

RESOPLAN®

TECHNICAL DATA SHEET

1. Description of materials

RESOPLAN® belongs to the group of compact laminates designed for exterior use, type EDS / EDF according to DIN EN 438 part 6 (classification and specifications for exterior-grade compact laminates with a thickness of 2 mm and greater), that is, made to withstand the influence of sunlight, rain and frost.

RESOPLAN® are sheets consisting of layers of fibrous cellulose material (normally paper), impregnated with thermosetting synthetic resins which harden when exposed to heat and high pressure. The process, a simultaneous application of heat ($\geq 120^{\circ}\text{C}$) and high specific pressure ($\geq 5 \text{ MPa}$), enables the flowing and subsequent curing of the thermosetting resins to obtain a homogenous and non-porous material (bulk density $\geq 1.4 \text{ g/cm}^3$) with the required surface finish.

In general, more than 60 % of RESOPLAN® consists of paper and the remaining 30 to 40 % consist of phenol formaldehyde resin for the core layers and melamine formaldehyde resin for the decorative top layer. Both resins are thermoset materials. They are irreversibly chemically cross-linked and form a hardened, stable material with properties that are fundamentally different from those of the basic raw materials. A suitable double-sided outer layer (coating) is added to the decorative surface to warrant weather and light protection. RESOPLAN® panels with a thickness of 3 mm are usually roughened on the reverse side and are therefore intended for gluing to a substrate. In larger material thicknesses, that is, above 5 mm, these panels are dimensionally very stable and therefore self-supporting. With its high elasticity factor, this material also has the advantage of high bending rigidity.

RESOPLAN® is available in the materials classes B2 and B1 according to DIN 4102-1 and in Euro classes B and D according to EN 13501-1. If greater fire protection is required, the laminate core is provided with an additive which contains no halogens. RESOPLAN® panels are not hazardous materials within the meaning of the Chemicals Act, so that they do not require any special labelling and a material safety data sheet is not required.

2. Technical data (RESOPLAN® thickness 6 - 12 mm)

| Properties | Test methods | Units | EDS | EDF |
|---|--|---|--|--------------------|
| Density | ISO 1183 | g/cm ³ | ≥1,4 | |
| Thickness tolerance | EN 438-2-5 | mm | 6 mm ±0,4 / 8 mm und 10 mm ±0,5 / 12 mm ±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 | |
| Eveneness tolerance | EN 438-2-9 | mm/m | 6 mm und 8 mm ≤ 5 mm / 10 mm und 12 mm ≤ 3 | |
| Resistance to humidity (48 hours in 65° warm water) Mass increase Appearance (surface) | EN 438-2-15 | Mass increase % 2 ≤ t ≤ 5 t ≥ 5 Appearance Class | ≤ 7 ≤ 5 ≥ 4 | ≤ 10 ≤ 8 ≥ 4 |
| Dimensional stability at elevated tempera- ture | DIN EN 438-2-17 | 2 mm ≤ t ≤ 5 mm % % t ≥ 5 mm % % | ≤ 0.4 ≤ 0.8 ≤ 0.3 ≤ 0.6 | |
| Resistance to sudden climate changes (climatic shock) Appearance Flexural strength index D _s Flexural modulus index D _m | DIN EN 438-2-19 | Class | ≥ 4.0 ≥ 0.8 ≥ 0.8 | |
| Resistance to UV radiation Contrast Appearance | EN 438-2-28 | Graumaßstab Class | ≥ 3 ≥ 4 | |
| Resistance to artificial weathering (incl. light fastness) Contrast Appearance | EN 438-2-29 | Grey scale Class | ≥ 3 ≥ 4 | |
| Flexural strength longitudinal / transverse | EN ISO 178 | MPa | ≥ 80 | |
| Flexural modulus longitudinal / transverse | EN ISO 178 | MPa | ≥ 9000 | |
| Surface resistivity (antistatic) | DIN EN 61340-2-3 (no static charge) | Ω | 10 ⁹ - 10 ¹¹ | |
| Burning behaviour RESOPLAN® RESOPLAN F | DIN 4102-1 DIN 4102-1 | | B2 | B1 |
| RESOPLAN® RESOPLAN F | EN 13501-1 EN 13501-1 | | D-s2, d0 | B-s2, d0 |
| Coefficient of linear thermal expansion longitudinal transverse | DIN 51045 (+80/-20) | 1/K 1/K | 0.9 · 10 ⁻⁵ 1.6 · 10 ⁻⁵ | |
| Calorific value | DIN 51900 | MJ/kg | 18 - 20,4 | |

Class 5 (no visible change); 4 (slight change in gloss level only); 3 (some hairline cracks and/or signs of erosion); 2 (surface cracks); 1 (blisters and/or delamination)

3. Storage & transportation

RESOPLAN® must be stored in an enclosed storage area under normal indoor conditions.

Stacks of panels should be stored and transported with full surface coverage, the edges flush and kept horizontal on a level pallet of sufficient size which has been covered with plastic film. Foreign bodies and abrasive dirt particles in the panel stack can cause impressions and damage to the panel surface. The panels must not be shifted or pushed against or pulled over each other during loading and unloading; they must be lifted individually by hand or with suction lifters. The top panel of each stack should also be covered and a protective weight placed on it. To prevent condensation from forming, stacks of panels should not be covered too tightly with film. These storage conditions must also be observed each time panels are removed from the stack.

4. Handling and processing of RESOPLAN®

The usual safety provisions regarding dedusting and fire protection must be complied with in the processing and finishing of RESOPLAN®. Due to the possibility of sharp edges, protective gloves should always be worn when handling RESOPLAN®. Contact with RESOPLAN® dust does not cause any special problems; however, there are a limited number of people who may have an allergic reaction to processing dusts of all kinds (thus also to HPL dust). RESOPLAN® is supplied as a formatted panel with trimmed edges. Because RESOPLAN® can be easily processed with wood processing machines, fitting elements and drill holes can be produced both in a workshop environment and also on the construction site. You will find more information on processing in the processing instructions "Materials-specific processing of RESOPLAN®".

5. Environmental and health-related aspects to be considered when using the product

RESOPLAN® is a cured and thus inert thermosetting plastic material.

The release of formaldehyde from RESOPLAN® itself is well below the statutorily permitted limit for wooden materials. RESOPLAN® is a product and not a chemical substance; therefore, the REACH regulation does not find application. It is, nevertheless, important to ensure an exchange of information with the raw material suppliers in relation to REACH-relevant components.

6. Cleaning and care of RESOPLAN®

RESOPLAN® panels are low-maintenance and, thanks to their homogeneous and non-porous surface, do not need any special care. However, after the 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 which result from the general use, the processing and the installation of RESOPLAN® panels.

General cleaning

Lightly soiled panelling can be simply cleaned with clear, lukewarm water. Heavier soil may be removed with a soap or detergent solution only.

- the use of non-abrasive household cleaning products always diluted with water is recommended
- fine and clean cloths or sponges should be used
- a regular final rinse with clean, clear water will prevent streaks from forming

The following cleaning agents should never be used:

- abrasive cleaning agents (e.g., scouring powder or cream/liquid with scrubbing agents)
- solvents or cleaning agents containing solvents (e.g., acetone, benzine, thinners etc.)
- scrubbing or abrasive cleaning cloths or sponges (e.g., microfibre cloths, scrubbing sponges, steel wool etc.)
- high-pressure cleaners or steam cleaners

7. RESOPLAN® in case of fire

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

- no melting, no dripping in the case of fire
- no fragmentation, no sudden formation of cracks in the case of fire
- no afterburning or afterglow upon removal of direct flame exposure
- low incidence of smoke gas formation

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

8. Energy recovery

Due to their high calorific value (18 - 20 MJ/kg)¹, RESOPLAN® panels are especially suitable for thermal recovery as a source of heat. With total combustion at 700 °C, they decompose into water, carbon dioxide and oxides of nitrogen. RESOPLAN® panels therefore 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. Waste disposal

RESOPLAN® can be taken to controlled landfills which comply with the current national and/or regional regulations.

All information contained in this Product Data Sheet is based on the current state of technical knowledge but does not constitute any form of guarantee. No guarantee can be assumed for specific applications or usage.