Product data sheet

RESOPLAN®
HPL as per EN 438-6

This information describes the composition of RESOPAL® boards and provides details on how to handle, process, use and dispose of them. RESOPLAN® boards are not hazardous materials as defined by the Chemicals Acts and therefore require neither special labeling nor a safety data sheet.

1 Description of material and composition

RESOPLAN® belongs to the group of compact laminates for outdoor use, type EDS / EDF according to DIN EN 438 part 6 (classification and specification for exterior-grade compact laminates with a thickness of 2 mm and greater), which means under the influence of sunlight, rain and frost.
RESOPLAN® is the name for boards made up of layers of fibrous cellulose (normally paper), impregnated with thermosetting synthetic resins which cure when subjected to heat and high pressure. The process involving the simultaneous application of heat ($\geq$ 120°C) and high specific pressure ($\geq$ 5 MPa) enables the thermosetting synthetic resins to flow and subsequently cure in order to achieve a homogeneous and pore-free material (bulk density $\geq$ 1.4 g/cm³) with the required surface finish.
More than 60% of RESOPLAN® is generally made up of paper and the remaining 30 to 40% is made up of phenol formaldehyde resin for the core layers and melamine formaldehyde resin for the decorative cover layer.
Both resins are thermosets. They are irreversibly chemically cured to form a hardened stable material whose properties are fundamentally different to those of the original raw materials.
The decorative surface has an added suitable double-sided outer layer (coating) to ensure weather and light protecting properties.
RESOPLAN® boards with a thickness of 3 mm are usually roughened on the reverse side for the coating of carrier materials. For greater material thicknesses, i.e. over 5 mm, these boards are extremely dimensionally stable and thus self-supporting. Due to its high modulus of elasticity, the material also offers the advantage of a high bending strength.
RESOPLAN® is optionally available in building material classes B2 and B1 according to DIN 4102-1 and in Euroclasses B and D according to EN 13501-1. If greater fire protection is required, an additive which contains no halogens is added to the laminate core.

2 Storage and transportation

Storage and transportation should be carried out in accordance with our recommendations. Foreign particles and abrasive contaminants in the board stack can result in indentations and damage to the board surface. When loading and unloading, the boards must not be shifted against each other or pulled on top of each other; they must be lifted individually by hand or with suction hoists. When covering the board stacks with foil, ensure that no condensation can form.
In accordance with the transport regulations, RESOPLAN® boards are not classified as hazardous materials and therefore require no labeling.

3 Handling and processing of RESOPLAN®

The standard safety regulations for de-dusting and fire protection must be observed when processing and finishing RESOPLAN®.
Because of possible sharp edges, always wear protective gloves when handling RESOPLAN®. Contact with RESOPLAN® dust does not cause any special problems; however, there is a limited number of people who may suffer an allergic reaction to processing dusts of any kind (and thus also to HPL dust).
RESOPLAN® is supplied as a format board with trimming all around. Due to the easy machinability of RESOPLAN® with woodworking machines, fitting parts and drill holes can be made in a workshop environment but also at the site. For further information on the processing, read the processing instructions "Processing appropriate to the material RESOPLAN®".

4 Environmental and health factors in use

RESOPLAN® is a cured and thus inert thermosetting plastics material.
The release of formaldehyde from RESOPLAN® is well below the statutorily permitted limit for wooden materials.
RESOPLAN® boards are products and not chemical substances and therefore the REACH ordinance does not find application. It is however important to ensure an exchange of information with raw material suppliers in relation to REACH-relevant components.

5 Cleaning and care of RESOPLAN®

RESOPLAN® boards (decorative high-pressure laminates as per EN 438-6) are low-maintenance and, thanks to their homogeneous and pore-free surface, do not require any special care. However, after processing and finishing or over the course of time, it may be necessary to clean the surface.
The recommended cleaning procedures apply to surface contaminations resulting from the general use, processing and installation of RESOPLAN® boards.

Cleaning general
Light dirt can be removed with clear, lukewarm water. Heavier dirt can be removed with soap suds or a detergent solution.

- Use non-abrasive household cleaning products diluted in water.
- Use fine and clean cloths or sponges.
- Always rinse with clean, clear water to prevent streaks from forming.

The following cleaning agents must never be used:

- Abrasive cleaning agents (e.g., scrubbing powder and abrasive cleaning liquids)
- Solvents and solvent cleaners (e.g., acetone, benzine, thinner etc.)
- Scrubbing and abrasive cleaning rags or sponges (e.g., microfiber cloth, scrubbing sponge, steel wool etc.)
- High-pressure cleaners and steam cleaners

Cleaning graffiti
If parts of the RESOPLAN® facade have been sprayed with graffiti, the cleaning agent “MBE Anti Graffiti Spray” from MBE GmbH is recommended for removal. With this, the RESOPLAN® surface can be cleaned effortlessly without damaging the board.
After this, the boards must be cleaned again with soap suds and rinsed with clean, clear water. Furthermore, the instructions on use of the Anti Graffiti Spray must also be followed (see attachment).

It is recommended to perform a cleaning test first on a small area of the affected surface. The effectiveness and the compatibility of the process must be tested before continuing with the remaining area.

6 RESOPLAN® in case of fire

RESOPLAN® boards are difficult to set alight and their properties prevent the spread of flames. When incompletely combusted, as with any other organic material, toxic substances can be found in the smoke.
Furthermore, RESOPLAN® is approved by the building authorities and the following positive fire protection properties need to be emphasized:

- no melting, no dripping in case of fire
- no fragmentation, no sudden formation of cracks in case of fire
- no afterburning or afterglowing after removal of direct flaming
- low smoke gas emission

In fires involving RESOPLAN®, the same fire fighting techniques can be used as with other wood-based building products.

7 Energy recovery

Due to their high calorific value (18 - 20 MJ/kg)*) RESOPLAN® boards are especially suitable for combustion as a source of heat. At 700°C, they completely decompose to water, carbon dioxide and nitrogen oxides. RESOPLAN® boards therefore fulfill the prerequisites for energy recycling as per §8 of the German Materials Recycling Act (KWG). The conditions for efficient combustion processes are provided in modern, officially approved industrial furnace systems. The ash from these combustion processes can be disposed of at supervised disposal sites.

8 Waste disposal

RESOPLAN® can be disposed of at supervised disposal sites that comply with existing national and/or regional provisions.

* For comparison: calorific value of mineral oil = 39 - 41 MJ/kg or of bituminous coal = 28 - 31 MJ/kg.

9 Technical specifications

Attributes	Testing method	Unit	Value
Flexural Modulus longitudinal transverse	EN ISO 178	 N/mm² N/mm²	 14,000 10,000
Flexural strength longitudinal transverse	EN ISO 178	 N/mm² N/mm²	 140 100
Tensile strength longitudinal transverse	EN ISO 527-2	 N/mm² N/mm²	 100 70
Density	ISO 1183	g/cm³	approx. 1.4
Dimensional stability at elevated temperature longitudinal transverse	DIN EN 438-2	 % %	 approx. 0.2 approx. 0.4
Resistance to climatic shock Appearance Flexural strength index D_s Flexural modulus index D_m	DIN EN 438-2	Rating	 $\geq$ 4 $\geq$ 0.95 $\geq$ 0.95
Resistance to artificial weathering (including light fastness) Contrast Appearance	DIN EN 438-2	 Grey scale Rating Rating	 $\geq$ 3 $\geq$ 4
Lightfastness	DIN EN 438-2	Grey scale (EN 20105-A02)	3 – 5
Co-efficient of thermal expansion longitudinal transverse	DIN 51045 (+80/-20°C)	 1/K 1/K	 $0.9 \cdot 10^{-5}$ $1.6 \cdot 10^{-5}$
Thermal conductivity	DIN 52612	W/(m · K)	approx. 0.3
Surface resistance (antistatic behavior)	DIN EN 61340-2-3 (no static charge)	Ω	10^{9} – 10^{11}
Water vapour diffusion resistance factor	DIN 52615		approx. 17200
Fire behavior RESOPLAN RESOPLAN F RESOPLAN RESOPLAN F	 DIN 4102-1 DIN 4102-1 EN 13501-1 EN 13501-1		 B2 B1 D, s2 – d0 B, s2 – d0
Calorific value	DIN 51900	MJ/kg	approx. 20
Impact resistance	DIN EN 438-2	N	$\geq$ 40

All the specifications in this product data sheet correspond to our current state of knowledge but this does not represent a guarantee. No guarantee is provided for the product's suitability for certain applications or uses. It is the personal responsibility of the user to comply with the appropriate laws and regulations.