Composition and uses

The VERMIPLASTER®BD product is a fine-grain powder mortar industrially manufactured from a base of calcium sulphate, lightened with expanded minerals and formulated with diverse additives to improve its mechanical application, when mixed with water, and to optimise the product physical-chemical characteristics once set and hardened on the structural element to be protected.

It contains no toxic or hazardous substances and only water vapour is given off when heated.
It contains no asbestos, as demonstrated by test nº A8987-B date on July 1999, carried out by the Institute of Occupational Medicine of Edinburgh (United Kingdom).

The VERMIPLASTER®BD mortar is intended for coating the structural elements in the buildings to provide passive protection in the event of fire. Its purpose is to keep the stability and bearing capacity of the above mentioned elements till the extinction of the fire or the evacuation of the building.

Manufacture and Quality Control

The VERMIPLASTER®BD mortar is manufactured by the company PROTECCION PASIVA 2000, S.L. at its plant at Dos Hermanas in (Seville) Spain . This modern production plant works under a fully automatic process and incorporates a programmable raw material dosage regulation system which guarantees the perseverance of the finished product characteristics.
During production, the mortar is controlled by strict Quality Control procedures in accordance to ISO 9001:2000 standard. An Environmental Policy is also carried out in accordance to ISO 14001:1996 standard. Both procedures have been certified by SGS with 010309/SC and 030070/MA numbers respectively.

INFORMATIVE TECHNICAL CHARACTERISTICS VERMIPLASTER® BD

Colour and finish	white, rough or smooth finish.
Number of coats	one, to obtain all thicknesses.
Theoretical coverage	3.25 kg/m2 / each 10 mm thickness.
Air erosion resistance	no erosion.
Apparent density of the mortar	325 g/l ± 15%.
Ground fineness	# 200 (40-60 %); # 800 (10-25 %).
Final hardening time	3 to 5 hours. According to mixing ratio used (water/mortar), and environmental conditions.
pH	12 – 13.
Corrosive on steel	non corrosive.
Reaction to fire classification	A0. Incombustible.

Application and Storage Conditions

Application of VERMIPLASTER®BD mortar is carried out mechanically or manually. It can not be projected on extreme temperatures (< 4 °C; > 45 °C). The product, once applied must be protected from the rain, the sun and strong wind.

Substrate temperature to be protected should be at least 2 °C above dewpoint temperature.

The surface of the element to be protected must be clean, dry and free from dust and greases, so that the adherente of the Vermiplaster BD is maximum. It is not recommended for surfaces which give off pigments, neither oily ones.

When the surface of the structural element to be protected does not assure an optimal adherence, it is recommended to contact with the manufacturer to know the special conditions of the application.

In Report number 19426 that was carried out under criterion and conditions established by the guidance ETAG 018-3 by Institute Eduardo Torroja that belongs to the Spanish Senior Council for Scientific Research, is stated that Vermiplaster mortar does not affect directly on corrosion, and it can be applied on bare steel without affecting it. However, in environments with permanent high relative humidity content or with continuous condensation risk, it is recommended to protect the steel with a previous anticorrosive paint in order to avoid the impact of humidity on steel through the porosity of mortar

Once VERMIPLASTER®BD dries, it can be painted with plastic paint or waterborne enamel.
It is available in sacks of 11 ± 1 Kg. The storage must be done in closed and dry enclosures. Its shelf life is 6 months approx., depending on the storage conditions.

PASSIVE PROTECTION

PASSIVE PROTECTION

Characteristics and Certifications

For structural steel elements, thickness of VERMIPLASTER®BD to be applied is defined by section factor value (Am/V) of the profile to be protected (expressed in m-1) and the desired fire resistance level (R) (expressed in minutes).

Fire stability curves were obtained through real scale standardised test (ENV 13381-4 and BS 476), in which profiles with different section factors (Am/V) and protected with different VERMIPLASTER®BD tricknesses were exposed to fire.

The results are shown in Technical Reports by the official laboratories where the test were carried out.

VERMIPLASTER®BD mortar is also certified for the contribution to fire resistance of structural concrete member-roofs, and concrete / galvanized steel sheet.

VERMIPLASTER®BD is also certified for its use in United Kingdom, France, Belgium, Holland, Czech Republic, Hungary, Poland, Rumania and Slovakia among others.

You may contact us to apply for the desired technical approval.

**Loading Tables for VERMIPLASTER BD applied to I-Sections
Protection Thickness Requirement [mm] to achieve 30 to 120 Minutes Fire Resistance (BS 476) for columns**

Section Factor	Limiting Steel Temperature	550°C		
[m-1]	30'	60'	90'	120'
upto 70	5,0	5,2	8,7	12,3
71 - 80	5,0	5,8	9,6	13,7
81 - 90	5,0	6,4	10,6	15,0
91 - 100	5,0	6,9	11,4	16,2
101 - 110	5,0	7,4	12,2	17,3
111 - 120	5,0	7,8	12,9	18,3
121 - 130	5,0	8,3	13,6	19,3
131 - 140	5,0	8,6	14,2	20,1
141 - 150	5,0	9,0	14,8	20,9
151 - 160	5,0	9,3	15,3	21,6
161 - 170	5,0	9,6	15,7	22,2
171 - 180	5,0	9,8	16,1	22,7
181 - 190	5,0	10,0	16,4	23,2
191 - 200	5,0	10,1	16,7	23,5
201 - 210	5,0	10,3	16,9	23,8
211 - 220	5,0	10,4	17,1	24,0
221 - 230	5,0	10,5	17,2	24,1
231 - 240	5,0	10,5	17,2	24,1
241 - 250	5,0	10,5	17,2	24,1
251 - 260	5,0	10,5	17,2	24,1
261 - 270	5,0	10,5	17,2	24,1
271 - 280	5,0	10,5	17,2	24,1
281 - 290	5,0	10,5	17,2	24,1
291 - 300	5,0	10,5	17,2	24,1
301 - 310	5,0	10,5	17,2	24,1

**Loading Tables for VERMIPLASTER BD applied to I-Sections
Protection Thickness Requirement [mm] to achieve 30 to 120 Minutes Fire Resistance (BS 476) for beams**

Section Factor	Limiting Steel Temperature	620°C		
[m-1]	30'	60'	90'	120'
upto 70	5,0	5,0	7,3	10,4
71 - 80	5,0	5,0	8,1	11,6
81 - 90	5,0	5,3	8,9	12,7
91 - 100	5,0	5,7	9,6	13,8
101 - 110	5,0	6,2	10,3	14,7
111 - 120	5,0	6,5	10,9	15,6
121 - 130	5,0	6,9	11,5	16,4
131 - 140	5,0	7,2	12,1	17,2
141 - 150	5,0	7,6	12,5	17,9
151 - 160	5,0	7,8	13,0	18,5
161 - 170	5,0	8,0	13,4	19,0
171 - 180	5,0	8,2	13,7	19,5
181 - 190	5,0	8,4	14,0	19,9
191 - 200	5,0	8,6	14,5	20,3
201 - 210	5,0	8,7	14,6	20,5
211 - 220	5,0	8,8	14,7	20,7
221 - 230	5,0	8,9	14,8	20,9
231 - 240	5,0	8,9	14,8	21,0
241 - 250	5,0	8,9	14,8	21,0
251 - 260	5,0	8,9	14,8	21,0
261 - 270	5,0	8,9	14,8	21,0
271 - 280	5,0	8,9	14,8	21,0
281 - 290	5,0	8,9	14,8	21,0
291 - 300	5,0	8,9	14,8	21,0
301 - 310	5,0	8,9	14,8	21,0

In addition VERMIPLASTER®BD has also been tested for protecting other building materials such as:

- Flat concrete/profiled sheet composite elements (ENV-13.381-5)
- Contribution to fire resistance of structural concrete members-roofs. (ENV-13.381-3)
- Contribution to fire resistance of structural concrete members-beams and columns. (ENV-13.381-3)