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European Technical Assessment

ETA-07/0019
of 04/08/2017

GENERAL PART

Technical Assessment Body issuing the European Technical Assessment:	Centre Scientifique et Technique du Bâtiment (CSTB)
Trade name of the construction product:	**CIMENT NATUREL PROMPT** **1842 PROMPT FIX-ZEMENT** **LE PROMPT** **LE PROMPT VICAT** **CIMENT PROMPT SUPERIEUR VOREPPE** **CIMENT PROMPT PORTE DE FRANCE** **QUICK NATURAL CEMENT PROMPT** **CIMENT NATUREL PROMPT - L'UNIQUE**
Product family to which the construction product belongs:	Rapid setting cement
Manufacturer:	VICAT Tour Manhattan 6 place de l'Iris F-92095 PARIS LA DEFENSE CEDEX France
Manufacturing plant(s):	Société VICAT - Usine de Saint Egrève 1 rue du Lac – CS 20207 F-38522 SAINT EGREVE FRANCE
This European Technical Assessment contains:	7 pages including 0 Annex(es) 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:	European Assessment Document 15-0008-00-0301, edition May 2017

SPECIFIC PART

1. Technical description of the product

The rapid setting cement “CIMENT NATUREL PROMPT” is a hydraulic binder which, when mixed with water, forms a paste which rapid sets and hardens by means of hydration reactions, its particular features are:

- raw materials are extracted from a single specific homogeneous geological seam,
- raw meal is burned in a kiln at T < 1300°C in order to obtain low quantities of aluminates and calcium silicates (specially C2S) ,
- the content of C2S is approximately 30%,
- it is a pure clinker without addition,
- initial setting time is lower than 4 minutes.

“CIMENT NATUREL PROMPT” complies with the specifications of the standard EN 197-1 except the following points presented below.

Table 1: Comparison between cement characteristics and specifications of hEN 197-1

Cement properties	Specifications EN 197-1
Raw material is extracted from a single geological seam	Clinker is a mixture of raw materials (EN 197-1, 5.2.1)
Calcium silicates content of the clinker can be ≤ 2/3	Calcium silicates content > 2/3 (EN 197-1, 5.2.1)
Setting time < 45 min	Setting time ≥ 45 min (EN 197-1. 7.1.2)
Soundness (expansion) can be > 10 mm	Soundness ≤ 10 mm
Loss on ignition can be > 5.0 %	Loss on ignition ≤ 5.0 %
Insoluble residue can be > 5.0 %	Insoluble residue ≤ 5.0% (hEN197-1 § 7.3)
Statistic assessment procedure for early strength and standard strength is inspected by attributes	Statistic assessment procedure for early strength and standard strength is inspected by variables (hEN197-1 table 6)

The chemical composition of this cement is very close to the one of Portland cement and it has high βC2S content, favorable to the durability. Moreover, this cement has been produced and used for 150 years so its durability performance has been shown in practice.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer’s instructions or (in absence of such instructions) according to the usual practice of the building professionals. Relevant manufacturer’s stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

2. Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

This cement is intended to be used to produce concretes, mortars, grouts and other mixes for construction and for the manufacture of construction products with aggregates/cement and water/cement ratios lower than usually practiced with standardised common cements.

It is more particularly employed for the following applications:

- industries using hydraulic binders,
- the manufacture of ready-mixed mortar and concrete intended for the following:
  - quick jobs,
  - sprayed concrete,
  - hemp concrete and bio-based materials of construction products,
  - mortar and concrete for repair jobs, etc.

3. Performances of the product and references to the methods used for their assessment

Performances of this rapid setting cement related to the basic requirements for construction works (hereinafter BWR), were determined according to EAD 150008-00-0301.

These performances, given in the following paragraphs, are valid as long as the components are the ones described in § 1 of this ETA.

3.1 Mechanical resistance and stability (BWR 1)

3.1.1 Standard strength

Essential characteristic	Clause of EAD 150008-00-0301	Performance
Standard strength	2.2.1	**≥ 20 MPa**

The standard strength of “CIMENT NATUREL PROMPT” was determined in accordance with EN 196-1[1] at 28 days except the following points (described in EAD 150008-00-0301 annex A1.1):

Mortar composition is:

sand : 1350 g

cement : 1350 g

water : 510 g

Water/cement ratio is then equal to 0.38 instead of 0.5 in EN 196-1.

Sand/cement is equal to 1 instead of 3 in EN 196-1.

After pouring in the water, paste is immediately mixed at a speed of 140 rpm for 10 seconds, then at 285 rpm for 15 seconds.

As soon as mixing is complete, empty the whole mortar into the mould which is already set on the jolting apparatus.

Distribute the mortar in the three compartments in one layer. Apply 30 strokes with the jolting apparatus.

Quickly cut off the mortar to a plane surface before the mortar is too hard.

Standard strength of “CIMENT NATUREL PROMPT” is ≥ 20 MPa. The lower limit for single result is 18 MPa.

The statistical assessment procedure is carried out according to EN 197-1, clause 9.2., with inspection by attributes.

3.1.2 Early strength at 15 minutes

Essential characteristic	Clause of EAD 150008-00-0301	Performance
Early strength at 15 minutes	2.2.2	**≥ 3,0 MPa**

The early strength at 15 minutes of "CIMENT NATUREL PROMPT" was determined in accordance with EN 196-1[1] except the following points (described in EAD 150008-00-0301 annex A1.1):

Mortar composition is:

sand : 1350 g

cement : 1350 g

water : 510 g

Water/cement ratio is then equal to 0.38 instead of 0.5 in EN 196-1.

Sand/cement is equal to 1 instead of 3 in EN 196-1.

After pouring in the water, paste is immediately mixed at a speed of 140 rpm for 10 seconds, then at 285 rpm for 15 seconds.

As soon as mixing is complete, empty the whole mortar into the mould which is already set on the jolting apparatus.

Distribute the mortar in the three compartments in one layer. Apply 30 strokes with the jolting apparatus.

Quickly cut off the mortar to a plane surface before the mortar is too hard.

Compression tests are carried out after 15 min ± 1 min for the first breaking of sample.

The early strength of "CIMENT NATUREL PROMPT" is ≥ 3.0 MPa. The lower limit for single result is 3.0 MPa.

The statistical assessment procedure is carried out according to EN 197-1, clause 9.2., with inspection by attributes.

3.1.3 Initial setting time

Essential characteristic	Clause of EAD 150008-00-0301	Performance
Initial setting time	2.2.3	**≤ 4 min**

The initial setting time of "CIMENT NATUREL PROMPT" was determined in accordance with EN 196-3[2] except the following points (described in EAD 150008-00-0301 annex A1.2):

Pure paste composition is:

cement : 500 gr

water : 175 gr

water/cement ratio is then equal to 0.35.

After pouring in the water, paste is immediately mixed at a speed of 140 rpm for 10 seconds, then at 285 rpm for 15 seconds.

The initial setting time and the limit value for single results of "CIMENT NATUREL PROMPT" is ≤ 4 min.

The statistical assessment procedure is carried out according to EN 197-1, clause 9.2., with inspection by attributes.

[1] EN 196-1 Methods of testing cement - Part 1: Determination of strength

[2] EN 196-3 Methods of testing cement - Part 3: Determination of setting time and soundness

3.1.4 Shrinkage

Method 1: Mortar method – Shr_M

Performance not assessed

Method 2: Concrete method – Shr_C

Performance not assessed

3.1.5 Soundness (expansion)

Essential characteristic	Clause of EAD 150008-00-0301	Performance
Soundness (expansion)	2.2.5	**≤ 15 mm**

The soundness of "CIMENT NATUREL PROMPT" was determined in accordance with EN 196-3[2] except the following points (described in EAD 150008-00-0301 annex A1.5):

Pure paste composition is:

cement : 500 gr

water : 175 gr

water/cement ratio is then equal to 0.35.

After pouring in the water, paste is immediately mixed at a speed of 140 rpm for 10 seconds, then at 285 rpm for 15 seconds.

Samples are immersed in hot water at the age of 1 h ± 10 min instead of 24 hours.

Water temperature is 80°C instead of 100°C.

The soundness of "CIMENT NATUREL PROMPT" is not greater than 15 mm (limit value for single results: 20 mm).

The statistical assessment procedure is carried out according to EN 197-1, clause 9.2., with inspection by attributes.

3.1.6 Loss on ignition

Essential characteristic	Clause of EAD 150008-00-0301	Performance
Loss on ignition	2.2.6	**≤ 14,0 % by mass**

The loss on ignition of "CIMENT NATUREL PROMPT" was determined in accordance with EN 196-2[3] and shall be ≤ 14,0% by mass (limit value for single results: 14,0 % by mass).

The statistical assessment procedure is carried out according to EN 197-1, clause 9.2., with inspection by attributes.

3.1.7 Sulphate content

Essential characteristic	Clause of EAD 150008-00-0301	Performance
Sulphate content	2.2.7	**≤ 4,0 % by mass**

The sulphate content, expressed as SO_3, of "CIMENT NATUREL PROMPT" was determined in accordance with EN 196-2[3] and is ≤ 4,0% by mass (limit value for single results: 4,5 % by mass).

The statistical assessment procedure is carried out according to EN 197-1, clause 9.2., with inspection by attributes.

[3] EN 196-2 Methods of testing cement - Part 2: Chemical analysis of cement

3.1.8 Chloride content

Essential characteristic	Clause of EAD 150008-00-0301	Performance
Chloride content	2.2.8	**≤ 0,10% by mass**

The chloride content of "CIMENT NATUREL PROMPT" was determined in accordance with EN 196-2[3] and is not greater than 0,10 % by mass.

The statistical assessment procedure is carried out according to EN 197-1, clause 9.2., with inspection by attributes.

3.1.9 Calcium silicate content and Al_2O_3/Fe_2O_3 ratio

Performance not assessed

3.1.10 Clinker phases content

Performance not assessed

3.1.11 Insoluble residue

Performance not assessed

3.1.12 Fineness (Blaine)

Performance not assessed

3.1.13 Effect of high temperature on mortar at early age (3 h)

Performance not assessed

3.1.14 Resistance to chloride penetration

Method 1: Chloride migration coefficient - D_{mig}

Performance not assessed

Method 2: Chloride diffusion coefficient - D_{diff}

Performance not assessed

3.1.15 Carbonation of concrete

Method 1: Carbonation resistance – C_{dcr}

Performance not assessed

Method 2: Relative carbonation resistance – C_{rcr}

Performance not assessed

3.1.16 Freeze-thaw resistance without de-icing agent

Method 1: Freeze-thaw resistance: Cube-procedure – FT_{cube}

Performance not assessed

Method 2: Freeze-thaw resistance: CF-procedure – FT_{CF}

Performance not assessed

Method 3: Freeze-thaw resistance: Beam-procedure – FT_{beam}

Performance not assessed

3.1.17 Freeze-thaw resistance and de-icing agent

Method 1: Freeze-thaw and de-icing resistance: CDF-procedure – FTS_{CDF}

Performance not assessed

Method 2: Freeze-thaw and de-icing resistance: Slab-procedure – FTS_{slab}

Performance not assessed

3.2 Safety in case of fire (BWR 2)

Performance not assessed

3.3 Hygiene, health and the environment (BWR 3)

Performance not assessed

3.4 Safety and accessibility in use (BWR 4)

Performance not assessed

3.5 Protection against noise (BWR 5)

Performance not assessed

3.6 Energy economy and heat retention (BWR 6)

Performance not assessed

3.7 Sustainable use of natural resources (BWR 7)

Performance not assessed

3.8 Aspects of durability and serviceability

Performance not assessed

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

According to Decision 1997/555/EC[4] as amended by 2010/683/EC[5] of the European Commission, the systems of AVCP given in the following table apply:

Product(s)	Intended use(s)	Level(s) or classes	System
Cement, Building limes and other Hydraulic Binders	concrete, mortar, grouts and other mixes	Any	1+

The systems of AVCP are described in Annex V of Regulation (EU) No 305/2011.

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

The factory production control shall be performed in accordance with the provisions of clauses 3.2 and 3.3 of EAD 150008-00-0301 Rapid setting cement.

Issued in Marne-la-Vallée on 4 august 2017 by

Charles BALOCHE, Technical Manager of the CSTB

[4] Official Journal of the European Communities L 229/9 of 20/08/1997

[5] Official Journal of the European Communities L 293/60 of 11/11/2010