

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-21/0727  
of 8 January 2024

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

MP 75 Fire

Product family  
to which the construction product belongs

Renderings and rendering kits intended for fire resisting  
applications

Manufacturer

Knauf Gips KG  
Am Bahnhof 7  
97346 Iphofen  
DEUTSCHLAND

Manufacturing plant

Knauf Gips KG  
further manufacturing plants see list on page 2

This European Technical Assessment  
contains

17 pages including 6 annexes which form an integral part  
of this assessment

This European Technical Assessment is  
issued in accordance with Regulation (EU)  
No 305/2011, on the basis of

350140-00-1106, Edition September 2017

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#### **List of manufacturing plants of "MP 75 Fire**

1. Mladoboleslavská 949, 19700 Praha 9 (Kbely) – Tschechische Republik
2. Karagedik Ahiboz Serpmeler Mevkii N° 236, 06833 Gölbassi (Ankara) – Türkei
3. Knaufstraße 1, 06536 Südharz - Deutschland

## Specific Part

### 1 Technical description of the product

The subject of this European Technical Assessment (ETA) is the fire protection rendering "MP 75 Fire". The construction product is assessed in accordance with EAD 350140-00-1106<sup>1</sup>, option 1.

The fire protective rendering "MP 75 Fire"<sup>2</sup> consists of the factory-made mineral dry mix "MP 75 Fire", which, freshly mixed with water, can be sprayed directly onto the substrate.

Steel substrates may require a pre-treatment with a primer for corrosion protection. The user can select a suitable steel primer from the list below of product families tested for suitability.

The application of "MP 75 Fire" for fire protection directly on site creates a fire protective rendering, which effectively increases or guarantees the fire resistance of the building element to be protected.

The primer "Hempel's Speed-Dry Alkyd 43140" was used in the fire tests of the fire protective rendering "MP 75 Fire" with regard to fire resistance duration on steel elements without lathing. The primer "Hempel's Speed-Dry Alkyd 43140" is a short to medium oil alkyd resin according to EU Directive 2004/42/EC<sup>3</sup>, which is applied as a very fast drying corrosion protection for steel elements on substrates prepared by sandblasting in layer thicknesses from 60 µm to 100 µm.

In addition to the corrosion protection primer mentioned above, further suitability tests were performed with regard to the adhesion of the fire protective rendering on primed steel and with regard to the technically fire protective properties of the rendering. The following corrosion protection coatings<sup>4</sup>, which represent corresponding product groups, were tested:

- Alkyd resin-based (solvent-based, 1-component, with active corrosion protection);
- epoxy resin-based (solvent-borne, 2-component, with active corrosion protection);
- polyurethane-based (solvent-based, 2-component, with active corrosion protection);
- based on zinc dust epoxy resin (solvent-borne, 2-component, with ~80% zinc powder);
- based on zinc dust silicate (solvent-borne, 1-component organosilicon binder with ~80% zinc powder).

On concrete substrates the direct application without any adhesion promoter is intended. As an additional measure to improve adhesion, the use of a non-combustible lathing can be provided.

The mineral dry mortar "MP 75 Fire" is a fine-grained white-beige powder based on gypsum as a binder, expanded perlite as a lightweight aggregate, and other additives to improve the processing and product properties.

The fire protective rendering "MP 75 Fire" is applied on site by spraying the fresh mortar with machines designed for this purpose or by manual application with trowel. The application can be carried out directly on the clean substrate or on the steel substrate pre-treated with one of the corrosion protection primers mentioned. The manufacturer's instructions on handling shall be considered.

<sup>1</sup> "Renderings and rendering kits intended for fire resisting applications" Edition September 2017, published in the Official Journal of the EU N° C 435/07 of 15 December 2017, p. 152

<sup>2</sup> The chemical composition is deposited with DIBt.

<sup>3</sup> Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products, amending Directive 1999/13/EC

<sup>4</sup> Manufacturer and technical data of the tested products deposited with the DIBt

For spray application, the powdered dry mix is mixed with a defined quantity of clean water and sprayed in a single layer according to the manufacturer's instructions. It is not permissible to apply another layer of fire protective plaster after the setting of the rendering.

The created fire protective rendering adheres completely on the entire surface of the substrate (concrete, reinforced concrete, prestressed concrete, steel) after the sprayed mix has hardened and now effectively retards the heat input when exposed to fire.

The total thickness of the applied fire protective rendering "MP 75 Fire" depends on the intended fire resistance duration, on the type of substrate and on the type of element to be protected.

According to the statistical evaluation (see annex 2 and 3), the thickness of the necessary fire protective rendering layer in practice ranges from 9.5 mm to 43.5 mm at an average consumption of dry mix of about 6.2 kg/m<sup>2</sup>.

The main technical characteristics of the dry mix and the final fire protective rendering "MP 75 Fire" are listed in Annex 1

## 2 **Specification of the intended use in accordance with the applicable European Assessment Document (EAD) Nr. 350140-00-1106<sup>1</sup>**

The fire protective rendering "MP 75 Fire" is intended for the protection of fire-resistant, vertical and horizontal load-bearing concrete or steel elements in case of fire without using lathing, mechanically fixings or plaster base.

The product will be used to maintain and/or to increase the fire resistance, to maintain the load-bearing capacity (R), and the integrity (E) of the fire-resistant elements in case of fire.

### **Type of use related to the element(s) intended to be protected:**

- Type 3 according to EAD: Fire Protective Products to protect load-bearing concrete elements (fire impact one-sided, three-sided or four-sided).
- Type 4 according to EAD: Fire Protective Products to protect load-bearing steel elements. (beams and columns with 3 and 4 exposed faces),
- non-load-bearing vertical partition walls made of non-combustible, classified building materials as well as substrates basically provided with lathing or other mechanically fixed plaster support.

### **Type of use conditions related to environmental use conditions:**

Type Y according to EAD:

Fire protective renderings for unrestricted indoor use as well as for a covered outdoor use under climatic conditions with occasional temperatures even below 0 °C, temperature changes between -10 °C and +40 °C and limited exposure to UV radiation, but no exposure to rain.

The performances in section 3 can only be assumed if the information and conditions on durability given in section 3.5 as well as the manufacturer's instructions are taken into account when using the fire protective rendering "MP 75 Fire".

The test and assessment methods on which this European Technical Assessment (ETA) is based lead to the assumption of working life of the fire protective rendering "MP 75 Fire" under use conditions of at least 25 years, provided that the product is installed and maintained in accordance with the manufacturer's instructions and used in accordance with intended purpose as described in this ETA.

Remark:

The statement of the working life cannot be assumed as a warranty by the manufacturer, but is to be considered only as an aid in selecting the proper product in relation to the assumed economically reasonable working life of the works. The term "assumed expected working life" means that if an evaluation is performed in accordance with the specifications of the EAD and the working life assumed therein expires under normal conditions of use, the actual working life may be substantially longer without significant deterioration of product performance or violation of the essential service requirements for works.

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

The performance assessment of "MP 75 Fire" with regard to the intended use was carried out in accordance with the European Assessment Document EAD 350140-00-1106<sup>1</sup> "Fire protective renderings and rendering kits for fire resisting applications", Table 1 for verified aspects of the "Essential requirements for construction works" No. 2, 3, 4 and 6. No performance was determined for the essential requirements BWR 5 - Sound insulation - and BWR 7 - Sustainability and protection of natural resources (NPD).

**3.1 Safety in case of fire - BWR 2**

**3.1.1 Reaction to fire**

Essential characteristic	Performance
Reaction to fire	class A1 in accordance with EN 13501-1 <sup>5</sup>

**3.1.2 Resistance to fire**

Following the test results according to the standards EN 13381-3<sup>6</sup> and EN 13381-4<sup>7</sup> and the classification of EN 13501-2<sup>8</sup>, the fire protective rendering "MP 75 Fire" can perform a fire resistance given in the table (dimensioning of required layer thickness see Annex 2 and 3

substrate	layer thickness	possible classification
Concrete walls and ceilings (fire impact on one-side)	11.5 mm to 20,5 mm	REI 30 to REI 180
Concrete beams and columns (fire impact on 3- or 4 sides)	11,0 mm to 22,0 mm	R 30 to R 180
Steel beams and steel columns	9,5 mm to 43,0 mm	R 30 to R 120

**3.1.2.1 Fire resistance and layer thicknesses required on steel components without lathing or mechanical fixings for classification of steel elements protected with the fire protective rendering "MP 75 Fire" (design/dimensioning according to Annexes 2.1 to 2.4)**

The fire tests and the evaluation of the results for the fire protection effect of the fire protective rendering "MP 75 Fire" on steel members without lathing or mechanical fixing were carried out taking into account EAD 350140-00-1106<sup>1</sup> with the test results according to EN 13381-4<sup>7</sup>.

<sup>5</sup> EN 13501-1:2019-05 Fire classification of construction products and building elements; Part 1: Classification using data from reaction to fire tests

<sup>6</sup> EN 13381-3:2015-06 Test methods for determining the contribution to the fire resistance of structural members; Part 3: Applied protection to concrete members

<sup>7</sup> EN 13381-4:2013-08 Test methods for determining the contribution to the fire resistance of structural members – Part 4: Applied passive protection to steel members

<sup>8</sup> EN 13501-2:2016-12 Fire classification of construction products and building elements; Part 2: Classification using data from fire resistance tests, excluding ventilation services

Provided that the deviation of the layer thicknesses from the nominal value and the deviation of the bulk density of the fire protective rendering are not greater than 10% in each case, the following was considered in the assessment of the test results for the dimensioning of the minimum layer thicknesses:

- Steel beams with a maximum web height of 639 mm and steel columns with a section height of  $h \leq 1000$  mm made of all steel grades in accordance with EN 10025-2<sup>9</sup> except S185, S460 and S500.
- Steel columns with open profile cross-section as well as hollow profile cross-sections.
- Profile factors ( $A_m/V$  values) up to  $429 \text{ m}^{-1}$  for 3-sided flaming and  $A_m/V$  values up to  $495 \text{ m}^{-1}$  for 4-sided flaming
- Fire resistance durations from 30 minutes to 150 minutes

The results for the design of the required minimum thickness of the fire protective rendering "MP 75 Fire" for open steel cross sections depending on the intended fire resistance duration, the profile factor and the type of element to be protected are summarized in tabular form in the Annexes 2.1 to 2.4. The design is carried out in accordance with Eurocode 3<sup>10</sup>.

The design/ dimensioning of the minimum layer thicknesses of the fire protective rendering on hollow steel sections shall be carried out in accordance with EN13381-4<sup>7</sup> taking into account the type of cross-section (circular or rectangular hollow sections) and using the design tables in Annex 2 in accordance with EN 1993-1-2, (Eurocode 3)<sup>10</sup>. In this context, the minimum layer thickness of the fire protective rendering designed in accordance with EN 13381-4<sup>7</sup> shall normally be multiplied by a factor of 1,25 and rounded up accordingly in each case, taking into account the plaster grain size and the spraying equipment used.

### 3.1.2.2 Fire resistance and layer thicknesses required for fire protection on concrete and reinforced concrete elements protected with the fire protective rendering "MP 75 Fire" (basis for design/dimensioning see Annex 3)

The testing and assessment of the results for the fire protection effect of the fire protective rendering "MP 75 Fire" on concrete, reinforced concrete and prestressed concrete elements was carried out in accordance with EN13381-3<sup>6</sup>.

For determination of the minimum layer thicknesses the following was considered:

- normal concrete members with a density of  $1955 \text{ kg/m}^3$  to  $2725 \text{ kg/m}^3$
- fire resistance durations from 30 minutes to 180 minutes (slabs) and up to 210 minutes (beams)
- Application for ceiling, walls, beams and columns

The minimum thicknesses of the dry layers of the fire protective rendering "MP 75 Fire" on concrete, reinforced and prestressed concrete elements shall be dimensioned in accordance with EN 1992-1-2:2008<sup>11</sup>, when necessary, by using the graphical presentations of the equivalent concrete thickness in Annex 3 of this ETA.

<sup>9</sup> EN 10025-2:2019-10

Hot rolled products of structural steels; Part 2: Technical delivery conditions for non-alloy structural steels

<sup>10</sup> EN 1993-1-2:2010-12

Eurocode 3: Design of steel structures; Part 1-2: General rules; Structural fire design

<sup>11</sup> EN 1992-1-2:2008-12

Eurocode 2: Design of concrete structures; Part 1-2: General rules; Structural fire design

### 3.2 Hygiene, health and the environment - BWR 3

#### 3.2.1 Content and release of dangerous substances

Essential characteristic	Performance
Content and release of dangerous substances	No dangerous substances <sup>12</sup>

The manufacturer's detailed written information on the chemical composition of "MP 75 Fire" has been assessed by DIBt and is deposited with DIBt.

According to the manufacturer's declaration and taking into account the obligation to mark according to Regulation 1272/2008 EU, the finished product does not contain any dangerous substances and does not release any such substances.

#### 3.2.2 Water vapor diffusion resistance in accordance with EN 12086<sup>13</sup>

Essential characteristic	Performance
Water vapor diffusion resistance coefficient $\mu$	$\mu = 6,9$ (tested at a rendering thickness of 19,8 mm)
equivalent air layer thickness $s_d$	$s_d = 0,14$ m (tested at a rendering thickness of 19,8 mm)

### 3.3 Safety in use - BWR 4

#### 3.3.1 Resistance to functional failures due to hard impact loads - 0.5 kg steel ball (according to EAD 350140-00-1106<sup>1</sup>, Abs. 2.2.6.1)

The fire protective rendering "MP 75 Fire" was applied to a 10 mm thick steel plate of grade S235JR+AR/+N with an area of 1 m x 1 m in a rendering thickness of 10 mm, full-surface. The steel plate had been prepared with the standard primer "Hempel's Speed-Dry Alkyd 43140" after a pre-treatment by sandblasting (Sa2½).

Furthermore, the fire protective rendering "MP 75 Fire" was applied to a 250 mm thick concrete slab of an area of 1 m x 1 m in rendering thickness of 10 mm over, full-surface.

The results given below indicate a good load-bearing capacity of the finished product under impact loads.

configuration	test conditions	result	observations
10 mm thick rendering layer on a steel plate	falling weight $\varnothing$ 50 mm falling energy: 6 Nm	max. depth of penetration: 4,5 mm max. $\varnothing$ of indentation: 24 mm	no cracks, no spalling, no puncture
	falling weight $\varnothing$ 63,5 mm falling energy: 10 Nm	max. depth of penetration: 4,3 mm max. $\varnothing$ of indentation: 27 mm	
10 mm thick rendering layer on a concrete slab	falling weight $\varnothing$ 50 mm falling energy: 6 Nm	max. depth of penetration: 3,8 mm max. $\varnothing$ of indentation: 23,5 mm	no cracks, no spalling, no puncture
	falling weight $\varnothing$ 63,5 mm falling energy: 10 Nm	max. depth of penetration: 4,0 mm max. $\varnothing$ of indentation: 28 mm	

#### 3.3.2 Resistance to functional failures due to soft impact loads - 50 kg glass ball bag (according to EAD 350140-00-1106<sup>1</sup>, clause 2.2.6.2)

The fire protective rendering "MP 75 Fire" was applied to a concrete slab in layer thicknesses of 10 mm and 20 mm. Impacts with a maximum impact energy of **1200 J** did not cause cracking, spalling, plastic deformation or loss of substrate adhesion.

<sup>12</sup> In accordance with the Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008, published in the Official Journal of the EU N° L 353 of 31/12/2008, p 1

<sup>13</sup> EN 12086:2013-06 Thermal insulating products for building applications, determination of water vapour transmission properties;

The results suggest that no additional risks of failure are to be expected with soft impact loading.

### 3.4 Energy economy and heat retention - BWR 6

#### 3.4.1 Thermal conductivity in accordance to EN 12664<sup>14</sup> and EN 1745<sup>15</sup>

The results of the test with the two-plate device on specimens from three different batches with rendering thicknesses of at least 30 mm and an average material density of 820 kg/m<sup>3</sup> resulted in an average thermal conductivity  $\lambda_{10, tr} = 0.2042$  W/(m·K).

For the design/dimensioning of the thermal conductivity according to EN 1745, the design value was determined for the dry bulk density range of 750 kg/m<sup>3</sup> ± 10 % (specified by the manufacturer):

$$\lambda_{design} = 0,23 \text{ W/(m}\cdot\text{K)}.$$

#### 3.4.2 Thermal efficiency and influence of the different primers in case of fire

Substrate/primer	Thermal efficiency (as tested)		Assessment
	t <sub>500</sub> in minutes	change in %	
Standard Steel + Alkyd resin	81	(100%)	reference
steel + Epoxy resin	85	+ 4,9	OK
steel + Epoxy + Zn-powder	87	+ 7,4	OK
steel + PU	82	+ 1,2	OK
steel + Alkyd/acrylate	99	+ 22,2	OK
steel + Zinc silicate	94	+ 16,1	OK

The influence of the investigated primers on the thermal behavior and on the thermal efficiency of the fire protective rendering "MP 75 Fire" varies slightly, but does not show any additional risk with regard to its use as a fire protective product.

### 3.5 General aspects of durability

Durability testing shall be an integral part of assessing the basic works and performance requirements. The following specific provisions for use shall be considered to ensure the durability of the performance.

#### 3.5.1 General suitability

The tests and the assessment of the performance relevant for fire protection was carried out at an environmental exposure for type Y - product intended for indoor use and covered outdoor use under climatic conditions with occasional temperatures also below 0° C, temperature changes and limited exposure to UV radiation, but no driving rain exposure - according to para. 2.2.12 of EAD 350140-00-1106<sup>1</sup>.

Result:

The final fire protective rendering "MP 75 Fire" without lathing or mechanical fixing is suitable as fire protection of structural elements made of steel or concrete, incl. reinforced or prestressed concrete to increase or maintain the fire resistance of the element covered with it and being exposed to use conditions of type Y conditions. This includes the suitability of the fire protective rendering under use conditions of type Z<sub>2</sub> and Z<sub>1</sub>.

<sup>14</sup> EN 12664:2001-05 Thermal performance of building materials and products; Determination of thermal resistance by means of guarded hot plate and heat flow meter methods; Dry and moist products of medium and low thermal resistance

<sup>15</sup> EN 1745:2020-11 Masonry and masonry products – Methods for determining thermal properties



### 3.5.2 Assessment with regard to adhesion on the substrate

#### Resistance to climatic stresses (as tested)

tested variant	exposure	adhesive strength after exposure	reference-adhesion (hardened, untouched rendering)	change <sup>b)</sup>
Steel substrate covered with 10 mm rendering	high permanent air humidity at 35°C and 95%RF	0,03 N/mm <sup>2</sup>	0,19 N/mm <sup>2</sup>	significant reduction
	alternating temperature	0,19 N/mm <sup>2</sup>		no change
	Freeze/thaw cycle 23°C/-10°C + 95% RF	0,17 N/mm <sup>2</sup>		no change
<i>Continued on page 9</i>				
concrete substrate covered with 10 mm rendering	high permanent air humidity at 35°C and 95%RF	0,40 N/mm <sup>2</sup>	0,48 N/mm <sup>2</sup>	no significant change
	alternating temperature	0,70 N/mm <sup>2</sup>		increase
	Freeze/thaw cycle 23°C/-10°C + 95% RF	0,48 N/mm <sup>2</sup>		no change
concrete substrate covered with 40 mm rendering	high permanent air humidity at 35°C and 95%RF	0,53 N/mm <sup>2</sup>	0,43 N/mm <sup>2</sup>	slight increase
	alternating temperature	0,45 N/mm <sup>2</sup>		no change
	Freeze/thaw cycle 23°C/-10°C + 95% RF	0,52 N/mm <sup>2</sup>		slight increase

<sup>b)</sup> assessment in accordance with the EAD clause 2.2.12.3

### 3.5.3 Assessment concerning heat transfer

Tests concerning the heat transfer behaviour (insulation effect) under one-sided fire impact stress carried out after the durability tests showed no negative influences in any of the tested cases.

Thus, the fire protection effectiveness of the fire protective rendering "MP 75 Fire" after exposure to climatic conditions of type Y is considered proven. This assessment includes the suitability of the fire protective rendering under use conditions of type Z<sub>2</sub> and Z<sub>1</sub>.

### 3.5.4 Restrictions in use with regard to certain climatic conditions

- The recommended ambient temperature when using the final product is between 5 °C and 40 °C.
- Avoid using the fire protective rendering on steel substrates where high permanent humidity is expected. If in doubt, contact the manufacturer and take additional protective measures if necessary.

### 3.6 Instructions for the production of the fire protective rendering on site

Only the mineral dry mix "MP 75 Fire" in the deposited composition and, if required, the components listed in section 1 of this ETA are to be used for the execution of the fire protective rendering.

The substrates to be protected shall be clean, dry and free of dust and grease. Existing coatings, and residues of paint and plaster shall be completely removed before applying the fire protective rendering.

On steel substrates, use one of the primers mentioned in section 1. Existing corrosion protection coatings shall be checked with regard to adhesion and composition/compatibility and, if necessary, removed completely.

In cases where the condition of the substrate does not ensure sufficient adhesion on the substrate, the use of a non-combustible, mechanically fastened plaster base shall be provided. This also applies in cases where the mechanical resistance of the fire protective rendering needs to be increased. To improve the resistance to mechanical action, the use of edge protectors or corner profiles is recommended, eg. on columns or on recesses.

The manufacturer's instructions for the execution of the fire protective rendering "MP 75 Fire" shall be considered.

The manufacturer is responsible for ensuring that all necessary information, including the product's safety data sheet, is correctly and completely provided to the person carrying out the rendering.

The full fire protection performance of the final rendering can only be assumed if the execution of the fire protective rendering "MP 75 Fire" is carried out on site by qualified professionals who are experienced in the application of sprayed plasters.

Steel substrates shall always be pre-treated with a suitable primer recommended in Section 1.

When executing the fire protective rendering "MP 75 Fire", test specimens should be manufactured in parallel at least for testing the density in order to prove the compliance of the executed fire protective rendering with the requirements of this ETA. According to this ETA, the gross density shall be  $750 \text{ kg/m}^3 \pm 10 \%$ . If the deviation is greater than 10 %, appropriate adhesive tensile tests shall be carried out eg. in accordance with EGOLF EA5<sup>16</sup> and EN 1015-12<sup>17</sup>. Adhesive tensile tests on site should reach at least 80 % of the values stated in this ETA under 3.5.2.

Furthermore, it is necessary to check the layer thickness of the freshly applied fire protection rendering after application by using a suitable tool, eg. a piercing measuring needle or a profometer. The results shall be documented. The measured thicknesses never shall fall below the rated minimum rendering thickness at any point.

### 3.7 Recommendations for maintenance and repair.

It is recommended to check the condition of the product at regular intervals for damage, cracks, flaking, staining, etc. When repairing, the damaged area shall be removed, the substrate re-prepared (cleaned) and "MP 75 Fire" re-applied by spraying or manually.

The manufacturer's instructions in this regard shall be observed and, in case of doubt, advice from the manufacturer shall be obtained.

16	EGOLF SM5:1999-07	Fire Testing; Method for the measurement of bonding properties of fire protection materials applied to steel, concrete and concrete composite structures
17	EN 1015-12:2016-12	Methods of test for mortar for masonry; Part 12: Determination of adhesive strength of hardened rendering and plastering mortars on substrates;

English translation prepared by DIBt

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

In accordance with the European Assessment Document EAD N° 350140-00-1106<sup>1</sup> the following legal basis applies: Decision of the commission N° 1999/454/EC<sup>18</sup>.

For the assessment and verification of constancy of performance (AVCP) **system 1** shall be applied (see Regulation (EU) N° 305/2011) Annex V in conjunction with Article 65 (2)) according to the following table:

Product	Intended use	performance	System
Fire protective Rendering "MP 75 Fire"	fire protection application on load-bearing steel elements, elements of concrete, reinforced concrete and prestressed concrete for improvement or maintenance of fire resistance	reaction to fire, period of fire resistance relevant characteristics	1

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

The technical details necessary for the implementation of the system 1 for assessment and verification of constancy of performance are laid down in the control plan (confidential part of this ETA) deposited with Deutsches Institut für Bautechnik.

The CE-marking for the kit shall be affixed on every component (stick-on label or directly on the packing unit) and the commercially accompanying documents. The declaration of performance shall be done in accordance with this ETA.

Issued in Berlin on 8 January 2024 by Deutsches Institut für Bautechnik

Johanna Held  
Head of section

*beglaubigt:*  
Dr.-Ing. Dierke

<sup>18</sup> Decision of the commission N° 1999/454/EC of 22 June 1999 (OJ of the EU L 178 of 14 July 1999, p 42), amended by EC Decision 2001/596/EC of 8 January 2001(OJ of the EU L 209 of 2 August 2001, p 2)

ANNEX 1

**TECHNICAL CHARACTERISTICS OF THE RENDERING "MP 75 Fire"**

Characteristic	Nominal level as tested	Test method	
<b>Dry mix "MP 75 Fire"</b>			
Bulk density of the dry mix	550 kg/m <sup>3</sup> ± 50 % kg/m <sup>3</sup>	See control plan	
Loss of mass at 550 °C, (residual mass after temperature impact in %)	> 95		
Density of the fresh mortar	1270 kg/m <sup>3</sup> ± 120 kg/m <sup>3</sup>		
<b>Fire protective rendering "MP 75 Fire"</b>			
Density, dry	750 kg/m <sup>3</sup> ± 75 kg/m <sup>3</sup>		
Compression strength after 28 d	≥ 2,3 N/mm <sup>2</sup>		
adhesive tensile strength (EN 1015-11)	≥ 0,20 N/mm <sup>2</sup>		
- on concrete	≥ 0,15 N/mm <sup>2</sup>		
- on steel			
Bending tensile strength	≥ 1,0 N/mm <sup>2</sup>		

ANNEX 2.1

Fire protective Rendering "MP 75 Fire"

Design of the minimum thicknesses for columns and beams with open steel profiles

Table 1 Fire resistance period 30 min

Design temperature [°C]	300	350	400	450	500	550	600	650	700	750
$A_m/V$ [m <sup>-1</sup> ]	minimum thickness of applied dry rendering [mm]									
< 80	13,0	11,0	10,0	9,5	9,5	9,5	9,5	9,5	9,5	9,5
80	13,5	12,0	10,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
90	14,5	13,0	11,5	10,0	9,5	9,5	9,5	9,5	9,5	9,5
100	15,0	13,6	12,5	11,0	10,0	9,5	9,5	9,5	9,5	9,5
110	15,5	14,5	13,0	12,0	11,0	9,5	9,5	9,5	9,5	9,5
120	16,0	15,0	14,0	12,5	12,0	10,5	9,5	9,5	9,5	9,5
130	16,5	15,5	14,1	13,0	12,0	11,0	10,0	9,5	9,5	9,5
140	17,0	16,0	14,5	13,5	12,5	11,5	10,5	9,5	9,5	9,5
150	17,0	16,0	15,0	14,0	13,0	12,0	11,0	10,0	9,5	9,5
160	17,5	16,5	15,5	14,5	13,5	12,5	11,5	10,5	9,5	9,5
170	17,5	16,5	15,5	14,5	13,5	12,5	11,5	10,5	10,0	9,5
180	18,0	17,0	16,0	15,0	14,0	13,0	12,0	11,0	10,0	9,5
190	18,0	17,0	16,0	15,0	14,0	13,0	12,5	11,5	10,5	9,5
200	18,0	17,0	16,0	15,5	14,5	13,5	12,5	11,5	11,0	10,0
210	18,5	17,5	16,5	15,5	14,5	13,5	13,0	12,0	11,0	10,0
220	18,5	17,5	16,5	15,5	15,0	14,0	13,0	12,0	11,5	10,5
230	18,5	17,5	16,5	16,0	15,0	14,0	13,0	12,5	11,5	10,5
240	18,5	18,0	17,0	16,0	15,0	14,0	13,5	12,5	11,5	11,0
250	19,0	18,0	17,0	16,0	15,0	14,5	13,5	12,5	12,0	11,0
260	19,0	18,0	17,0	16,0	15,5	14,5	14,5	13,0	12,0	11,5
270	19,0	18,0	17,0	16,5	15,5	14,5	14,5	13,0	12,0	11,5
280	19,0	18,0	17,5	16,5	15,5	14,5	14,5	13,0	12,5	11,5
290	19,0	18,0	17,5	16,5	15,5	15,0	15,0	13,0	12,5	11,5
300	19,0	18,5	17,5	16,5	16,0	15,0	15,0	13,5	12,5	12,0
310	19,0	18,5	17,5	16,5	16,0	15,0	15,0	13,5	12,5	12,0
320	19,5	18,5	17,5	17,0	16,0	15,0	15,0	13,5	13,0	12,0
330	19,5	18,5	17,5	17,0	16,0	15,5	15,0	13,5	13,0	12,0
340	19,5	18,5	17,5	17,0	16,0	16,0	15,5	13,5	13,0	12,5
≥ 350	20,0	19,0	18,5	17,5	17,0	16,0	16,0	14,5	14,0	13,0

## ANNEX 2.2

**Table 2 Fire resistance period 60 min**

Design temperature [°C]	300	350	400	450	500	550	600	650	700	750
$A_m/V$ [m <sup>-1</sup> ]	minimum thickness of applied dry rendering [mm]									
< 80	20,5	19,5	18,0	16,5	15,0	13,5	11,5	10,0	9,5	9,5
80	21,5	20,0	18,5	17,5	16,0	14,5	13,0	11,5	9,5	9,5
90	22,0	21,0	19,5	18,5	17,0	16,0	14,5	13,0	11,5	10,0
100	23,5	21,5	20,5	19,5	18,0	17,0	15,5	14,0	13,0	11,5
110	23,5	22,5	21,0	20,0	19,0	17,5	16,5	15,0	14,0	12,5
120	24,0	23,0	21,5	20,5	19,5	18,5	17,0	16,0	15,0	13,5
130	24,0	23,0	22,0	21,0	20,0	19,0	17,5	16,5	15,5	14,5
140	24,5	23,5	22,5	21,5	20,5	19,5	18,0	17,0	16,0	15,0
150	25,0	24,0	23,0	21,0	20,5	19,5	18,5	17,5	16,5	15,5
160	25,0	24,0	23,0	22,0	21,0	20,0	19,0	18,0	17,0	16,0
170	25,5	24,5	23,5	22,5	17,5	21,5	19,5	18,5	17,5	16,5
180	25,5	24,5	23,5	22,5	21,5	20,5	19,5	18,5	17,0	16,5
190	25,5	24,5	23,5	22,5	21,5	21,0	20,0	19,0	18,0	17,0
200	26,0	25,0	24,0	23,0	22,0	21,0	20,0	19,0	18,0	17,0
210	26,0	25,0	24,0	23,0	22,0	21,0	20,0	19,5	18,5	17,5
220	26,0	25,0	24,0	23,0	22,0	21,5	20,5	19,5	18,5	17,5
230	26,0	25,0	24,0	23,5	22,5	21,5	20,5	19,5	18,5	18,0
240	26,5	25,5	24,5	23,5	22,5	21,5	20,5	20,0	19,0	18,0
250	26,5	25,5	24,5	23,5	22,5	21,5	21,0	20,0	19,0	18,0
260	26,5	25,5	24,5	23,5	22,5	22,0	21,0	20,0	19,0	18,5
270	26,5	25,5	24,5	24,0	23,0	22,0	21,0	20,0	19,5	18,5
280	26,5	25,5	25,0	24,0	23,0	22,0	21,0	20,5	19,5	18,5
290	27,0	26,0	25,0	24,0	23,0	22,0	21,0	20,5	19,5	18,5
300	27,0	26,0	25,0	24,0	23,0	22,0	21,5	20,5	19,5	19,0
310	27,0	26,0	25,0	24,0	23,0	22,5	21,5	20,5	19,5	19,0
320	27,0	26,0	25,0	24,0	23,0	22,5	21,5	20,5	20,0	19,0
330	27,0	26,0	25,0	24,0	23,5	22,5	21,5	20,5	20,0	19,0
340	27,0	26,0	25,0	24,0	23,5	22,5	21,5	21,0	20,0	19,0
≥ 350	27,5	26,5	25,5	24,5	24,0	23,0	22,5	21,5	20,5	20,0

**ANLAGE 2.3**

**Table 3 Fire resistance period 90 min**

Design temperature [°C]	300	350	400	450	500	550	600	650	700	750
$A_m/V$ [m <sup>-1</sup> ]	minimum thickness of applied dry rendering [mm]									
< 80	28,5	27,5	26,0	25,0	23,5	22,0	20,5	19,0	17,5	16,0
80	29,0	28,0	27,0	25,5	24,4	23,0	31,5	20,0	18,5	17,0
90	30,0	29,0	27,5	26,5	25,5	24,0	23,0	21,5	20,0	19,0
100	30,5	28,0	28,5	27,5	26,0	25,0	24,0	22,5	21,0	20,0
110	31,0	29,5	29,0	28,0	27,0	25,5	24,5	23,5	22,0	21,0
120	31,5	30,0	29,5	28,5	27,0	26,0	25,0	24,0	23,0	21,5
130	32,0	30,5	30,0	29,0	27,5	26,5	25,5	24,5	23,5	22,0
140	32,5	31,0	30,0	29,0	28,0	27,0	26,0	25,0	24,0	23,0
150	32,5	31,0	30,5	29,5	28,5	27,5	26,5	25,0	24,0	23,0
160	33,0	31,5	30,5	29,5	28,5	27,5	26,5	25,5	24,5	23,5
170	33,0	32,0	31,0	30,0	29,0	28,0	27,0	26,0	25,0	24,0
180	33,0	32,0	31,5	30,0	29,0	28,0	27,0	26,0	25,0	24,0
190	33,5	32,0	31,5	30,0	29,0	28,0	27,0	26,5	25,5	24,5
200	33,5	32,5	31,5	30,5	29,5	28,5	27,5	26,5	25,5	24,5
210	33,5	32,5	31,5	30,5	29,5	28,5	27,5	26,5	25,5	24,5
220	34,0	32,5	31,5	30,5	29,5	28,5	27,5	27,0	26,0	25,0
230	34,0	33,0	32,0	31,0	30,0	29,0	28,0	27,0	26,0	25,0
240	34,0	33,0	32,0	31,0	30,0	29,0	28,0	27,0	26,0	25,0
250	34,0	33,0	32,0	31,0	30,0	29,0	28,0	27,0	26,0	25,5
260	34,0	33,0	32,0	31,0	30,0	29,0	28,0	27,0	26,5	25,5
270	34,0	33,0	32,0	31,0	30,0	29,0	28,0	27,5	26,5	25,5
280	34,5	33,5	32,0	31,0	30,0	29,5	28,5	27,5	26,5	25,5
290	34,5	33,5	32,5	31,5	30,5	29,5	28,5	27,5	26,5	25,5
300	34,5	33,5	32,5	31,5	30,5	29,5	28,5	27,5	26,5	26,0
310	34,5	33,5	32,5	31,5	30,5	29,5	28,5	28,0	27,0	26,0
320	34,5	33,5	32,5	31,5	30,5	29,5	28,5	27,5	27,0	26,0
330	34,5	33,5	32,5	31,5	30,5	29,5	28,5	28,0	27,0	26,0
340	34,5	33,5	32,5	31,5	30,5	29,5	29,0	28,0	27,0	26,0
≥ 350	35,0	34,0	33,0	32,0	31,0	30,0	29,5	28,5	27,5	26,5

ANLAGE 2.4

Table 4 Fire resistance period 120 min

Design temperature [°C]	300	350	400	450	500	550	600	650	700	750
$A_m/V$ [m <sup>-1</sup> ]	minimum thickness of applied dry rendering [mm]									
< 80	36,5	35,5	34,5	33,0	32,0	31,0	29,5	28,0	27,0	25,5
80	37,0	36,0	35,0	34,0	32,5	31,5	30,5	29,0	27,5	26,5
90	38,0	37,0	35,5	34,5	33,5	32,5	31,0	30,0	29,0	27,5
100	38,5	37,5	36,5	35,5	34,0	33,0	32,0	31,0	29,5	28,5
110	39,0	38,0	37,0	36,0	34,5	33,5	32,5	31,5	30,5	29,0
120	39,5	38,5	37,0	36,0	35,0	34,0	33,0	32,0	31,0	29,5
130	39,5	38,5	37,5	36,5	35,5	34,4	33,5	32,0	31,0	30,0
140	40,0	39,0	38,0	37,0	36,0	35,0	33,5	32,5	31,5	30,5
150	40,0	39,0	38,0	37,0	36,0	35,0	34,0	33,0	32,0	31,0
160	40,5	39,5	38,5	37,5	36,0	35,0	34,0	33,0	32,0	31,0
170	40,5	39,5	38,5	37,5	36,5	35,5	34,5	33,5	32,5	31,5
180	41,0	40,0	38,5	37,5	36,5	35,5	34,5	33,5	32,5	31,5
190	41,0	40,0	39,0	38,0	37,0	36,0	34,5	33,5	32,5	31,5
200	41,0	40,0	39,0	38,0	37,0	36,0	35,0	34,0	33,0	32,0
210	41,5	40,0	39,0	38,0	37,0	36,0	35,0	34,0	33,0	32,0
220	41,5	40,5	39,0	38,0	37,0	36,0	35,0	34,0	33,0	32,0
230	41,5	40,5	39,5	38,5	37,0	36,0	35,0	34,0	33,0	32,0
240	41,5	40,5	39,5	38,5	37,5	36,5	35,5	34,5	33,5	32,5
250	41,5	40,5	39,5	38,5	37,5	36,5	35,5	34,5	33,5	32,5
260	42,0	40,5	39,5	38,5	37,5	36,5	35,5	34,5	33,5	32,5
270	42,0	40,5	39,5	38,5	37,5	36,5	35,5	34,5	33,5	32,5
280	42,0	41,0	40,0	38,5	37,5	36,5	35,5	34,5	33,5	32,5
290	42,0	42,0	40,0	38,5	37,5	36,5	35,5	34,5	33,5	32,5
300	42,0	41,0	40,0	39,0	38,0	36,5	35,5	34,5	33,5	33,0
310	42,0	41,0	40,0	39,0	38,0	37,0	36,0	34,5	34,0	33,0
320	42,0	41,0	40,0	39,0	38,0	37,0	36,0	35,0	34,0	33,0
330	42,0	41,0	40,0	39,0	38,0	37,0	36,0	35,0	34,0	33,0
340	42,5	41,0	40,0	39,0	38,0	37,0	36,0	35,0	34,0	33,0
≥ 350	43,0	41,5	40,5	39,5	38,5	37,5	36,5	35,5	34,5	33,5



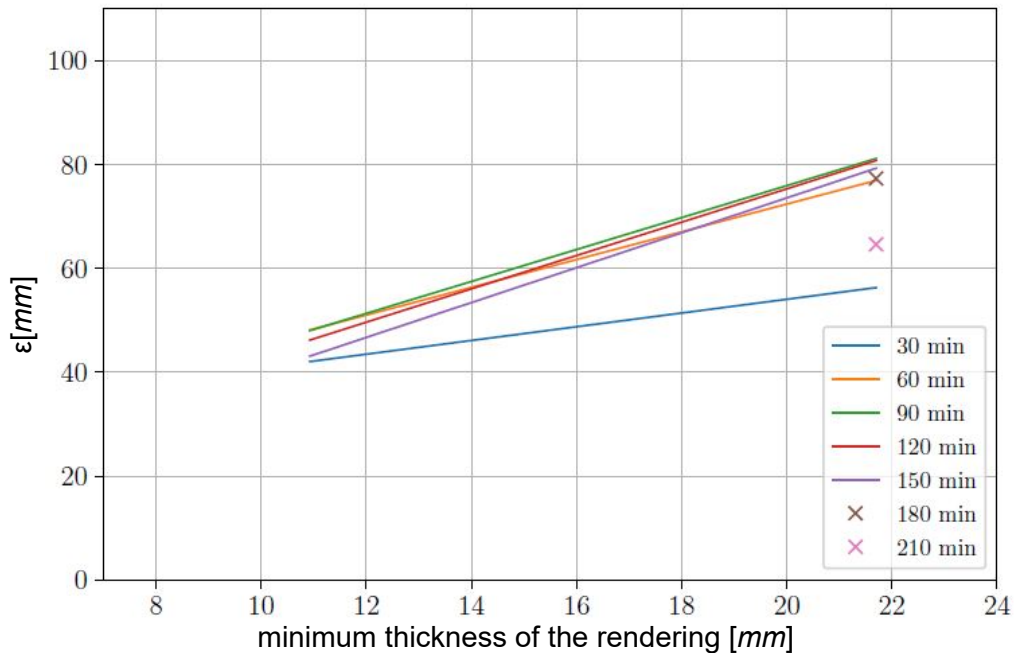
**ANNEX 3.1**

**Fire protective rendering "MP 75 Fire"**

**Design and dimensioning of the equivalent thickness for concrete structures in accordance with EN 13381-3, Annex C**

**1 linear concrete structures (beams, columns)**

Equivalent concrete depth



**2 flat concrete structures with one-dimensional fire impact (walls, ceilings)**

