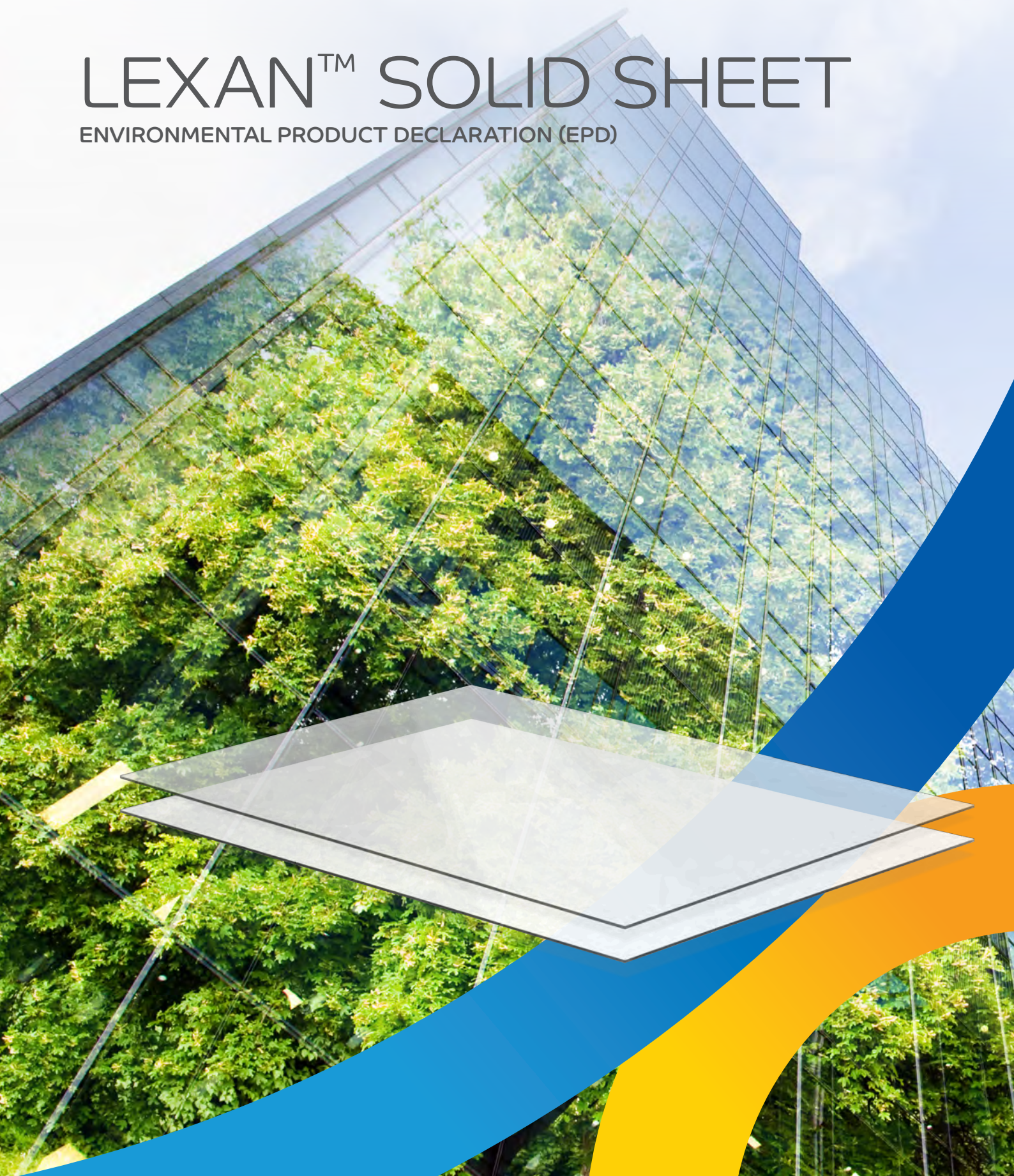


CHEMISTRY THAT MATTERS™



LEXAN™ SOLID SHEET

ENVIRONMENTAL PRODUCT DECLARATION (EPD)



ABOUT THIS EPD

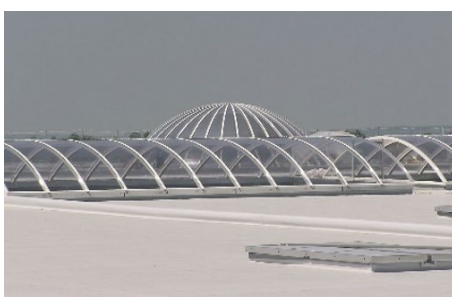
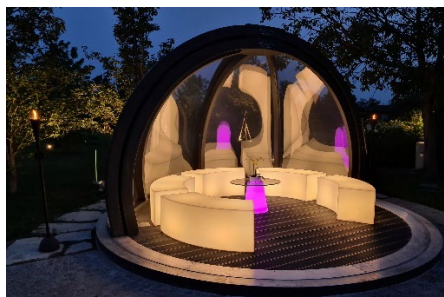
Declared Product:	LEXAN™ Solid Sheet
Issue Date:	July 2022
Validity:	5 years from the date of publication
PCR (Product Category Rule):	EN 15804:2012 + A2:2019
Third Party Verification:	In accordance to EN ISO 14025 and relevant PCR Conforms to EN15804+A2 Verifier: Bernd Brandt, bernd@brandtconsulting.eu

DESCRIPTION

An Environmental Product Declaration (EPD) is a document, which transparently communicates the environmental performance or impact of any product or material over its lifetime.

PRODUCT INFORMATION

PRODUCT DESCRIPTION	PRODUCT COMPOSITION AND CONTENT															
LEXAN™ Solid polycarbonate sheets combine a high level of mechanical, optical and thermal properties, which can be used for a wide range of applications.	The product does not contain materials listed in the “Candidate list of Substances of Very High Concern for authorization” in a concentration over 0,1% (w/w).															
PRODUCTION PROCESS AND TECHNOLOGY	<p><i>Table 1 Composition of the product in percentages</i></p> <table border="1"> <thead> <tr> <th>Components</th> <th>Composition/content/ingredients</th> <th>Quantity (range)</th> </tr> </thead> <tbody> <tr> <td>Product</td> <td>Polycarbonate granulates</td> <td>80 - 90%</td> </tr> <tr> <td></td> <td>Regrinded polycarbonate granulates</td> <td>10 - 15%</td> </tr> <tr> <td></td> <td>UV-additives</td> <td>1 - 1.5%</td> </tr> <tr> <td></td> <td>Pigments (white, grey, brown/bronze, blue, violet, red)</td> <td>0.02 - 1.1%</td> </tr> </tbody> </table>	Components	Composition/content/ingredients	Quantity (range)	Product	Polycarbonate granulates	80 - 90%		Regrinded polycarbonate granulates	10 - 15%		UV-additives	1 - 1.5%		Pigments (white, grey, brown/bronze, blue, violet, red)	0.02 - 1.1%
Components		Composition/content/ingredients	Quantity (range)													
Product	Polycarbonate granulates	80 - 90%														
	Regrinded polycarbonate granulates	10 - 15%														
	UV-additives	1 - 1.5%														
	Pigments (white, grey, brown/bronze, blue, violet, red)	0.02 - 1.1%														
LEXAN™ Solid Polycarbonate sheets are produced via an extrusion process. Polycarbonate powder and/or pellets are compounded to a melt, which is transformed to a sheet shape through a calendaring process.																



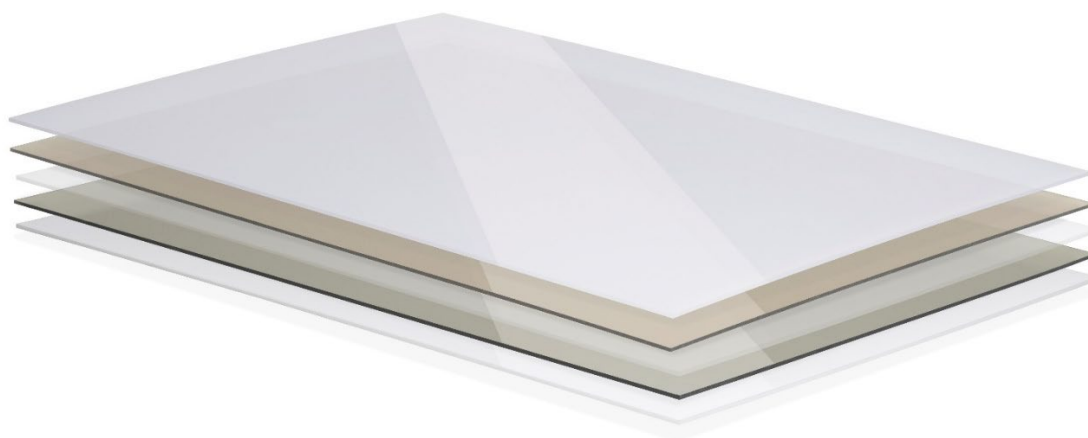
TECHNICAL DATA / PHYSICAL CHARACTERISTICS

Table 2 Technical properties of the product

Technical property	Standard	Value/unit	Comment
Reaction to fire	EN 13501-1	B-s1, d0	Test according EN 13823 up to 6mm
Dimensional tolerances	EN 16240	Pass/Fail	
Light transmittance “ τ_v ”	EN 14500	%	Up to 87%
Linear thermal expansion	ISO 11359-2	$65 \cdot 10^{-6} \text{ K}^{-1}$	Coefficient
Durability	EN 16240	ΔA clear, ΔD coloured	Test according to EN ISO 4892-2
Thermal transmittance (U value)	EN ISO 6946	3,5 – 5,8 W/m ² K	Depending on thickness

LIFE CYCLE STAGE AND MODULES

Description of the system boundary (X = Included in LCA; MND = Module not declared)																
Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	disposal	Reuse-recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X



LCA (LIFE CYCLE ASSESSMENT)

The LCA study was performed by EPSE and ENPERAS/VITO according to the ISO 14040 and ISO 14044 (data inventory) standards (ISO, 2006). The European electricity mix (consumption mix + import) has been used to model electricity use in the life cycle stages. Ecoinvent 3.6 database (June 2019, Wernet et al., 2016) was used for this study.

Declared Functional Unit (FU) is the production of 1 kg of a “Solid Polycarbonate sheet”.
LEXAN™ Solid polycarbonate sheets are typically available in thicknesses between 2 and 15mm.

Table 3 Conversion factors for Solid Polycarbonate Sheet

LEXAN Solid Sheet	Value	Unit	Thickness (mm)	Conversion factor
Functional Unit (FU)	1	kg	2	0.417
Gross weight per square meter	1.2	kg/m ² /mm	3	0.278
Conversion factor to 1 m ²			4	0.208
			5	0.167
			6	0.139
			8	0.104
			10	0.083
			12	0.069
			15	0.056

GWP TOTAL - POTENTIAL ENVIRONMENTAL IMPACT

Table 4 Total Global Warming Potential (standard unit for measuring carbon footprint)

Impact category	Units	Total
GWP-Total	kg CO ₂ equiv./FU	5.48

Included is:

Product Stage: A1, A2, A3

Installation stage: A4

End of life Stage: C1, C2, C3, C4



INFORMATION ON BIOGENIC CARBON CONTENT

There is no biogenic carbon content in the product. Uptake of biogenic CO₂ within the pallets and the carton is reported in module A3, release in module A5.

	Biogenic carbon content (kg C / FU)
Biogenic carbon content in product (at the gate)	0,00E+00
Biogenic carbon content in accompanying packaging	4,82E-02

This EPD is valid for products sold globally, produced in Europe.

REFERENCES

- Datasheets www.sabic.com/ff
- ISO 14040:2006: Environmental Management-Life Cycle Assessment-Principles and framework.
- ISO 14044:2006: Environmental Management-Life Cycle Assessment-Requirements and guidelines.
- ISO 14025:2006: Environmental labels and Declarations-Type III Environmental Declarations principles.
- EN 15804+A2:2019. CEN TC350. Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products. European standard.
- European Commission, PEFCR Guidance document, - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.3, December 2017.
- Life cycle assessment for solid and multiwall polycarbonate sheets produced by the European Polycarbonate Sheet Extruders (EPSE); December 2021.

CONTACT US

Europe

SABIC
Functional Forms
Plasticslaan 1
4612 PX
Bergen op Zoom
The Netherlands
T +31 (0)164 293684
E ff.info@sabic.com



DISCLAIMER: THE MATERIALS, PRODUCTS AND SERVICES OF SAUDI BASIC INDUSTRIES CORPORATION (SABIC) OR ITS SUBSIDIARIES OR AFFILIATES ("SELLER") ARE SOLD SUBJECT TO SELLER'S STANDARD CONDITIONS OF SALE, WHICH ARE AVAILABLE UPON REQUEST. INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS DOCUMENT ARE GIVEN IN GOOD FAITH. HOWEVER, SELLER MAKES NO EXPRESS OR IMPLIED REPRESENTATION, WARRANTY OR GUARANTEE (i) THAT ANY RESULTS DESCRIBED IN THIS DOCUMENT WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN OR APPLICATION INCORPORATING SELLER'S MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS. UNLESS OTHERWISE PROVIDED IN SELLER'S STANDARD CONDITIONS OF SALE, SELLER SHALL NOT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS DESCRIBED IN THIS DOCUMENT. Each user is responsible for making its own determination as to the suitability of Seller's materials, products, services or recommendations for the user's particular use through appropriate end-use and other testing and analysis. Nothing in any document or oral statement shall be deemed to alter or waive any provision of Seller's Standard Conditions of Sale or this Disclaimer, unless it is specifically agreed to in a writing signed by Seller. Statements by Seller concerning a possible use of any material, product, service or design do not, are not intended to, and should not be construed to grant any license under any patent or other intellectual property right of Seller or as a recommendation for the use of any material, product, service or design in a manner that infringes any patent or other intellectual property right.

SABIC and brands marked with ™ are trademarks of SABIC or its subsidiaries or affiliates.
© 2023 SABIC. All Rights Reserved.