

Intumescent boards and seals

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PALUSOL[®] 100, 104 & 210



odice
PASSIVE FIRE PROTECTION



Product description

PALUSOL intumescent boards consist of hydrated sodium silicate and a small quantity of an organic substance and they are reinforced with glass fibre.

A coating of epoxy resin on both sides protects the core from climatic influences such as carbon dioxide, water and water vapour.

When exposed to heat, the **PALUSOL** becomes deformable. Above 100°C, the water contained in the **PALUSOL** starts to boil, causing expansion of the core (intumescence), primarily perpendicular to its faces. A fine-pored, compression resistant, non-combustible layer of foam is formed which offers thermal insulating properties. The expansion pressure can reach 1,5 N/mm².

The foam which is formed constitutes a heat resistant insulating layer which seals the gaps and joints of construction elements, thereby preventing the passage of smoke, heat and flames.

Features

PALUSOL possesses the following features:

- Flexible and easy to handle (cutting and stamping) at temperatures of between 20°C and 40°C.
- Thermoformable at temperatures above 60°C.
- Expands at 100°C and above.
- Expands with an expansion pressure which can reach 1,5 N/mm².
- Releases water vapour, which provides a cooling effect.
- Formation of a structured and non-combustible foam which constitutes an insulating layer against the action of heat.
- The pyrolysis gases released from the **PALUSOL** in the event of fire are non-toxic.
- Asbestos free.

Technical data

Physical properties

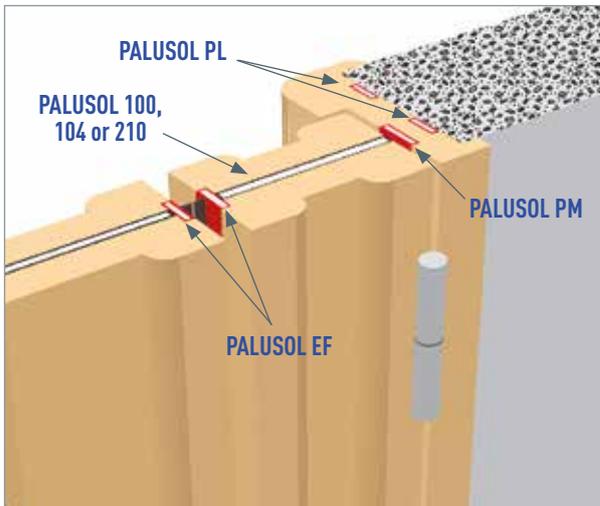
Colour	white	Areal weight	
Reinforcement		PALUSOL 100	2,25 to 3,75 kg/m ²
PALUSOL 100	glass fibre	PALUSOL 104	4,30 to 7,30 kg/m ²
PALUSOL 104	glass fibre	PALUSOL 210	2,25 to 3,75 kg/m ²
PALUSOL 210	glass fibre and wire mesh	Foaming height	> 5 x initial thickness
Water content	25 to 40% of weight*	Expansion pressure	≥ 0,9 N/mm ²
Thickness		Thermal conductivity (at 20°C)	0,8 W /m.K
PALUSOL 100	1,5 to 2,3 mm*		
PALUSOL 104	3,0 to 4,2 mm*		
PALUSOL 210	1,5 to 2,3 mm*		

* BASF SE specifications. Each manufacturing batch is controlled before leaving the factory and on a regular basis by the "Deutsches Institut für Bautechnik" in Berlin (European Technical Assessment ETA -15/0345)



Reaction of PALUSOL when exposed to fire.

Applications



Example of application: fire retardant door.

Intumescent seals which prevent the passage of smoke, heat and flames in the following examples of usage:

- Wood and metal fire-resistant doors.
- Fire resistant safes and strong boxes.
- Intumescent ventilation grilles.
- Fire resistant dampers.
- Fire resistant sleeves for pipe penetrations.
- Cable penetration seals.
- Fire resistant glazed profiles and elements.
- Fire resistant elements for the rail and shipping industries.
- Thermal insulation of boards etc.

Product range

PALUSOL 100	PALUSOL 104	PALUSOL 210
STANDARD BOARD SIZE		
1100 mm x 1,9 x 2100 mm	1100 mm x 3,6 x 2100 mm	1100 mm x 1,9 x 2100 mm
NUMBER OF BOARDS/PALLET		
100	50	100

PALUSOL parts can be cut or stamped to your drawings in our workshop.

Cut tolerances: ± 0,5 mm.

PALUSOL can receive a self-adhesive strip in order to facilitate installation (ref. SA).

Long-term efficiency of PALUSOL

The long-term efficiency of PALUSOL has been proven in normal climatic conditions.

The results of tests conducted by BASF SE and by independent institutions (such as the "Institut für Holzforschung" in Munich) shows that after 40 years of prolonged exposure in normal conditions of use, PALUSOL retained its efficiency in the event of fire (the expansion height and expansion pressure parameters remained constant).

Measures for protecting PALUSOL

Since it is PALUSOL's chemical characteristics which generate its expansion pressure, the material must be provided with long-term protection.

PALUSOL must be safeguarded from atmospheric influences which are likely to change its chemical structure, even when located within a construction element. These influences are water or raised atmospheric humidity, carbon dioxide in the air and prolonged heating (permanently above 40°C).

Recommendations for use

As a long-lasting protective measure, we recommend that PALUSOL is encapsulated in a rigid thermoplastic profile (PALUSOL P, PM or EF: see technical data sheets) or in a vinyl film (PALUSOL PL: see technical data sheet), where necessary with a watertight bead at each end, depending on the conditions of application.

According to the approval for PALUSOL (European Technical Assessment ETA -15/0345 issued by the Deutsches Institut für Bautechnik in Berlin) the permeability to carbon dioxide gas must be below 300 cm³/ (m² x bar x day) for profiles or envelopes applied in very close contact (for example, glued sheets) and below 100 cm³/ (m² x bar x day) for looser envelopes (profiles and vinyl film, for example). PALUSOL fire resistant boards are relatively thin and have low intrinsic rigidity. They must be fitted in such a way that the risk of mechanical damage is minimised.

Packaging

The PALUSOL boards are stacked on a pallet and wrapped in plastic film.

Other packaging is employed for the delivery of pre-cut PALUSOL strips or other processed pieces.

Storage

The PALUSOL must be protected from water, humidity and constant temperatures above 40°C. Before transformation, it must be stored in facilities with normal atmospheric conditions.

PALUSOL is stable to freezing. It becomes brittle and easily breakable at low temperatures but regains flexibility when it warms up.

The boards tend to deform under load (including under the effect of their own weight) and to mould themselves, more or less, to the shape of their support. The boards should always be stored horizontally and on a very flat surface, avoiding stacking to more than five pallets high.

Health and safety measures

Observe usual workplace health and safety rules.

Wear protective leather gloves.

Refer to the safety data sheet for PALUSOL 100, 104 & 210.

PALUSOL® is a registered trademark of BASF SE.

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