Data **sheet**

35 years technical support

Intumescent
boards and seals

US / 1.4 / Rev. 2

PALUSOL® 100, 104

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 212°F (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 218 PSI (1,5 N/mm^2).

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 68°F and 118°F (20°C and 40°C).
- Thermoformable at temperatures above 140°F (60°C).
- Expands at 212°F (100°C) and above.
- Expands with an expansion pressure which can reach 218 PSI (1,5 N/mm^2).
- 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

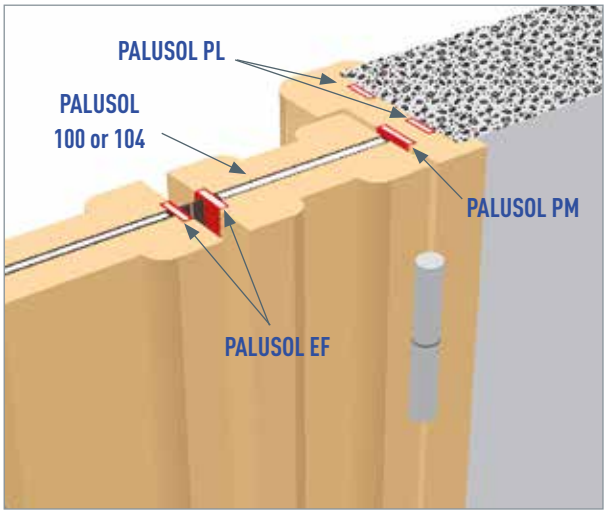
Colour	white
Reinforcement	
PALUSOL 100	glass fibre
PALUSOL 104	glass fibre
Water content	25 to 40% of weight*
Thickness	
PALUSOL 100	1/16" to 3/32" (1,5 to 2,3 mm)*
PALUSOL 104	1/8" to 11/64" (3,0 to 4,2 mm)*

Areal weight	
PALUSOL 100	0,46 to 0,77 lbs/ft^2 (2,25 to 3,75 kg/m^2)
PALUSOL 104	0,88 to 1,5 lbs/ft^2 (4,30 to 7,30 kg/m^2)
Foaming height	> 5 x initial thickness
Expansion pressure	131 PSI (≥ 0,9 N/mm^2)
Thermal conductivity at 68°F (20°C)	0,8 W /m.K

* 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
STANDARD BOARD SIZE	
43"x 1/16"x 82" (1100 mm x 1,9 x 2100 mm)	43"x 3/16"x 82" (1100 mm x 3,6 x 2100 mm)
NUMBER OF BOARDS/PALLET	
100	50

PALUSOL parts can be cut or stamped to your drawings in our workshop.
Cut tolerances: ± 0,02" (± 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 104°F (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 Insitut für Bautechnik in Berlin) the permeability to carbon dioxide gas must be below 1,7 in^3/ft^2x bar/day (300 cm^3/m^2 x bar x day) for profiles or envelopes applied in very close contact (for example, glued sheets) and below 0,57 in^3/ft^2x bar/day (100 cm^3/m^2 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 104°F (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.**

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