ film/sheet, LEXAN™ EXELL™ D sheet, NORYL™ film, ULTEM™ film/sheet, VALOX™ film, GEPAX™ sheet, MARGARD™ sheet, PLASTECH™ sheet, SOUNDGLAZE™ sheet, CLINIWALL™ sheet, SUNXP™ sheet, VEROLITE™ sheet, ILLUMINEX™ film, CARBORON™ sheet, THERMOCLICK™ sheet, THERMOCLEAR™ sheet, THERMOCLEAR-PLUS™ sheet, STADECK™ panel, LEXAPANEL™ building system, and
- (iii) COLORCOMP™, FARADEx™, KONDUIT™, LUBRICOMP™, LUBRILOY™, STAT-KON™, STAT-LOY™, THERMOCOMP™, THERMOTUF™, VERTON™, ELCRES™, ELCRIN™ compounds, and
- (iv) SABIC®PC.

All existing grade-colors of the above mentioned Resins / Films / Sheets /Compounds, except products which are designed to consume Post Consumer Recycle (PCR), are referred in this document as 'SABIC Products' here after.

The SABIC Products do not contain restricted substances mentioned in the table below as intentionally added components or as expected process impurities [above corresponding threshold limits mentioned in the below table]

Reference Detail/Reference Regulation	Restricted Substances	Threshold Limits (% W/W)
Restriction of Hazardous Substances (RoHS)*	- Lead and its compounds,	
	- Mercury and its compounds,	

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Directive 2011/65/EU, 2015/863/EU, 2017/2102/EU and amendments	- Hexavalent Chromium compounds,	0.1 each
	- Polybrominated biphenyls (PBBs) and	
	- Polybrominated diphenyl ethers (PBDEs)	
	- Bis(2-ethylhexyl) phthalate (DEHP)	
	- Butyl benzyl phthalate (BBP)	
	- Dibutyl phthalate (DBP)	
End-of-Life Vehicles (ELV) Directive (2000/53/EC, Directive (2016/774/EC) and their amendments)	- Diisobutyl phthalate (DIBP)	0.01
	- Cadmium and its compounds	

* The SABIC Products could fully meet the EU ROHS 2.0 related substance restrictions; no any existing exemptions have been used.

We are disclosing above information, to the best of our knowledge, based upon data from our raw material suppliers or manufacturers. Please note that analysis of the raw materials and/or SABIC Product/s for presence of the above-mentioned substances on a routine basis neither is a part of our quality control plan, nor is a part of the SABIC Product specifications, and hence it shall not be construed as any warranty, expressed or implied.

We recommend that users take appropriate precaution during storage, transportation and use of SABIC Products to avoid contamination and deterioration. Please refer to the product's Safety Data Sheet (SDS) of the SABIC Products before use and consult our nearest representative, if there are further needs.

Please be informed that, certain products are designed to consume Post Consumer Recycle (PCR) for Environmental waste reduction. The details about use of the PCR, if any, are stated in the respective SDS. Please contact our Customer Service or Product Stewardship team to request information regarding the chemical compliance attributes of these products, which may differ from those contained in this letter.

Do note that the information above is current as on the date of this letter. The information provided in this letter is based upon information currently available to Seller. I trust the above information will be of use to you.

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This letter supersedes all earlier communications on the same subject matter. If you have any further questions, or you require additional information on the above, please contact: webinquiries@sabic.com (EU), or productinquiries@sabic.com (US), or asiaproductinquiries@sabic.com (AP).

In the name of the manufacturer,

for SABIC

Mr. Gregory Porta
Director, Product Stewardship & Toxicology
SABIC
2500 CityWest Blvd.
Houston,
TX, USA

A handwritten signature in black ink, appearing to read 'Gregory Porta', written over the printed name and address.

Enclosure: Nil

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