



## European Technical Approval ETA-05/0213

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung  
*Trade name*

"Hydrolith F200"

Zulassungsinhaber  
*Holder of approval*

Hans G. Hauri KG  
Mineralstoffwerke  
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DEUTSCHLAND

Zulassungsgegenstand  
und Verwendungszweck  
*Generic type and use  
of construction product*

Natürliches getempertes Puzzolan  
als Betonzusatzstoff Typ II  
*Natural calcined pozzolana  
as type II addition*

Geltungsdauer:  
*Validity:* vom  
*from*  
bis  
*to*

13 May 2013  
13 May 2018

Herstellwerk  
*Manufacturing plant*

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Diese Zulassung umfasst  
*This Approval contains*

7 Seiten  
7 pages

Diese Zulassung ersetzt  
*This Approval replaces*

ETA-05/0213 mit Geltungsdauer vom 16.11.2010 bis 16.11.2015  
*ETA-05/0213 with validity from 16.11.2010 to 16.11.2015*

## I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:
  - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products<sup>1</sup>, modified by Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council<sup>3</sup>;
  - *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998<sup>4</sup>, as amended by Article 2 of the law of 8 November 2011<sup>5</sup>;*
  - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC<sup>6</sup>.
- 2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.
- 3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.
- 4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.
- 5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.
- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

<sup>1</sup> Official Journal of the European Communities L 40, 11 February 1989, p. 12  
<sup>2</sup> Official Journal of the European Communities L 220, 30 August 1993, p. 1  
<sup>3</sup> Official Journal of the European Union L 284, 31 October 2003, p. 25  
<sup>4</sup> *Bundesgesetzblatt Teil I 1998*, p. 812  
<sup>5</sup> *Bundesgesetzblatt Teil I 2011*, p. 2178  
<sup>6</sup> Official Journal of the European Communities L 17, 20 January 1994, p. 34

## II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

### 1 Definition of product and intended use

#### 1.1 Definition of the construction product

The concrete addition "Hydrolith F200" is a natural calcined pozzolana of volcanic origin. The initial material - a tertiary volcanic rock - is Phonolith from Fohberg nearby Bötzingen/Kaiserstuhl, Germany. In the production plant of Hans G. Hauri KG, Mineralstoffwerk in Bötzingen, it is pre-processed and after thermal treatment (450 °C) finely divided by grinding.

It consists essentially of SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>, the content of reactive SiO<sub>2</sub> as defined and described in EN 197-1<sup>7</sup> being at least 25 % by mass. The pozzolana consists mainly of minerals zeolite, alkali-feldspar, aegirine augite and wollastonite.

#### 1.2 Intended use

"Hydrolith F200" is a type II addition (pozzolanic) for production of concrete, including in particular cast-in-situ or prefabricated structural concrete conforming to European standard EN 206-1<sup>8</sup>.

"Hydrolith F200" according to this ETA may also be used in mortars and grouts.

The provisions made in this European Technical Approval are based on an assumed working life of concrete incorporating "Hydrolith F200" of 50 years, provided that the conditions laid down in sections 4.2 and 5 for the application, packaging, transport and storage are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

### 2 Characteristics of product and methods of verification

#### 2.1 Loss on ignition

The loss on ignition shall be determined in accordance with the principles of the method described in EN 196-2<sup>9</sup> but using an ignition time of 1 h and shall not be greater than 6,0 % by mass.

The loss on ignition may be greater than 6,0 % by mass, if the difference between loss on ignition and carbon dioxide (CO<sub>2</sub>) content is not greater than 4,0 % by mass. In this case the carbon dioxide content shall be determined in accordance with EN 196-2<sup>9</sup>.

#### 2.2 Chloride

The content of chloride, expressed as Cl<sup>-</sup>, shall be determined in accordance with EN 196-2<sup>9</sup> and shall not be greater than 0,10 % by mass.

#### 2.3 Sulfate

The sulfate content, as determined by the method described in EN 196-2<sup>9</sup> and expressed as SO<sub>3</sub>, shall not be greater than 1,0 % by mass.

<sup>7</sup> EN 197-1 Cement - Part 1: Composition, specification and conformity criteria for common cements  
<sup>8</sup> EN 206-1 Concrete - Part 1: Specification, production, performance and conformity  
<sup>9</sup> EN 196-2 Methods of testing cement - Chemical analysis of cement

#### 2.4 Total content of alkalis

The total content of alkalis shall be determined in accordance with EN 196-2<sup>9</sup> and calculated as Na<sub>2</sub>O (equivalent) and shall not exceed 12,0 % by mass.

#### 2.5 Content of soluble alkalis

The content of soluble alkalis shall be determined in accordance with EN 196-2<sup>9</sup> with the exception that the chemical pulping is done in accordance with EN 1744-1<sup>10</sup>, 7. The content of soluble alkalis is calculated as Na<sub>2</sub>O (equivalent) and shall not exceed 0,2 % by mass.

#### 2.6 Fineness

The fineness of the addition shall be expressed as the mass proportion in percent of the addition retained when sieved on a 0,045 mm mesh sieve and determined in accordance with EN 450-1<sup>11</sup>, section 5.3.1.

The fineness of the addition shall be declared. The declared value shall not exceed 25 % by mass. The fineness shall not vary by more than ± 10 percentage points from the declared value.

#### 2.7 Specific surface

The specific surface shall be determined in accordance with the air permeability method specified in EN 196-6<sup>12</sup>.

The specific surface of the addition shall be declared. The declared value shall be at least 500 m<sup>2</sup>/kg. The specific surface shall not vary by more than ± 50 m<sup>2</sup>/kg from the declared value.

#### 2.8 Activity index

The activity index is the ratio (in percent) of the compressive strength of standard mortar bars, prepared with 75 % test cement plus 25 % addition by mass, to the compressive strength of standard mortar bars prepared with 100 % test cement, when tested at the same age.

Preparation of mortar, preparation and curing of the mortar prisms and determination of the compressive strength shall be carried out in accordance with EN 196-1<sup>13</sup>.

NOTE: For test cement see EN 450-1<sup>11</sup>, section 3.3.

The activity index at 7 days and at 28 days shall not be less than 80 % and 90 %, respectively.

#### 2.9 Initial setting time

The initial setting time shall be determined on a 25 % addition plus 75 % test cement by mass cement paste in accordance with EN 196-3<sup>14</sup> and shall not be more than 120 minutes longer than the initial setting time of a 100 % by mass test cement paste. The requirements regarding initial setting time specified in EN 197-1<sup>7</sup> shall be met by the test cement when tested alone.

NOTE: For test cement see EN 450-1<sup>11</sup>, section 3.3.

#### 2.10 Soundness

The expansion shall be determined through the expansion on 30 % addition plus 70 % test cement by mass in accordance with EN 196-3<sup>14</sup> and shall not be greater than 10 mm.

NOTE: For test cement see EN 450-1<sup>11</sup>, section 3.3.

10	EN 1744-1	Tests for chemical properties of aggregates - Part 1 Chemical analysis
11	EN 450-1	Fly ash for concrete - Part 1: Definition, specifications and conformity criteria
12	EN 196-6	Methods of testing cement - Determination of fineness
13	EN 196-1	Methods of testing cement - Determination of strength
14	EN 196-3	Methods of testing cement - Determination of setting time and soundness

## 2.11 Pozzolanic reactivity

The content of reactive silicon dioxide, SiO<sub>2</sub>, defined and described in 3.2 of EN 197-1<sup>7</sup> shall be determined by the method described in EN 196-2<sup>9</sup> and shall not be less than 25,0 % by mass.

NOTE: In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

## 3 Evaluation and attestation of conformity and CE marking

### 3.1 System of attestation of conformity

According to the communication of the European Commission<sup>15</sup> the system 1+ of attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 1+: Certification of the conformity of the product by an approved certification body on the basis of:

(a) Tasks for the manufacturer:

- (1) factory production control;
- (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

(b) Tasks for the approved body:

- (3) initial type-testing of the product;
- (4) initial inspection of factory and of factory production control;
- (5) continuous surveillance, assessment and approval of factory production control;
- (6) audit-testing of samples taken at the factory.

Note: Approved bodies are also referred to as "notified bodies".

### 3.2 Responsibilities

#### 3.2.1 Tasks for the manufacturer

##### 3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. 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 performed. This production control system shall insure that the product is in conformity with this European Technical Approval.

The manufacturer may only use initial materials stated in the technical documentation of this European Technical Approval.

The factory production control shall be in accordance with the Control Plan of 16 November 2010 relating to the European Technical Approval ETA-05/0213 issued on 16 November 2010 which is part of the technical documentation of this European Technical Approval.

<sup>15</sup> Letter of the European Commission of 04.02.2005 to EOTA

The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at Deutsches Institut für Bautechnik.<sup>16</sup>

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

#### 3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to section 3.1 in the field of natural calcined puzzolana as type II addition in order to undertake the actions laid down in section 3.3. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European Technical Approval ETA-05/0213 issued on 16 November 2010.

#### 3.2.2 Tasks for the approved bodies

The approved body shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control,
- audit-testing of samples taken at the factory

in accordance with the provisions laid down in the Control Plan of 16 November 2010 relating to the European Technical Approval ETA -05/0213 issued on 16 November 2010.

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.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European Technical Approval.

In cases where the provisions of the European Technical Approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

#### 3.3 CE marking

The CE marking shall be affixed on the packages and the accompanying commercial documents respectively. The letters "CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacturer),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product,
- the number of the European Technical Approval,
- declared value for fineness,
- declared value for specific surface.

<sup>16</sup>

The "control plan" is a confidential part of the European technical approval and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

#### **4 Assumptions under which the fitness of the product for the intended use was favourably assessed**

##### **4.1 Manufacturing**

The concrete addition "Hydrolith F200" is manufactured according to a specific procedure from initial material of a defined volcanic origin by grinding and thermal treatment.

The European Technical Approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data and information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

##### **4.2 Application**

"Hydrolith F200" is a type II addition (pozzolanic) for production of concrete, including in particular cast-in-situ or prefabricated structural concrete conforming to European standard EN 206-1<sup>8</sup>.

"Hydrolith F200" according to this ETA may also be used in mortars and grouts.

"Hydrolith F200" can be used in concrete with all types of cement acc. to EN 197-1<sup>7</sup>.

The recommended maximum replacement of cement by "Hydrolith F200" is 25 % by mass.

"Hydrolith F200" can be used too with verified k-value concept in concrete made of Portland cement CEM I, Portland limestone cement CEM II/A-LL and Portland composite cement CEM II/B-M (T-LL) according to EN 197-1<sup>7</sup>. Therefore the types of cements, for which the suitability of the k-value concept is verified, are only CEM I, CEM II/A-LL and CEM II/B-M (T-LL) acc. to EN 197-1<sup>7</sup>. The k-value concept can be used for all exposure classes acc. to EN 206-1<sup>8</sup> except XF2 and XF4. The maximum content of addition to be taken into account is 33 % by mass of the cement content. The determined k-value is  $\geq 0,6$  for a concrete age  $\geq 28$  days.

The slightly slower setting rate at the beginning could require longer formwork periods, especially during cold seasons. For the same reason, the concrete shall be protected against drying-out and carefully curing is necessary, if exposed to unfavourable climatic conditions.

#### **5 Indications to the manufacturer - Packaging, transport and storage**

In the production plant the addition shall be stored in silos.

"Hydrolith F200" should be conveyed, stored and transported in the same way as fly ash.

The manufacturer shall ensure that the requirements given in sections 1, 2 and 4 are made known to those involved. This can be implemented by, for example, handing over copies of the appropriate sections of the European Technical Approval.

Uwe Bender  
Head of Department

*beglaubigt:*  
Gözcü