



Promat



PROMADUR® & PROMADUR® Top Coat  
Product Data Sheet

[www.promat-see.com](http://www.promat-see.com)







## PROMADUR®

### Product description

PROMADUR® is a single pack water-borne, solvent free transparent intumescent coating for fire protection of timber structures.

PROMADUR® is the latest generation of fire resistant reactive paint to achieve fire ratings on wood and structural timber elements. Thanks to its extremely good transparency, the surface of the wooden materials remains visible, keeping the esthetical aspect of the natural timber.

### General recommendations for application

PROMADUR® is a technical coating. It must be applied with care and only by professionals.

Normally PROMADUR® is applied by brush or roller (short pile lambswool rollers) or, for very large surfaces, with airless spray equipment (recommended tip size: 0,015").

Stir the product before application. The product is ready for use, maximum dilution with 3 % water. Clean tools immediately after use with warm water.

Conditions for application and during drying time:

- temperature > +6 °C, relative humidity < 80 %
- moisture content of wood or wooden materials < 15 %

Always check the surface for appropriate adhesion: it should be free from dirt, dust, grease, wax, mould, oil, glues or any materials which can compromise the adhesion. It is recommended to treat a small trial area, in case of unknown ingredients of the wooden materials.

PROMADUR® must be fully dry before top coating.

NOTE: Due to the physical properties of some raw materials, the high thickness applied, and the morphology of the different supports, it is possible, in some rare cases, that the appearance of some minor issues might occur in the final aspect of the product. This could include small droplets, white reflexions, irregular patterns or similar. PROMADUR is a hi-performing technical product with high transparency, but not a product for pure aesthetical purposes.

In case of fire PROMADUR® expands creating a protective insulating foam which protects the substrate from contact with air (oxygen), decreasing the combustibility, and slow down the transfer of energy (heat) from the fire to the timber elements, increasing the fire resistance.

PROMADUR® is designed for indoor use. Top coating is not necessary in normal conditions. The application of PROMADUR® Top Coat is recommended to increase resistance to humidity and mechanical performances (including abrasion resistance).

PROMADUR® is eco-friendly, due to extremely low VOC contents and free from formaldehyde in the formulation.

PROMADUR® has long durability and passes the 33 years test according to Czech protocol I (Arrhenia - 30 °C) without losing fire performance and without change in the color shade.

### Uses

Fire resistance of loadbearing timber elements (columns, beams, floors and walls) can be increased by applying PROMADUR®. Fire resistance of protected elements depends on the section, shape, different types of wood timber (solid timber, sawn, planed or in pole form, glued laminated timber or wood-based structural products, wood-based panels jointed together with adhesives or mechanical fasteners) and the quantity of the protective coating applied. Depending on the above factors, PROMADUR® increases the fire rating of timber elements up to extremely high fire resistance classes (R 120 or even more).

PROMADUR® can be used also to decrease the combustibility of timber surfaces. Timber protected with PROMADUR® is classified up to B-s1, d0 according to EN 13501 (SBI-test), which is the best possible performance for combustible materials.

PROMADUR® can be applied to a wide range of buildings, such as hotels, restaurants, schools, public buildings, museums, libraries, offices and private houses.

### Performances

#### Fire reaction

Solid wood, particle boards and plywood for construction (with a minimum thickness of 10 mm), even with very low density (minimum: 337 kg/m<sup>3</sup>), can be protected with PROMADUR® and PROMADUR® Top Coat, obtaining the classification.

#### Fire resistance

Fire rating of protected timber elements must be calculated based on the dept of char obtained from the value of  $t_f \rightarrow t_{ch}$  (start of charring) and  $k_{ch}$  (charring rate) from fire tests EN 13381-7, as required by the Eurocode 1995-1-2. (see "How to calculate the fire rating of a protected timber loadbearing element" for further explanation).

PROMADUR® is a protective coating, so it contributes to the fire resistance of loadbearing structures. The contribution must be evaluated with specific fire tests and assessments, according to EN 13381-7. NOTE: the fire rating of any timber element is always a combination of the original fire resistance of the unprotected element and the contribution of the protective material, as specified by the EC 1995-1-2. Therefore, timber elements protected with PROMADUR® can reach R 120 or greater.

Contact the local Promat office for any details and explanation.



### How to calculate the fire rating of a protected timber loadbearing element

The Eurocode 5 (EC 1995-1-2) provides procedures for calculating the fire resistance of structural timber elements with surfaces initially protected from fire exposure. The Eurocode 5 procedure divides the rated time periods into different intervals, with different charring rates, depending on the behavior of the protective material on the charring rate.

To calculate the fire resistance of a protected element, it's necessary to know some parameters. The most important parameters are:

- **charring depth:** distance from the original surface of the timber member to the char line.
- **failure time  $t_f$ :** time at which failure of the fire protection system occurs, due to detachment of a significant area or sudden significant temperature rise upon the initially protected timber surface.
- **start of charring  $t_{ch}$ :** start of charring at the surface of a timber member.
- **charring rate  $\beta$ :** speed of charring of a timber element when exposed to ISO 834 fire.

$\beta_o$	mm/min	One-dimensional charring rate according to EN 1995-1-2.
$\beta_n$	mm/min	Notional charring (bi-dimensional - two or more side exposed) rate according to EN 1995-1-2.
$\beta_2$ or $\beta''$	mm/min	Charring rate behind a fire protection system according to EN 1995-1-2.
$k_{\beta}$		Ratio of carbonization speed = $\beta''/\beta_o$ for one dimensional or $\beta''/\beta_n$ for notional.

For surfaces protected by fire protective products, it should be considered that:

- the start of charring is delayed until time  $t_{ch}$ ;
- charring may commence prior to failure of the fire protection, but at a lower rate than the charring rates of the unprotected timber (values are given in EC 1995-1-2) until failure time  $t_f$  of the fire protection;
- after failure time  $t_f$  of the fire protection, the charring rate is increased until when the charring depth is equals either the charring depth of the same member without fire protection or 25 mm, whichever is the lesser;
- during this final stage, the charring rate reverts to the value for the initially unprotected wood member ( $\beta_o$  if monodirectional as floors or walls or  $\beta_n$  if bi-directional as beams or columns).

The test methods to determine the above parameters are given in EN 13381-7 (Test methods for determining the contribution to the fire resistance of structural members - Part 7: Applied protection to timber members).

### Quality assurance

Promat products are manufactured to stringent quality control systems to assure that our customers receive materials made to the highest standards.

Operating to these standards means that all activities, which have a bearing upon quality, are set out in written procedures.

Systematic and thorough checks are made on all materials and their usage. Test equipment is subjected to regular checks and is referred back to national standards.

The information given in this data sheet is based on actual tests and is believed to be typical of the product. No guarantee of results is implied however, since conditions of use are beyond our control.

### Fire resistance values

#### Beams and Columns

PROMADUR® 1.120 g/m<sup>2</sup>: Time to the protective material failure:  $t_f \rightarrow t_{ch} = 17$  min  
Ratio of carbonisation speed of protected to unprotected structure  $k_\beta = \beta''/\beta'$ :  
 $k_\beta = 0,71$

PROMADUR® 468 g/m<sup>2</sup>: Time to the protective material failure:  $t_f \rightarrow t_{ch} = 13$  min  
Ratio of carbonisation speed of protected to unprotected structure  $k_\beta = \beta''/\beta'$ :  
 $k_\beta = 0,95$

PROMADUR® 181 g/m<sup>2</sup>: Time to the protective material failure:  $t_f \rightarrow t_{ch} = 7$  min  
Ratio of carbonisation speed of protected to unprotected structure  $k_\beta = \beta''/\beta'$ :  
Up to 30 minutes  $k_\beta = 0,91$   
More than 30 minutes  $k_\beta = 1$

#### Ceiling and walls

PROMADUR® 468 g/m<sup>2</sup>: Time of the fire protective system failure:  $t_f \rightarrow t_{ch} = 12$  min  
Ratio of carbonisation speed of protected to unprotected structure  $k_\beta = \beta''/\beta'$ :  
 $k_\beta = 0,91$

PROMADUR® 181 g/m<sup>2</sup>: Time to the fire protective system failure:  $t_f \rightarrow t_{ch} = 6$  min  
Ratio of carbonisation speed of protected to unprotected structure  $k_\beta = \beta''/\beta'$ :  
Up to 15 minutes  $k_\beta = 0,72$   
More than 15 minutes  $k_\beta = 1$

### Technical data

Colour:	transparent
Density (g/cm <sup>3</sup> ):	1,30 +/- 0,05
Viscosity at 20 °C:	500 - 3.500 mPa.s (20 °C)
Solubility in water:	soluble
pH	3-6
Application temperature:	between +6 °C and +35 °C
Application data:	up to 470 g/m <sup>2</sup> in one coat

### Drying times

As per all the paints and coatings, the drying time depends on ambient temperature and relative humidity.

Drying times at approx. +20 °C and a relative humidity of approx. 65 % is 24 hours per layer. When dry, surface treated with PROMADUR® can be cleaned with a dry and smooth cloth. Do not clean with water, solvent or acid or alkaline cleaner.

*Note: PROMADUR® becomes transparent after drying fully and it is sensible to pressure within the first weeks after application. The film could become soft again when it gets in contact with humidity, if not protected with topcoat.*

### Finishing and top coat

PROMADUR® is tested as a full cycle of intumescent paint and finishing by colourless PROMADUR® Top Coat (approximately 80 - 100 g/m<sup>2</sup>). The top coat can be applied after intumescent coating is fully dry. PROMADUR® Top Coat increase humidity resistance and mechanical performances (including abrasion resistance).

### Surface preparation

When necessary, an appropriate primer must be applied (please consult your local Promat office).

### Supply and storage

12,5 kg plastic pails. The product has a shelf life of 12 months in closed original pails above +5 °C up to +35 °C. Keep above frost temperature. This product is not flammable.

### Environment, Health and Safety

Please always request the most recent safety data sheet before using the product.

# PROMADUR® Top Coat

### Description

PROMADUR® Top Coat is a single component, solvent base transparent top coat, specifically designed to improve the humidity resistance and the mechanical performances of PROMADUR®, without decreasing the fire rating of the protected timber elements.

PROMADUR® Top Coat is free from aromatic substances, fast drying and very easy to apply. PROMADUR® Top Coat has no negative effect on the expansion of intumescent coatings.

### Application

PROMADUR® Top Coat is a technical coating. It must be applied with care and only by professionals. PROMADUR® Top Coat can be applied only when PROMADUR® is fully dried. Stir the product before application. The product is ready for use, maximum dilution with 3 % solvent.

The temperature of material and surface must be  $> +15\text{ °C}$  and the relative humidity during application and drying must be below 70 % .

PROMADUR® Top Coat is applied by brush or roller (short piled velour or mohair) or, for very large surfaces, with airless spray equipment (tip size recommended: 0,011").

### Technical data

<b>Colour:</b>	transparent
<b>Density (kg/m³):</b>	1,17 +/- 0,02
<b>Viscosity at 20 °C:</b>	$\geq 60$ seconds (ISO 2341-93 6 mm)
<b>Flash point</b>	32 °C
<b>Application temperature:</b>	$> +15\text{ °C}$
<b>Application data:</b>	up to 100 g/m² in one coat

### Drying times

As with all the paint coatings, the drying time depends on this ambient conditions and relative humidity.

Drying times of PROMADUR® Top Coat is at approx.  $+20\text{ °C}$  and a relative humidity of approx. 65 % are:

- dust-dry after approximately 30 minutes
- fully dry after approximately 10 hours

*Note: PROMADUR® Top Coat becomes transparent when completely dry and is sensible to pressure within the first weeks after application.*

### Supply and storage

5 kg metal pails. The product has a shelf life of 9 months in closed original pails above  $+5\text{ °C}$  up to  $30\text{ °C}$ . Opened pails must be sealed carefully after use. This product is flammable.

### Environment, Health and Safety

Please request always for the most recent safety data sheet before using the product.

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