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European Technical Assessment

**ETA 11/0019
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English translation prepared by IETcc. Original version in Spanish language

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) Nº305/2011:

Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

Trade name of the construction product

RAPIDVAL

Product family to which the construction product belongs

Rapid Setting Cement

Manufacturer

Cementos Portland Valderrivas, S.A.
C/ Dormitalería nº 72. 31001 Pamplona. Spain

Manufacturing plant(s)

Barrio de la Estación s/n. Olazagutía, Navarra 31809. Spain.

This European Technical Assessment contains

5 pages.
Annex 1. Contain confidential information and is not included in the ETA when that assessment is publicly available.

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

European Assessment Document (EAD)
Nº 16-15-0008-03.01 for "Rapid Setting Cement".

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

The rapid setting cement RAPIDVAL is special cement that is not covered by a European standard (EN).

The rapid setting cement is a hydraulic binder with quick set and strength rise features. The particular features are the following:

- The main raw material is extracted from a single specific homogeneous geological seam,
- it is burned in a kiln at $T < 1,300^{\circ}\text{C}$ in order to obtain low quantities of very reactive aluminates (but not calcium mono-aluminates) and C_2S content $> 45\%$,
- initial setting time is between 1 and 4 minutes.

The minerals of the clinker will be declared in the "Control Plan" associated to the ETA. The cement has a very short setting time, so sometimes can be necessary to use citric acid as retarder.

This cement complies with the specifications of EN 197-1 standard except the following

RAPIDVAL 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 between 50% by mass and 2/3 by mass	Calcium silicates content $> 2/3$ (EN 197-1, 5.2.1)
Setting time between 1 and 4 min	Setting time ≥ 45 min (UNE-EN 197-1. 7.1.2)
Soundness (expansion) < 15 mm	Soundness < 10 mm
Loss of ignition $\leq 14\%$	Loss of ignition $\leq 5\%$

The chemical composition of this cement is very close to the one of Portland cement and it has high C_2S content, favourable to the durability.

2 Specification of the intended use in accordance with the applicable EAD

RAPIDVAL 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. The ratios commonly used are the following:

Mortar Aggregates / cement	Concrete Aggregates / cement	Water / cement
0,2%	Maximun value < 4	Maximun value $< 0,5$
Standar value 2	Standar value 2,5-4	Standar value 0,4

Because of the rapid setting time, batch volumes are generally lower than 100 litres.

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 and urgent repairs, Mansory works and Restoration of works and heritage.

The provisions made in this European Technical Approval are based on an assumed working life of concrete, mortar and grout similar to the one of concrete, mortar and grout incorporating common cement provided that the conditions laid down in "Installation".

The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are only to be regarded as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

"Assumed intended working life" means that, when an assessment following the ETAG provisions is made, and when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the Essential Requirements.

Installation. The fitness of use of this kit can only be assumed if this is installed according to the manufacturer's instructions, which are part of the MTD to this ETA placed at IETcc.

Concretes, mortars, grouts and other mixes composition and the constituent materials for described mixes shall be chosen to satisfy the requirements specified for fresh and hardened mixes, including consistence, density, strength, durability, protection of embedded steel against corrosion, taking into account the production process and the intended method of execution of works, following the appropriate standards and/or regulations for concrete and mortar valid in the place of use. Particularly, it is recommended to consider:

- The amount of retardant used at this evaluation was 0,4%, but it is possible to use different percentages according to the desired setting time. When this percentage is modified, it is necessary to consult or to follow the manufacturer indications.

- The retardant is incorporated to the cement in the mixture procedure.
- It must be mixed like a normal Portland cement, taking account the rapid time setting.
- It is recommended to performed mixtures in little amounts.
- Once the setting has started, more water cannot be added to the mixture.
- High temperatures accelerate the setting time.

The precautions to be taken in using this cement are like those pertinent to traditional cements: avoid prolonged contact with the skin, avoid excess amounts of water, work on a clean, moist support and use clean aggregates.

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

The identification tests and the assessment for the intended use of this product according to the Essential Requirements were carried out in compliance with the European Assessment Document N° 16-15-0008-03.01 for "Rapid Setting Cement"..

3.1 RAPIDVAL Characteristics

ER. 1 Mechanical resistance and stability

Early strength (EN 196-1, modified, A1.2 EAD 16-15-0008-03.01 sand: 1350±5 g, cement: 675±2 g and water: 270±1 g, w/c=0,4) at 15 minutes: 3 MPa. The declared limit value results is ≥ 1 MPa.

Standard strength (EN 196-1, mod. A1. EAD 16-15-0008-03.01 sand: 1350±5 g, cement: 675±2 g and water: 270±1 g, w/c=0,4) at 28 days: 38 MPa. The declared limit value results is ≥ 25 MPa.

Initial setting time (EN 196-3, mod, A1.3 EAD 16-15-0008-03.01): 1 minutes (0,4% citric acid). The declared value result is between 1-4 minutes.

Shrinkage (UNE 80115) **at 28 days**: 0,2% (Shr_M). The declared limit value results at 28d is $\leq 0,5\%$

Soundness (EN 196-3, mod A1.4 EAD 16-15-0008-03.01): 1 mm. The declared limit value result is < 15 mm.

Loss of ignition (EN 196-2): 9%. The declared limit value result is $\leq 14\%$.

Sulphate content (EN 196-2). 2,9 %. The declared limit value result is $\leq 4\%$

Chloride content (EN 196-2). 0,03 %. The declared limit value result is $\leq 0,1\%$

Calcium Silicates content (EN 197-1): 50%. The declared value result is between 50-60%.

Insoluble residue (EN 196-2). 5%. The declared limit value result $\leq 6\%$.

Fineness (Blaine) (EN 196-6). 5500 cm²/g. The declared limit value result ≥ 5000 cm²/g.

ER. 3 Hygiene, health and environment

Water-soluble hexavalent chromium (EN 162-2): < 2 ppm. The declared limit value result is < 2 ppm.

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

System of attestation of conformity. According to the decision 97/555/EC as amended by 2010/683/EC of the European Commission, the system of assessment and verification of constancy of performance given is:

Product	Intended uses	Level /Classes	System
RAPIDVAL	RAPID SETTING CEMENT	Any	1+

This system of attestation of conformity +1 is defined as follows:

Tasks for the manufacturer: factory production control, and further testing of samples taken at the factory by the manufacturer in accordance with the "Control Plan".

Tasks for the notified body: initial type-testing of the product, initial inspection of factory and of factory production control and two annual surveillances, assessment and approval of factory production control of the manufacturer.

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

The ETA is issued for this kit on the basis of agreed data/information, deposited at IETcc, which identifies the product that has been assessed and judged. It is the manufacturer's responsibility to make sure that all those who use the kit are appropriately informed of specific conditions according to sections 1, 2, 4 and 5 including the annexes of this ETA. Changes to the product or its production process, should be notified to the IETcc before the changes are introduced. IETcc will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

5.1 Tasks of the manufacturer

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 ensure that the product is in conformity with this ETA.

The manufacturer shall only use incoming materials supplied with the relevant inspection documents according to the MTD. In the next table are enclosed the controls and the minimum frequency performed by the manufacturer included in his Control plan.

Nº	Subject/type of control	Test or control method	Criteria, if any	Minimum nº samples	Minimum frequency
Factory production control (FPC)					
1	Standard strength	Annex A1.2 EAD	Level	1	2/week ¹ // 4/week ² // batch ³
2	Early strength	Annex A1.2 EAD	Level	1	2/week ¹ // 4/week ² // batch ³
3	Initial setting time	Annex A1.3 EAD	Level	1	2/week ¹ // 4/week ² // batch ³
4	Soundness (expansion)	Annex A1.4 EAD	Level	1	2/week ¹ // 4/week ² // batch ³
5	loss on ignition	EN 196-2	Level	1	2/week ¹ // 4/week ² // batch ³
6	Sulphate content	EN 196-2	≤ 4%	1	2/week ¹ // 4/week ² // batch ³
7	Chloride content	EN 196-2	≤ 0,1%	1	2/week ¹ // 4/week ² // batch ³
8	Chemical Composition**	A 2.2.10 EAD	Level	1	1 week ² / month ¹
<small>¹ routine situation; ² initial period, ³discontinuous expedition</small>					

Other tasks of manufacturer. The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 4 in order to undertake the actions laid down in this clause. For this purpose, the control plan shall be handed over by the manufacturer to the notified bodies involved.

The manufacturer shall make a declaration of conformity, stating that this product is in conformity with the provisions of this ETA.

5.2 Tasks of notified bodies. The notified body shall perform:

Initial inspection of factory and of factory production control. The Notified Body shall ascertain that, in accordance with the Control Plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in clause 2 of this ETA.

Continuous surveillance, assessment and approval of Factory Production Control. The Notified body shall visit the factory at least once a year. Surveillance of the manufacturing process shall include:

- Inspection of the documentation of factory production control, to ensure continuing compliance with the provisions of the ETA,
- Identification of changes by comparing data obtained during the initial inspection or during the last visit.

In cases where the provisions of the European Technical Approval and its "Control Plan" are no longer fulfilled the certification body (IETcc) shall withdraw the certificate of conformity.



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by

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