

RESOPAL® X-LINE

PRODUCT DATA SHEET

1. Material description

RESOPAL® X-Line belongs to the group of compact laminates for outdoor use, type EGS/EGF according to EN 438 Part 6 (Classification and specifications for Exterior-grade compact laminates of thickness 2 mm and larger), i.e. under the influence of sunlight, rain and frost.

RESOPAL® X-Line are panels consisting of layers of fibrous cellulose (usually paper) impregnated with thermosetting synthetic resin, which cure under heat and high pressure.

The process, a simultaneous application of heat ($\geq 120^{\circ}\text{C}$) and specific high pressure ($\geq 5\text{ MPa}$), enables the flowing and subsequent curing of the thermosetting resins, in order to obtain a homogeneous and non-porous material (bulk density $\geq 1.35\text{ g/cm}^3$) with the required surface.

More than 60% of RESOPAL® X-Line is generally made of paper. The remaining 30 to 40% consists of phenol formaldehyde resin for the core layers and melamine formaldehyde resin for the decorative top layer. Both resins belong to the thermosets. They are irreversibly chemically cross-linked and form a cured, stable material whose properties are fundamentally different from those of the raw materials. The decorative layer on both sides consists of a decorative paper layer impregnated with melamine resin without additional UV protection. RESOPAL® X-Line panels with a thickness of 3 mm are usually roughened on the back and therefore intended for coating substrates. In larger material thicknesses, i.e. more than 5 mm, these panels are extremely dimensionally stable and therefore self-supporting. Due to its high modulus of elasticity, the material also has the advantage of a high bending rigidity.

RESOPAL® X-LINE is optionally available in Euroclasses B and D according to EN 13501-1. If increased fire protection is required, the laminate core is provided with an additive that does not contain halogens. RESOPAL® X-Line panels are not hazardous substances as defined by the Chemicals Act and therefore do not require special labelling nor a safety data sheet.

2. Technische Daten

Properties	Test method	Units	EGS	EGF
Density	ISO 1183	g/cm ³	≥ 1,35	
Thickness Tolerance	EN 438-2-5	mm	6mm ±0,4 / 8mm und 10mm ±0,5 / 12mm ±0,6	
Length and width tolerance	EN 438-2-6	mm	+10 / -0	
Edge straightness tolerance	EN 438-2-7	mm/m	≤ 1,5	
Squareness tolerance	EN 438-2-8	mm/m	≤ 1,5	
Flatness tolerance	EN 438-2-9	mm/m	6mm und 8mm ≤ 5mm / 10mm und 12mm ≤ 3	
Resistance to wet conditions	EN 438-2-15	Mass increase % 2 ≤ t ≤ 5 t ≥ 5 Appearance Rating	≤ 7 ≤ 5 ≥ 4	≤ 10 ≤ 8 ≥ 4
Dimensional stability at elevated temperature	EN 438-2-17	2 mm ≤ t ≤ 5 mm % % t ≥ 5 mm % %	≤ 0,4 ≤ 0,8 ≤ 0,3 ≤ 0,6	
Resistance to climatic shock Appearance Flexural strength index D _s Flexural modulus index D _m	EN 438-2-19	Rating	≥ 4,0 ≥ 0,8 ≥ 0,8	
Resistance to artificial weathering (incl. light fastness) Contrast Appearance	EN 438-2-29	Grey scale Rating	≥ 3 ≥ 4	
Flexural strength longitudinal /transverse	EN ISO 178	MPa	≥ 80	
Flexural modulus longitudinal/transverse	EN ISO 178	MPa	≥ 9000	
Surface resistance (antistatic behavior)	EN 61340-2-3 (no static load)	Ω	10 ⁹ - 10 ¹¹	
Fire behaviour				
RESOPAL® X-Line RESOPAL X-Line F	EN 13501-1 EN 13501-1		D-s1, d0	B-s1, d0
Coefficient of linear thermal expansion longitudinal transverse	DIN 51045 (+80/-20)°C	1/K 1/K	0,9 · 10 ⁻⁵ 1,6 · 10 ⁻⁵	
Calorific value	DIN 51900	MJ/kg	18 - 20	

Rating 5 (no visible change); 4 (change of gloss only); 3 (hairline cracks and/or signs of erosion); 2 (surface cracks); 1 (blistering and/or delamination)

3. Storage & Transport

RESOPAL® X-Line must be stored in a closed storage room under normal indoor conditions. Storage and transport must be carried out fully flat, horizontal and flush with the edges on a sufficiently large pallet, covered with a plastic film. Foreign bodies and abrasive impurities in the panel stack can cause indentations and damage to the panel surface. When loading and unloading, the panels must not be shifted against each other and pulled over each other; they must be lifted individually by hand or with suction lifters. The top panel must be covered and weighted down. To prevent condensation, stacks of panels should not be covered too tightly with film. These storage conditions must also be ensured after each removal from the stack. In the case of panels covered with protective film, they must be removed from both sides at the same time.

4. Handling and processing of RESOPAL® X-Line

The usual safety regulations regarding dust removal and fire protection must be observed when processing Resopal® X-Line panels. Due to possible sharp edges, protective gloves should always be worn when handling RESOPAL® X-Line. Contact with RESOPAL® X-Line dust does not cause any particular issues; nevertheless, there are a limited number of people who may have an allergic reaction by processing dusts of all kinds (and therefore also to HPL dust). RESOPAL® X-Line is supplied as a format panel with trimmed edges. Because RESOPAL® X-Line can be easily processed with woodworking machines, fitting elements and drill holes can be produced under workshop conditions but also on the construction site.

You will find more information on processing in the processing instructions of RESOPLAN®.

5. Environmental and health aspects of use

RESOPAL® X-Line is a cured and thus inert thermosetting plastic material. The formaldehyde emission of RESOPAL® X-Line itself is far below the legally permissible limit for wood-based materials. RESOPAL® X-Line is a product and not a chemical substance. Therefore, the REACH Regulation is not applicable. Nevertheless, it is important to ensure an exchange of information with raw material suppliers regarding REACH-relevant components

6. Cleaning and care of RESOPAL® X-Line

Slightly soiled panels are cleaned with a soft, clean and, if necessary, moistened cloth. Larger stains can be removed with a warm soap or detergent solution or with a commercial cleaning agent after a longer period of exposure, if necessary. Remaining residues can generally be removed with organic solvents such as ethanol, acetone, benzene or nail polish remover. You can only use clean, soft cloths, soft sponges or soft brushes as cleaning aids! Care waxes or polishes must not be applied as they leave a coating on RESOPAL surfaces. This coating changes the typical surface properties.

Important notice:

Only cleaning agents that do not contain abrasive, strongly acidic or strongly bleaching ingredients may be used.

7. Reinigung und Pflege von RESOPAL® X-Line

RESOPAL® X-Line panels are not at all easy to set on fire and their properties prevent or retard the spread of flames. In case of incomplete combustion, as with any other organic material - toxic substances can be found in the smoke. Furthermore, RESOPAL X-Line F is generally approved by the building authorities and the following positive fire protection properties should also be emphasized:

- no melting, no dripping in case of fire
- no shattering, no sudden cracking in case of fire
- no afterburning or after glowing upon removal of direct flame exposure
- low incidence of smoke gas emission

In the case of fires involving RESOPAL® X-Line, the same fire-fighting techniques can be used as for other wood-based building products.

8. Energy recovery

Due to their high calorific value (18 - 20 MJ/kg)¹, RESOPAL® X-Line panels are particularly suitable for thermal recycling. With total combustion at 700 °C they decompose into water, carbon dioxide and nitrogen oxides. Therefore, RESOPAL® X-Line panels fulfil the prerequisites for energetic utilisation according to § 8 of the German Closed Substance Cycle Waste Management Act (Kreislaufwirtschaftsgesetz).

The conditions for efficient combustion processes are warranted in state of the art, officially approved industrial combustion systems. The ash from these combustion processes can be disposed of at controlled landfill sites.

9. Energierückgewinnung

Resopal® X-Line can be shipped to controlled landfills which comply with the current national and/or regional regulations.

Alle in diesem Produktdatenblatt enthaltenen Angaben basieren auf dem aktuellen technischen Wissensstand, stellen jedoch keine Garantie dar. Eine Gewähr zur Eignung für bestimmte Einsatzzwecke oder Anwendungen wird nicht übernommen.

¹ For comparison: calorific value of fuel oil = 37 - 41 MJ/kg or of hard coal = 28 - 31 MJ/kg