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European Technical Assessment

ETA 18/0689
of 21.02.2022



General part

Technical Assessment Body issuing the ETA: ITeC

ITeC has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment).

Trade name of the construction product

Hempafire Pro 315

Product family to which the construction product belongs

Reactive coatings for fire protection of steel elements.

Manufacturer

HEMPEL A/S

Lundtoftegårdsvej 91
DK-2800 Kgs. Lyngby
Denmark

Manufacturing plant(s)

According to Annex N kept by ITeC.

This European Technical Assessment contains

55 pages including 1 annex which forms an integral part of this assessment

and

Annex N, which contains confidential information and is not included in the European Technical Assessment when that assessment is publicly available.

This European Technical Assessment is issued in accordance with Regulation (EU) 305/2011, on the basis of

European Assessment Document EAD 350402-00-1106.

This version replaces

ETA 18/0689 issued on 03.08.2020.

General comments

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es)).

Specific parts of the European Technical Assessment

1 Technical description of the product

Hempafire Pro 315 is a spray-applied or, for small areas, brush-applied solvent based intumescent coating. Hempafire Pro 315 Fast Dry is the fast drying version of Hempafire Pro 315 and both reactive coatings have the same composition except for the solvents that evaporate out of the end use product.

The reactive coating systems for fire protection consist of the primer, the intumescent coating and, depending on the environmental use category, the topcoat where appropriate (see section 2).

The assessed primers are given in Table 1 and the topcoats, in relation with the environmental use category, in Table 2.

The components of the reactive coating system will be installed according to the manufacturer's instructions which shall conform to the assessment carried out in this ETA.

All the reactive coating systems considered in this ETA have been assessed under option 3, as described in section 1.2.2 of EAD 350402-00-1106.

2 Specification of the intended use(s) in accordance with the applicable EAD

Hempafire Pro 315 is used as a reactive coating system to fire protect beams and columns made of structural steel to achieve a fire resistance classification in accordance with EN 13501-2¹.

Hempafire Pro 315 is intended to fire protect various sizes of open sections (H and I) and circular and rectangular hollow sections for up to a fire resistance duration in accordance with Annex 1, in the design temperatures range of 300 °C to 850 °C. The detailed field of application regarding fire protection of Hempafire Pro 315 is given in Annex 1.

Regarding the type of structural steel and compatible assessed primers, the reactive coating systems are intended for use on the following substrates.

¹ EN 13501-2 Fire classification of construction products and building elements Part 2: Classification using data from fire resistance tests, excluding ventilation services implemented.

Table 1: Assessed primers* of the reactive coating system.

Substrate: Carbon steel blast cleaned to EN ISO 8501-1 ² Sa 2 ½ or equivalent	
<p>2-component epoxy, e.g:</p> <ul style="list-style-type: none"> • Shopprimer E 15280 ^(a) at indicated DFT 20 µm • Hempadur 15570 ^(a) at indicated DFT 100 µm • Hempaprime Multi 500 45950 ^(a) at indicated DFT 150 µm • Hemudur 18500 ^(b) at indicated DFT 75 µm • Hempadur Speed-Dry ZP500 17500 ^(a) at indicated DFT 100 µm <p>1-component epoxy, e.g:</p> <ul style="list-style-type: none"> • Uniprimer 13140 ^(a) at indicated DFT 50 µm <p>Alkyd, e.g:</p> <ul style="list-style-type: none"> • Speed-Dry Primer 13770 ^(a) at indicated DFT 40 µm • Hemulin Primer 18310 ^(b) at indicated DFT 80 µm <p>Acrylic, e.g:</p> <ul style="list-style-type: none"> • Hemucryl Primer 18100 ^(b) at indicated DFT 30 µm <p>2-component polyurethane, e.g:</p> <ul style="list-style-type: none"> • Hempathane Fast Dry 55750 ^(a) at indicated DFT 100 µm <p>Zinc rich epoxy, e.g:</p> <ul style="list-style-type: none"> • Hempadur Zinc 17360 ^(a) at indicated DFT 50 µm <p>Activated Zinc, e.g:</p> <ul style="list-style-type: none"> • Hempadur AvantGuard 750 (1736G) ^(a) at indicated DFT 60 µm <p>Double layer systems:</p> <ul style="list-style-type: none"> • Hempadur Zinc 17360 ^(a) at indicated DFT 50 µm (1st layer) + Shopprimer E 15275 ^(a) at indicated DFT 20 µm (2nd layer) • Hempadur 15570 ^(a) at indicated DFT 100 µm (1st layer) + Hempaprime Multi 500 45950 ^(a) at indicated DFT 150 µm (2nd layer) 	<p>^(a) solvent borne ^(b) water borne</p>
Substrate: Galvanised steel according to EN ISO 1461 ³ , 120 µm zinc coating	
<p>2-component epoxy, e.g:</p> <ul style="list-style-type: none"> • Hempadur 15553 ^(a) at indicated DFT 50 µm 	<p>^(a) solvent borne</p>

* Or other primers of the same families (and liquid carrier), as specified by the manufacturer, proven to be compatible in accordance with EAD 350402-00-1106.

Note: according to section 2.3.4.2 of EAD 350402-00-1106, the maximum allowed DFT of the primers can be increased by 50 % compared to the nominal values given in Table 1, provided that the applied DFT does not exceed the maximum DFT as recommended by the manufacturer. Any primer DFT below the nominal values can be allowed, provided that the applied DFT is not lower than the minimum DFT as recommended by the manufacturer.

² EN ISO 8501-1 Preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness. Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.

³ EN ISO 1461 Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods.

Regarding the environmental use conditions, the reactive coating systems are intended for the following categories.

Table 2: Environmental use categories and assessed topcoats of the reactive coating system.

Topcoat	Environmental use category
Hempel's Polyenamel 55102 at indicated DFT 40 µm	Type X
Hempathane HS 55610 at indicated DFT 100 µm	
Hempathane HS 55613 at indicated DFT 100 µm	
Hempathane Topcoat 55210 at indicated DFT 60 µm	
Hempathane Speed-Dry Topcoat 250 55250 at indicated DFT 50 µm	
Hempadur Fast Dry 45410 at indicated DFT 100 µm	
Hempathane Fast Dry 55750 at indicated DFT 100 µm	
Hempathane Fast Dry 55750 at indicated DFT 120 µm	Type Y
Hemucryl Enamel Hi-build 58030 at indicated DFT 85 µm	
Hempatex Hi-build 46410 at indicated DFT 100 µm	
Hempatex Enamel 56360 at indicated DFT 40 µm	
Hempathane TL87/EG 87480 at indicated DFT 80 µm	
Hempel's Speed-Dry Alkyd 43140 at indicated DFT 100 µm	
Hempel's Speed-Dry Alkyd 43141 at indicated DFT 100 µm	
Hemucryl Enamel 58100 at indicated DFT 45 µm	Type Y
Without topcoat	Type Y

The environmental use categories are specified in EAD 350402-00-1106, section 1.2.3:

- Type X: external use (including all other types).
- Type Y: internal use and semi-exposed conditions (including Type Z₁ and Type Z₂).
- Type Z₁: internal use with high humidity conditions (including Type Z₂).
- Type Z₂: internal use.

The provisions made in this ETA are based on a working life of Hempafire Pro 315 of at least 10 years, provided that the conditions laid down in the manufacturer's instructions for the installation, use and maintenance are met. These provisions are based upon the current state of the art and the available knowledge and experience.

The indications given as to the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, but are to be regarded only as a means for choosing the appropriate product(s) in relation to the expected economically reasonable working life of the works.

3 Performance of the product and reference to the methods used for its assessment

3.1 Performance of the product

The assessment of Hempafire Pro 315 has been performed in accordance with EAD 350402-00-1106 for *Reactive coatings for fire protection of steel elements (September 2017)*.

Table 3: Performance of the product.

Product: Hempafire Pro 315		Intended use: Fire protection of structural steel members
Basic requirement	Essential characteristic	Performance
BWR 2 Safety in case of fire	Reaction to fire	D-s2,d0 B-s1,d0 (see table 4)
	Resistance to fire	Smouldering fire (slow heating curve) Compliance with EN 13381-8
BWR 4 Safety and accessibility in use	Durability	with a topcoat acc. to Table 2 without topcoat
		Type X / Type Y Type Y

Table 4: Reaction to fire performance.

Primer	Intumescent coating	Topcoat	Reaction to fire
All assessed primers as given in table 1	Hempafire Pro 315	All assessed topcoats as given in table 2	D-s2,d0
All assessed primers as given in table 1 ^(*)	Hempafire Pro 315 up to DFT 900 µm	Hempathane HS 55610 at DFT 80 µm	B-s1,d0

(*) Except the primer double layer system 15570+45950.

The rest of characteristics included in EAD 350402-00-1106 have not been assessed in this ETA.

3.2 Methods used for the assessment

3.2.1 Reaction to fire

The reaction to fire performance of the reactive coating system has been determined in accordance with EN 13501-1⁴, Regulation (EU) 2016/364 and Annex D of EAD 350402-00-1106.

Tests were performed according to EN 13823⁵ and EN ISO 11925-2⁶.

3.2.2 Resistance to fire

3.2.2.1 Resistance to fire performance

The resistance to fire performance of the reactive coating system has been determined according to EN 13501-2 and is given in Annex 1.

Tests and assessment have been performed according to EN 13381-8⁷.

3.2.2.2 Smouldering fire (slow heating curve)

The verification under exposure to the smouldering fire curve according to Annex A of EN 13381-8 has been carried out and the product meets the established requirements.

3.2.3 Durability

The durability performance of the reactive coating systems has been assessed in accordance with section 2.2.5 of EAD 350402-00-1106 for the environmental use categories given in Table 2 of this ETA.

3.2.4 Compatibility of primers

Compatibility of primers with the reactive coating has been assessed in accordance with section 2.3.4.2 of EAD 350402-00-1106, in relation with the type of steel substrate as shown in Table 1 of this ETA.

3.2.5 Technical characterisation

The ETA is issued for the reactive coating system based on data/information deposited with the ITeC in accordance with section 2.3.5 of EAD 350402-00-1106.

⁴ EN 13501-1 Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests implemented.

⁵ EN 13823 Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item.

⁶ EN ISO 11925-2 Reaction to fire tests. Ignitability of products subjected to direct impingement of flame. Part 2: Single-flame source test.

⁷ EN 13381-8 Test methods for determining the contribution to the fire resistance of structural members. Part 8: Applied reactive protection to steel members.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to the Decision 1999/454/EC of the European Commission, the system of AVCP (see EC delegated Regulation (EU) No 568/2014 amending Annex V to Regulation (EU) 305/2011) given in the following table applies.

Table 5: AVCP System.

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Fire protective products (including coatings)	For fire compartmentation and/or fire protection or fire performance	Any	1

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

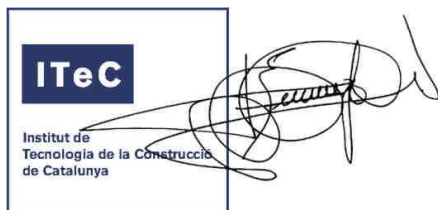
All the necessary technical details for the implementation of the AVCP system are laid down in the Control Plan deposited with the ITeC and agreed in accordance with EAD 350402-00-1106, section 3.

The Control Plan is a confidential part of the ETA and only handed over to the notified product certification body involved in the assessment and verification of constancy of performance.

The factory production control operated by the manufacturer shall be in accordance with the above-mentioned Control Plan.

Issued in Barcelona on 21 February 2022

by the Catalonia Institute of Construction Technology.



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