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European Technical Assessment

ETA 24/0584
of 2024/07/22

General Part

Technical Assessment Body Issuing the European Technical Assessment:	**Element Materials Technology Rotterdam B.V.**
Trade Name of the Construction Product:	**HENSOMASTIK® B 3000**
Product Family to Which the Construction Product Belongs:	Reactive Coating for Fire Protection of Concrete Elements
Manufacturer:	**Rudolf Hensel GmbH** Lauenburger Landstrasse 11 D-21039 Börnsen Germany
Manufacturing Plant(s):	**Rudolf Hensel GmbH** Lauenburger Landstrasse 11 D-21039 Börnsen Germany
This European Technical Assessment Contains:	10 pages, including 1 Annex, which forms an integral part of this assessment
This European Technical Assessment is Issued in Accordance with Regulation (EU) No 305/2011, On the Basis Of:	EAD 351075-00-1106, February 2022

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1. Technical Description of the Product

HENSOMASTIK® B 3000 is a spray applied reactive coating formulated for the fire protection of structural concrete elements.

In accordance with EAD 351075-00-1106, February 2022, HENSOMASTIK® B 3000 may be considered as a reactive coating kit that includes one (or more) sealers and/or one (or more) topcoats (Option 3).

2. Specification of the Intended Use(s) in Accordance with the Applicable European Assessment Document (hereinafter EAD)

The intended use of HENSOMASTIK® B 3000 is to fire protect or contribute to the fire resistance of solid concrete beams and columns in accordance with EN 13381-3:2015.

The results are presented in Annex A of this ETA.

The provisions in this ETA for resistance to fire performance are based on an assumed working life of the applied coating for the intended use of at least 10 years for environmental category Types Z_2, Z_1, Y and X.

The above provisions are made subject to appropriate use and maintenance according to the manufacturer's instruction. The indications given on the intended working life are based upon the current state of the art and the available knowledge and experience. These cannot be interpreted as a guarantee given by the producer, but are to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

HENSOMASTIK® B 3000 has been assessed as being compatible with the following sealer(s):

Sealer				
Sealer Reference[1]	Sealer Type	Tested Nominal Sealer DFT (µm)	Permitted Sealer Thickness Range (µm)[2]	
			Minimum	Maximum
BETON-CARBONSPERRE	One component water based anti-carbonation protective coating	80	40.0	120.0

DFT: Dry Film Thickness

[1] The approval is limited to the specific product (trade name and type) and no generic approach is possible.

[2] The permitted theoretical minimum and maximum DFTs cannot be less or exceed the DFT for each product as recommended by the manufacturer. The practical information given by the manufacturer must be followed.

HENSOMASTIK® B 3000 has been also assessed as having passed the requirements for durability for the following exposure conditions:

Topcoat Reference[1]	Durability Approvals Based On The Carried Out Testing			
	Type Z_2	TypeZ_1	Type Y	Type X
No Topcoat	Approved	Approved	Approved	Approved

DFT: Dry Film Thickness

[1] Insulation efficiency tests were performed with the protection system consisting of BETON-CARBONSPERRE sealer and reactive coating HENSOMASTIK® B3000 without topcoats. Topcoat application is not permitted

The determined ISO 4624 nominal mean adhesion strength results for the bond between the HENSOMASTIK® B3000 protection system and the concrete substrate are:

Tested nominal thickness (µm)	Determined nominal adhesion (bond strength) (MPa)
1341	0.92
3034	0.81
2084	0.99

More comprehensive adhesion (bond strength) measurements are presented in the Warringtonfire test report No. 545313.

The product was subjected to identification testing in accordance with the methods of identification defined in Annex D of EAD 351075-00-1106, February 2022. Thermoanalytical analyses (TG) and Infrared spectroscopy analyses (IR) results are presented in the Element test report No. C6058-1 Rev B.

3. Performance of the Product and References to the Methods Used for its Assessment

Product: Reactive coating		Intended use: Fire protection of structural concrete elements
Assessment method	Essential characteristic	Product performance
BASIC WORKS REQUIREMENT 2: SAFETY IN CASE OF FIRE		
EN 13501-1:2018	Reaction to fire	No Performance Assessed
EN 13381-3:2015	Resistance to fire	Concrete Beam and Column Elements (see Annex A)
EAD 351075-00-1106, February 2022 Clause 2.2.2.2		Use of compatible sealer(s) (see ETA Section 2)
BASIC WORKS REQUIREMENT 3: HYGIENE, HEALTH AND THE ENVIRONMENT		
EN 16516:2017+A1:2020	Content, emission and/or release of dangerous substances	No Performance Assessed
BASIC WORKS REQUIREMENT 4: SAFETY AND ACCESSIBILITY IN USE		
EAD 351075-00-1106, February 2022 Clause 2.2.4	Adhesion (bond strength)	(see ETA Section 2)
ASPECTS OF DURABILITY LINKED WITH THE BASIC WORKS REQUIREMENTS		
EAD 351075-00-1106, February 2022 Clause 2.2.5	Durability	(see ETA Section 2)

4. Assessment and Verification of Constancy of Performance (hereinafter AVCP) System Applied, with reference to its Legal Base

According to the decision 1999/454/EC of the European Commission Decision of date 22 June 1999 on the procedure for attesting the conformity of construction products pursuant to Article 20(2) of Council Directive 89/106/EEC as regards fire stopping, fire sealing and fire protective products, the system of assessment and verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) given in the following table apply:

Products	Intended uses	Level or Class	System
Fire protective products (including coatings)	Fire protection of solid concrete elements	Any	1

5. Technical Details Necessary for the Implementation of the AVCP System, as Provided for in the Applicable EAD

The manufacturer shall exercise permanent internal control, record and evaluate the results of factory production in accordance with the provisions laid down in the "Control Plan" related to this European Technical Assessment. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results. The production control system shall ensure that the product is in conformity with this European Technical Assessment.

The manufacturer may only use verified by Technical Assessment Body initial/raw/constituent materials stated in the technical documentations related to this European Technical Assessment.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

In cases where the provisions of the European technical assessment and its "Control Plan" are no longer fulfilled the certification body shall withdraw the Certificate of Constancy and inform the relevant authorities e.g. NANDO, EOTA.

The EAD 351075-00-1106, February 2022, presents an example of the properties that shall be controlled and the minimum frequencies of control. The exact test method and threshold have been laid down in the factory production control plan, which is operated by the manufacturer and deposited at Element Materials Technology Rotterdam B.V.

Issued in Amsterdam, Netherlands on 2024/07/22

By

Pascal Coget

TAB Manager

Annex A - Product Performance: Resistance to Fire

1 The protection system can be used to remedy deficiencies in concrete cover thickness to reinforcement bars. This Annex relates to the use of HENSOMASTIK® B 3000 to fire protect or contribute to the fire resistance of solid concrete beams and columns in accordance with EN 13381-3:2015.

The EN 13381-3:2015 assessment principles applied are illustrated in Figure 1. Within the member without protection, it is required that the cover thickness is not less than d_{cc}, in order to ensure the temperature of reinforcement is lower than the critical temperature. While within a member that has additional protection applied with a thickness d_p, the required minimum thickness of the cover may be reduced to d_{cp}, due to the beneficial effect of protection. The insulation ability of the protection can be indicated by equivalent thickness, of which the value is d_{cc}-d_{cp}.

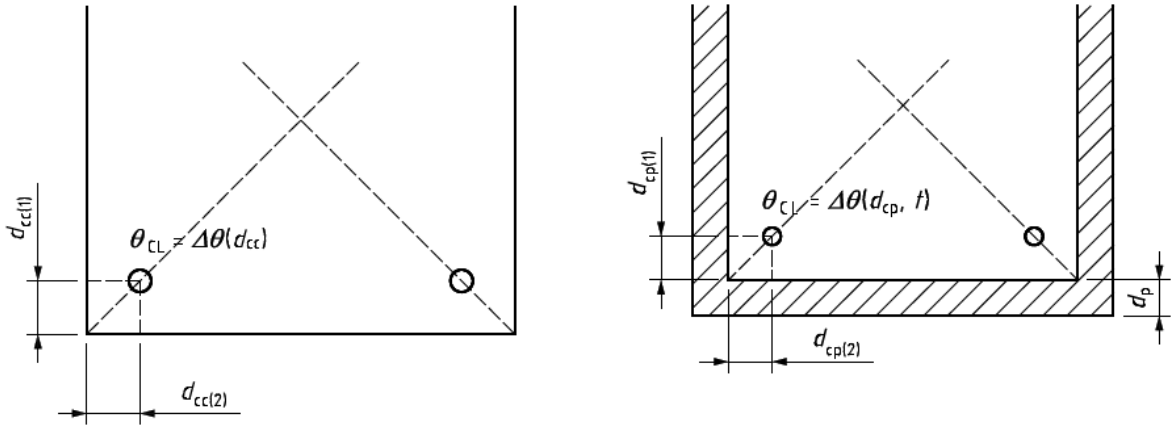

Figure 1. Unprotected concrete beam (left) and Protected concrete beam (right)

The precise scope of application is given in Tables of Results.

2 The data presented in the tables in this Annex refers to both horizontal beams supporting concrete floor slabs (protected on the soffit) and vertical columns exposed to fire from more than one side.

3 The results are applicable to pre-stressed structures provided that the rules detailed in EN 1992-1-2 are respected.

4 The data shown is applicable to HENSOMASTIK® B 3000 applied by spray to flexural and compression members supporting loads where the tensile stress in the reinforcement bars is equal to or less than 300 MPa.

5 The data shown is applicable to concrete elements in which the density is within the range from 1981kg/m^3 (0.85 times that the minimum tested 2331kg/m^3) to 2704kg/m^3 (1.15 times that the maximum tested 2352kg/m^3) and concrete strength classes of C25/30 and C30/37.

6 Tested specimens were prepared using siliceous aggregates. Therefore, following EN 13381-3:2015, the results of the assessment are applicable to concrete made with any type of aggregate.

7 All types of soluble oil or soluble emulsion release agents are permitted to be applied to concrete surfaces where release from the mould is facilitated.

8 The method of concrete surface preparation and the protection system application should be as described in the appropriate test reports.

The concrete surface shall be cleaned with sandpaper (or equivalent) to remove all traces of release agent and concrete laitance before compatible sealer application. Specifications of suitably tested and assessed sealers are listed in this document. The sealer permitted dry film thicknesses are also provided in the body of this ETA. Topcoat application is not permitted.

9 The test specimens consisted of solid concrete beams that were 450mm high and 150mm deep. The results given in this ETA for beams are applicable to all solid concrete beams with an equal or higher width as that tested and with an equal or higher height as that tested. It is possible to decrease the height provided the section surface remains the same or is higher, by increasing the width.

Tables of Results

Equivalent thickness for a concrete beam with 1.313mm and 3.435mm coating dry film thickness (DFT) excluding a sealer thickness.

Fire Resistance Period (minutes)	Equivalent thickness for a concrete beam/column with 1.313mm coating DFT (mm)
30	22
60	19
90	16
120	15

Fire Resistance Period (minutes)	Equivalent thickness for a concrete beam/column with 3.435mm coating DFT (mm)
30	34
60	29
90	26
120	24

Minimum protection thickness of 1.313mm:

The results of the analysis up to 60 minutes apply to loadbearing and non-loadbearing concrete slab and wall members. The data beyond 60 minutes can only be used for non-loadbearing members.

Maximum protection thickness of 3.435mm:

The results of the analysis up to 90 minutes apply to loadbearing and non-loadbearing concrete slab and wall members. The data beyond 90 minutes can only be used for non-loadbearing members.