BS EN 13282-2:2015

BSI Standards Publication

Hydraulic road binders

Part 2: Normal hardening hydraulic road binders — Composition, specifications and conformity criteria

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National foreword

This British Standard is the UK implementation of EN 13282-2:2015. Together with BS EN 13282-1:2013, it supersedes DD ENV 13282:2000 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/516/14, Special hydraulic road binders.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Liants hydrauliques routiers - Liants hydrauliques routiers à durcissement normal - Partie 2: Composition, spécifications et critères de conformité

Hydraulische Tragschichtbinder - Teil 2: Normal erhärtende hydraulische Tragschichtbinder - Zusammensetzung, Anforderungen und Konformitätskriterien

This European Standard was approved by CEN on 8 February 2015.

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Foreword

This European Standard (EN 13282-2:2015) has been prepared by Technical Committee CEN/TC 51 "Cement and building limes", the secretariat of which is held by NBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document and EN 13282-1:2013 supersedes ENV 13282:2000.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

For relationship with Regulation (EU) No. 305/2011, see the informative Annex ZA which is an integral part of this standard.

The European Standard EN 13282 for *Hydraulic road binders* consists of the following parts:

— *Part 1: Rapid hardening hydraulic road binders – Composition, specifications and conformity criteria*;

— *Part 2: Normal hardening hydraulic road binders – Composition, specifications and conformity criteria*;

— *Part 3: Conformity evaluation*.

The Scopes of EN 13282-1 and EN 13282-2 that supersede ENV 13282:2000 are covering more families of products. They refer to the classification of building limes given in EN 459-1:2010.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Depending on the local experience and availability of products and materials, different binders are used for roadbases and sub-bases, capping layers, soil treatment (stabilization and improvement) in Europe. These include cements conforming to EN 197-1, building limes conforming to EN 459-1 and hydraulic road binders presently defined in existing national standards or national technical approvals.

Hydraulic road binders are finished products, produced in a factory and supplied ready for use. They are differentiated according to their strength development into normal hardening hydraulic road binders, specified in this part of European Standard and rapid hardening hydraulic road binders, specified in EN 13282-1. EN 13282-3 defines the conformity evaluation procedure for hydraulic road binders according to this standard.

Binders obtained through mixing of their constituents on site are not covered by this European Standard.

Cements, masonry cements and building limes are also outside the scope of this European Standard, as they are defined in specific European Standards.

1 Scope

-This European Standard defines and gives the specifications for normal hardening hydraulic road binders, produced in a factory and supplied ready for treatment of materials for bases, sub-bases and capping layers as well as earthworks, in road, railway, airport and other types of infrastructures.

It includes the mechanical, physical and chemical requirements and the classification of these binders based on their compressive strength at 56 days. It also includes the conformity criteria and evaluation procedures to be applied by the manufacturer.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 196-1, *Methods of testing cement — Part 1: Determination of strength*

EN 196-2, *Method of testing cement — Part 2: Chemical analysis of cement*

EN 196-3, *Methods of testing cement — Part 3: Determination of setting times and soundness*

EN 196-6, *Methods of testing cement — Part 6: Determination of fineness*

EN 196-7, *Methods of testing cement — Part 7: Methods of taking and preparing samples of cement*

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 451-1, *Method of testing fly ash — Part 1: Determination of free calcium oxide content*

EN 459-1, *Building lime — Part 1: Definitions, specifications and conformity criteria*

EN 459-2, *Building lime — Part 2: Test methods*

EN 13282-3, *Hydraulic road binders — Part 3: Conformity evaluation*

ISO 10694, *Soil quality — Determination of organic and total carbon after dry combustion (elementary analysis)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 197-1 and the following apply.

3.1
autocontrol testing
continual testing by the manufacturer of normal hardening hydraulic road binder spot samples taken at the point(s) of release from the factory/depot

3.2
control period
period of production and dispatch identified for the evaluation of the autocontrol test results

3.3
characteristic value
value of a required mechanical, physical or chemical property outside of which lies a specified percentage, the percentile P_k, of all the values of the population

3.4
specified characteristic value
characteristic value of a mechanical, physical or chemical property which in the case of an upper limit is not to be exceeded or in the case of a lower limit is, as a minimum, to be reached

3.5
single result limit value
value of a mechanical, physical or chemical property which – for any single test result – in the case of an upper limit is not to be exceeded or in the case of a lower limit is, as a minimum, to be reached

3.6
allowable probability of acceptance *CR*
for a given sampling plan, allowed probability of acceptance of a normal hardening hydraulic road binder with a characteristic value outside the specified characteristic value

3.7
available lime of a normal hardening hydraulic road binder CaOab
quantity of available CaO of a normal hardening hydraulic road binder, expressed in % by mass of the normal hardening hydraulic road binder, determined in accordance with the method for quicklime given in EN 459-2, but filtering the suspension obtained after sugar extraction, before performing titration, through two fine filter papers (mean pore diameter of approximately 2 µm, ash content < 0,01 % by mass) placed in a Buchner funnel

Note 1 to entry: Available CaOab of a normal hardening hydraulic road binder mostly originates from the main constituent calcium lime (CL).

3.8
slaking water content *Ws*
quantity of water needed to slake the normal hardening hydraulic road binder before testing, expressed in % by mass of unslaked binder

4 Hydraulic road binder

4.1 General

A hydraulic binder, when mixed with water, hardens both in the air and under water and remains solid, even under water.

A hydraulic road binder is a factory produced hydraulic binder, supplied ready for use, having properties specifically suitable for treatment of materials for bases, sub-bases and capping layers as well as earthworks, in road, railway, airport and other types of infrastructures.

NOTE 1 Hydraulic road binders are not only used for road construction but this general designation will be used for a better understanding in this document.

A hydraulic road binder consists of a powder made from a blend of different constituents and statistically homogeneous in composition. A high degree of uniformity in all properties shall be obtained through continuous mass production processes.

NOTE 2 Continuous production refers to the process, the definition of the product, its composition and properties but does not imply a 24 h production.

4.2 Normal hardening hydraulic road binder

A normal hardening hydraulic road binder is a hydraulic road binder which conforms to the requirements for strength at 56 days, fineness, initial setting time, soundness, sulfate content and composition as given in Clause 7.

5 Constituents

5.1 Main constituents

The main constituents of a normal hardening hydraulic road binder are those in a proportion exceeding 10 % by mass. They shall be selected from the following list:

a) Constituents defined as main constituents in EN 197-1:

   1) Portland cement clinker (K);

   2) granulated blastfurnace slag (S);

   3) pozzolanic materials: natural pozzolana (P) and natural calcined pozzolana (Q);

   4) siliceous fly ash (V) and calcareous fly ash (W);

   5) burnt shale (T);

   6) limestone (L,LL).

b) other fly ashes:

   1) siliceous fly ash of circulating fluidised bed (Va) resulting from coal combustion which shall conform to the following requirements, in mass fraction percent:

      i) $(SiO_2) + (Al_2O_3) + (Fe_2O_3) \geq 70$ % by mass;

      ii) free CaO ≤ 2 % by mass determined in accordance with EN 451-1;

      iii) reactive silicon dioxide > 20 % by mass;

      iv) $SO_3 \leq 6$ % by mass;

      v) mass fraction passing 315 µm = 100 % by mass.

   2) unslaked calcareous fly ash (Wa) containing at least 15 % by mass reactive calcium oxide (CaO), to be used only as a constituent of normal hardening hydraulic road binders of classes N1 and N2 (see Table 1).

The loss on ignition of fly ash (V, W, Va, Wa), determined in accordance with EN 196-2, but using an ignition time of 1 h, or the content of unburnt carbon, determined in accordance with ISO 10694, shall not exceed 9,0 % by mass.

c) paper sludge ash (WP) coming from incineration of paper sludge in accordance with the following characteristics, in mass fraction percent:

   1) total CaO ≥ 35 % by mass;

2) $(SiO_2) + (Al_2O_3) + (Fe_2O_3) \geq 15$ % by mass;

3) $MgO \leq 5$ % by mass;

4) free $CaO \geq 7$ % by mass determined in accordance with EN 451-1;

5) $SO_3 \leq 2{,}0$ % by mass.

The loss on ignition of paper sludge ash (WP), determined in accordance with EN 196-2, but using an ignition time of 1 h, or the content of unburnt carbon determined in accordance with ISO 10694 shall not exceed 9,0 % by mass.

d) crystallised basic oxygen furnace (BOF) slag (Sb) resulting from the transformation of pig iron into steel through an oxygen treatment process which shall conform to the following requirements, in mass fraction percent:

1) total $CaO \geq 35$ % by mass;

2) $(SiO_2) + (Al_2O_3) + (Fe_2O_3) \geq 35$ % by mass;

3) $MgO \leq 9$ % by mass;

4) free CaO from 7 % to 15 % by mass determined in accordance with EN 451-1;

5) $SO_3 \leq 0{,}5$ % by mass;

6) soundness ≤ 30 mm determined in accordance with EN 196-3 (measured on slag ground to Blaine fineness greater than 2 000 cm^2/g).

e) calcium lime (CL) and natural hydraulic lime (NHL) which conform to EN 459-1. CL limes may be in the form of either quicklime (CL-Q) or hydrated lime (CL-S).

5.2 Minor additional constituents

Minor additional constituents may be added in a proportion not exceeding 10 % by mass in total.

Minor additional constituents are specially selected, inorganic natural mineral materials, inorganic mineral materials derived from the clinker or calcium lime production process, or constituents as specified in 5.1 unless they are included as main constituents which, after appropriate preparation and on account of their particle size distribution, improve the physical properties of the binder (such as workability or water retention). They can be inert or have slightly hydraulic, latent hydraulic or pozzolanic properties. However, no requirements are set for them in this respect.

Minor additional constituents shall be correctly prepared, i.e. selected, homogenized, dried and comminuted depending on their state of production or delivery.

Minor additional constituents shall not impair the properties of the binder.

5.3 Calcium sulfate (Cs)

Calcium sulfate, gypsum, hemihydrate or anhydrite (natural or artificial) or any mixture of them may be added to the other constituents of the normal hardening hydraulic road binder during its manufacture.

5.4 Additives

Additives, for the purpose of this European Standard, are constituents not covered in 5.1 to 5.3 which are added to improve the manufacture or the properties of the normal hardening hydraulic road binder.

The total quantity of additives, on a dry basis, shall not exceed 1 % by mass of the binder.

A total content of additives greater than 1 % by mass is permitted provided that quantity and function of each of them are stated on the packaging and/or on the delivery note.

Additives shall not impair the properties of the normal hardening hydraulic road binder.

6 Classification

Normal hardening hydraulic road binders designation includes the letter N followed by a number representing the strength class.

The strength class of a normal hardening hydraulic road binder shall be determined by the compressive strength at 56 days tested in accordance with EN 196-1.

Four strength classes are defined in Table 1: N 1, N 2, N 3 and N 4 (see 7.2).

NOTE Strength classes are incorporated to control the consistency of the production. They are not related to the mechanical performance of soils or other materials treated with normal hardening hydraulic road binders.

7 Requirements

7.1 General

If the available CaOab of a normal hardening hydraulic road binder which contains quicklime as main constituent is exceeding 10 % by mass, the binder shall be slaked before being tested for compressive strength, initial setting time or soundness.

NOTE 1 CaOab always exceeds 10 % if CL-Q declared content is not less than 23 % (CL 90-Q), 27 % (CL 80-Q) or 30 % (CL 70-Q). In these cases it is not necessary to measure CaOab in order to decide if the binder should be slaked before preparing specimens, the answer being always affirmative. For lesser declared values, it is necessary to determine CaOab in accordance with the method specified in 3.7.

NOTE 2 Values in Note 1 have been obtained combining the minimum CL-Q actual content according to the tolerances defined in 7.5.2 and the minimum single result of available lime content of the quicklime permitted for each class in EN 459-1.

EXAMPLE For a normal hardening hydraulic road binder conforming to this European Standard declared to contain 27 % by mass quicklime (CL 80-Q), the actual proportion of CL 80-Q would be between 17 and 37 % (see 7.5.2). The minimum single result for the available lime content of CL 80 Q permitted by EN 459-1 is 62 %. Consequently, even combining both minimum values, the available lime content CaOab of the binder should be at least

$$17 \times (62/100) = 10{,}5\ \%$$

The slaking procedure used shall be documented.

When the procedure is applied by the manufacturer for assessment and verification of constancy of performance (AVCP) of a normal hardening hydraulic road binder, it should be documented in the factory production control.

Annex A (informative) describes a procedure which is given as guidance. This procedure has been proven to be suitable for normal hardening hydraulic road binders containing up to 25 % by mass of available CaOab, in terms of precision of the compressive strength test method. When the available CaOab of the normal hardening road binders exceeds 25 % by mass, and/or when deviations to this procedure or a different procedure are applied, the suitability of the slaking procedure shall be demonstrated and duly documented. In particular, it shall be shown that the procedure allows to meet the requirements for precision given in EN 196-1. In addition, a detailed description of the slaking procedure shall be documented.

NOTE 3 When a normal hardening hydraulic road binder containing more than 10 % by mass of available CaOab is to be tested by two or more laboratories, it is appropriate that the slaking procedure is agreed in advance.

7.2 Mechanical requirements

The compressive strength of normal hardening hydraulic road binders shall be determined in accordance with EN 196-1, the cement being replaced by the normal hardening hydraulic road binder.

If the available CaOab of a normal hardening hydraulic road binder which contains quicklime as main constituent is exceeding 10 % by mass, the binder shall be slaked before testing (see 7.1).

The prisms shall be produced, stored and tested as specified in EN 196-1, unless otherwise specified below. In case of slaked normal hardening hydraulic road binders, the mortar may present a dry to very dry aspect. Whatever the mortar aspect, the prisms shall be produced as specified in EN 196-1.The prisms shall be removed from the mould between 20 h and 24 h after preparation and then stored, pending the test, at a relative humidity of not less than 90 %.

Should it not be possible to remove the prisms from the mould after 24 h, it is permitted to remove them at a later age, and this age shall be stated in the test report.

When using moist air storage boxes, the prisms shall not be allowed to come into contact with the water poured into the boxes up to a level of about 10 mm. The lid shall close tightly and any felt seals shall be kept damp.

Normal hardening hydraulic road binders shall conform to the requirements given in Table 1.

Table 1 — Mechanical requirements given as characteristic values

Strength class	**Compressive strength in MPa at 56 days**	
N 1[a]	≥ 2,5	≤ 22,5
N 2	≥ 12,5	≤ 32,5
N 3	≥ 22,5	≤ 42,5
N 4	≥ 32,5	≤ 52,5
[a] A loading rate of (400 ± 40) N/s shall be used when testing specimens of strength class N 1.		

7.3 Physical requirements

7.3.1 Fineness

The fineness of a normal hardening hydraulic road binder shall be determined by sieving.

Sieving shall be carried out in accordance with EN 196-6. The sieve residue shall conform to the requirement given in Table 2.

7.3.2 Initial setting time

Initial setting time, determined in accordance with EN 196-3, shall conform to the requirement given in Table 2.

If the available CaOab of a normal hardening hydraulic road binder which contains quicklime as main constituent is exceeding 10 % by mass, the binder shall be slaked before testing (see 7.1).

For the class N 1, in contrast to the procedure described in EN 196-3, specimens shall not be stored in a water bath but under air curing conditions ((20 ± 2) °C / 90 % RH min).

7.3.3 Soundness

Expansion, determined in accordance with EN 196-3, shall conform to the requirement given in Table 2.

If the available CaOab of a normal hardening hydraulic road binder which contains quicklime as main constituent is exceeding 10 % by mass, the binder shall be slaked before testing (see 7.1).

Normal hardening hydraulic road binders containing more than 4,0 % by mass of SO_3 shall, in addition, withstand the cold water test described in EN 459-2. They shall be regarded as unsound if, following storage in water, the two specimens have warping or gaping edge cracks either on their own or in conjunction with crazing.

Table 2 — Physical requirements given as characteristic values

Fineness **residue by mass at 90** µm %	**Initial setting time** min	**Soundness (expansion)** mm
≤ 15	≥ 150	≤ 30

7.4 Chemical requirement – Sulfate content

The sulfate content, expressed as the percentage of SO_3 by mass, and determined in accordance with EN 196-2, shall not exceed 4,0 % by mass as characteristic value.

A sulfate content of up to 9,0 % by mass as characteristic value is permitted for normal hardening hydraulic road binders containing more than 60 % by mass of granulated blastfurnace slag (S), provided that they meet the requirements in 7.3.3.

A sulfate content of up to 11,5 % by mass as characteristic value is permitted for binders containing burnt shale (T) or calcareous fly ash (W or Wa), only when the greater part of the sulfate content comes from the burnt shale or from the calcareous fly ash.

7.5 Composition

7.5.1 Declaration of composition

The constituents of a normal hardening hydraulic road binder, and their average proportion in the finished product, shall be recorded. The main constituents (5.1) shall be declared by the manufacturer (see Clause 8), as well as the presence of calcium sulfate (5.3) if the sulfate (SO_3) content of the normal hardening hydraulic road binder exceeds 4,0 % by mass.

7.5.2 Requirements on composition

The composition of a normal hardening hydraulic road binder shall meet, for all main constituents taken individually, the values documented by the manufacturer and declared (see 7.5.1 and Clause 8) within absolute tolerances given in Table 3.

The proportion of paper sludge ash (WP) as defined in 5.1 c) shall not exceed 40 % by mass.

The proportion of crystallised basic oxygen furnace slag (Sb) as defined in 5.1 d) shall not exceed 40 % by mass.

NOTE Requirements on the proportions of paper sludge ash (WP) and crystallised basic oxygen furnace slag (Sb) result from existing experience at the time of publication of this European Standard.

When SO_3 content exceeds 4,0 % by mass, the letter Cs shall be added in the declaration of composition.

Table 3 — Declared composition and tolerances

Declared proportion of main constituent[a] % by mass	**Absolute tolerance[a]** % by mass
> 20	± 10
>10 and ≤ 20	± 5
[a] Values in percentage by mass related to the total mass of the main and minor additional constituents excluding calcium sulfate and additives.	

EXAMPLE For a declared composition of S 50, K 30, V 15, the actual composition of the normal hardening hydraulic road binder would be within the following limits (related to the total mass of normal hardening hydraulic road binder with the exclusion of calcium sulfate (Cs) and additives):

— S : 40 % to 60 % by mass,

— K : 20 % to 40 % by mass,

— V : 10 % to 20 % by mass.

7.6 Durability requirements

In many applications, particularly in severe environmental conditions, the choice of binder has an influence on the durability of the finished works, e.g. soundness, frost resistance or chemical resistance.

The choice of binder, particularly as regard type and strength class for different applications and exposures, shall follow the appropriate standards and/or regulations valid in the place of use.

7.7 Dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.

In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction web site on EUROPA accessed through: http://ec.europa.eu/enterprise/construction/cpd-ds/.

8 Standard designation

Normal hardening hydraulic road binders shall be identified on accompanying documents, and, where relevant, on the packaging, by:

— the letters HRB;

— the strength class;

— the composition.

The standard designation of normal hardening hydraulic road binder shall include the symbol of each constituent (see 5.1 and 5.3).

Where limes are used as constituents, the part of their standard designation according to EN 459-1 referring to the type shall be used as symbol (CL-Q, CL-S or NHL).

Where quicklime is used as a main constituent, the producer shall declare the class of quicklime. Should water be used for slaking, the required quantity of water Ws shall also be declared (see Examples 2 and 3 and Annex A).

NOTE Particular properties relevant to the intended use are not included in the standard designation; advice may be given on the delivery documents or packaging.

EXAMPLE 1 A normal hardening hydraulic road binder conforming to this European Standard, of strength class N 3 and declared to consist of 55 % by mass granulated blastfurnace slag, 25 % by mass siliceous fly ash and 15 % by mass hydrated calcium lime, is identified by:

Normal hardening hydraulic road binder EN 13282-2
HRB N 3 – S 55, V 25, CL-S 15

EXAMPLE 2 A normal hardening hydraulic road binder conforming to this European Standard, of strength class N 2, declared to consist of 53 % by mass granulated blastfurnace slag, 25 % by mass clinker and 15 % by mass quicklime (CL 90-Q), and requiring an amount of water for slaking (Ws) of 9,5 % by mass, is identified by:

Normal hardening hydraulic road binder EN 13282-2
HRB N 2 – S 53, K 25, CL 90-Q 15
Ws 9,5

EXAMPLE 3 A normal hardening hydraulic road binder conforming to this European Standard, of strength class N 2, declared to consist of 65 % by mass granulated blastfurnace slag, 15 % by mass siliceous fly ash and 15 % by mass quicklime (CL 80-Q), with a SO_3 content exceeding 4,0 % by mass, and requiring an amount of water for slaking (Ws) of 8 % by mass, is identified by:

Normal hardening hydraulic road binder EN 13282-2
HRB N 2 – S 65, V 15, CL 80-Q 15, Cs
Ws 8

9 Conformity criteria

9.1 General requirements

The manufacturing process and its control shall ensure that the composition of a normal hardening hydraulic road binder is kept within the limits specified in this European Standard.

Conformity of normal hardening hydraulic road binders to this European Standard shall be continually evaluated on the basis of testing of spot samples.

The properties, test methods and the minimum testing frequencies for the autocontrol testing by the manufacturer are specified in Table 4.

Concerning testing frequencies for normal hardening hydraulic road binders not being dispatched continuously and other details, see EN 13282-3.

NOTE 1 For certification of constancy performance by an approved notified body, conformity of normal hardening hydraulic road binders with this European Standard is evaluated in accordance with Annex ZA and the relevant cited clauses of EN 13282-3.

NOTE 2 This European Standard does not deal with acceptance inspection at delivery.

Table 4 — Properties, test methods and minimum testing frequencies for the autocontrol testing by the manufacturer, and statistical assessment procedure

Property (reference)		Test method [a] [b]	Number of samples	Statistical assessment by	
				Variables[c]	Attributes[d]
Compressive strength (7.2)		EN 196-1 and see 7.1	1 per week	x	
Initial setting time (7.3.2)		EN 196-3	1 per week		x
Fineness (7.3.1)		EN 196-6	1 per week		x
Soundness (7.3.3)	$SO_3 \leq 4{,}0$ %	EN 196-3	1 per week		x
	$SO_3 > 4{,}0$ %	EN 196-3 EN 459-2			
Sulfate content (7.4)		EN 196-2	1 per week		x
Composition (7.5)		- [e]	1 per month		x

[a] Where allowed in the relevant part of EN 196, other methods than those indicated may be used provided they give results correlated and equivalent to those obtained with the reference method.

[b] The methods used to take and prepare samples shall be in accordance with EN 196-7.

[c] If the data are not normally distributed, then the method of assessment may be decided on a case by case basis.

[d] If the number of samples is at least 2 per week during the control period the assessment may be made by variables.

[e] Appropriate test method chosen by the manufacturer.

9.2 Conformity criteria for mechanical, physical and chemical properties and evaluation procedure

9.2.1 General

Conformity of normal hardening hydraulic road binders to the requirements for mechanical, physical and chemical properties in this European Standard is assumed if the conformity criteria specified in 9.2.2 and 9.2.3 are met. Conformity shall be evaluated on the basis of continual sampling using spot samples taken at the point of release and on the basis of the test results obtained on all autocontrol samples taken during the control period.

9.2.2 Statistical conformity criteria

9.2.2.1 General

Conformity shall be formulated in terms of a statistical criterion based on:

— the specified characteristic values for mechanical, physical and chemical properties as given in 7.2, 7.3, and 7.4 of this European Standard;

— the percentile P_k on which the specified characteristic value is based, as specified in Table 5;

— the allowable probability of acceptance *CR*, as given in Table 5.

Table 5 — Required values P_k and *CR*

	Mechanical requirements		**Physical requirements and SO_3 content**
	56 day strength (lower limit)	**56 day strength (upper limit)**	
Percentile P_k on which the characteristic value is based	5 %	10 %	
Allowable probability of acceptance *CR*	5 %		

NOTE Conformity evaluation by a procedure based on a finite number of test results can only produce an approximate value for the proportion of results outside the specified characteristic value in a population. The larger the sample size (number of test results), the better will be the approximation. The selected probability of acceptance CR controls the degree of approximation by the sampling plan.

Conformity with the requirements of this European Standard shall be verified either by variables or by attributes, as described in 9.2.2.2 and 9.2.2.3 respectively, as specified in Table 4.

The control period shall be 12 months.

9.2.2.2 Inspection by variables

For this inspection the test results are assumed to be normally distributed.

Conformity is verified when Formula (1) and Formula (2), as relevant, are satisfied:

$$\overline{x} - k_A \cdot s \geq L \quad (1)$$

and

$$\overline{x} + k_A \cdot s \leq U \quad (2)$$

Where

$\overline{x}$ is the arithmetic mean of the totality of the autocontrol test results in the control period;

s is the standard deviation of the totality of the autocontrol test results in the control period;

k_A is the acceptability constant;

L is the specified lower limit given in Tables 1 and 2 referred to in 7.2 and 7.3;

U is the specified upper limit given in Tables 1 and 2 referred to in 7.2 and 7.3 and 7.4.

The acceptability constant k_A depends on the percentile P_k on which the characteristic value is based, on the allowable probability of acceptance *CR* and on the number *n* of the test results. Values of k_A are listed in Table 6.

Table 6 — Acceptability constant k_A

Number of test results n	k_A [a]	
	For P_k = 5 %	For P_k = 10 %
	(56 day strength lower limit)	(other properties)
20 to 21	2,40	1,93
22 to 23	2,35	1,89
24 to 25	2,31	1,85
26 to 27	2,27	1,82
28 to 29	2,24	1,80
30 to 34	2,22	1,78
35 to 39	2,17	1,73
40 to 44	2,13	1,70
45 to 49	2,09	1,67
50 to 59	2,07	1,65
60 to 69	2,02	1,61
70 to 79	1,99	1,58
80 to 89	1,97	1,56
90 to 99	1,94	1,54
100 to 149	1,93	1,53
150 to 199	1,87	1,48
200 to 299	1,84	1,45
300 to 399	1,80	1,42
> 400	1,78	1,40
NOTE Values given in this Table are valid for *CR* = 5 %.		
a Values of k_A valid for intermediate values of n may also be used.		

9.2.2.3 Inspection by attributes

The number c_D of test results outside the characteristic value shall be counted and compared with an acceptable number c_A, calculated from the number n of autocontrol test results and the percentile P_k, as specified in Table 7.

Conformity is verified when Formula (3) is satisfied:

$$c_D \leq c_A \tag{3}$$

The value of c_A depends on the percentile P_k on which the characteristic value is based, on the allowable probability of acceptance *CR* and on a number n of the test results. Values of c_A are listed in Table 7.

Table 7 — Values of c_A

Number of test results n[a]	c_A for P_K = 10 %
20 to 39	0
40 to 54	1
55 to 69	2
70 to 84	3
85 to 99	4
100 to 109	5
110 to 123	6
124 to 136	7
NOTE Values given in this Table are valid for CR = 5 %.	
[a] If the number of test results is n < 20 (for P_k = 10 %) a statistically based conformity criterion is not possible. Despite this, a criterion of c_A = 0 shall be used in cases where n < 20.	

9.2.3 Single result conformity criteria

In addition to the statistical conformity criteria, conformity of test results to the requirements of this European Standard requires that it shall be verified that each test result remains within the single result limit values specified in Table 8.

Table 8 — Limit values for single results

Property		Limit values			
		Strength class			
		N 1	N 2	N 3	N 4
Compressive strength lower limit (MPa)	56 days	1,5	10,0	20,0	30,0
Sulfate content upper limit (% SO_3 by mass)		5,0 [a]			
Fineness upper limit (% residue by mass)	90 µm	17,0			
Initial setting time lower limit (min)		135			
Soundness upper limit (mm)		33			
[a] For normal hardening hydraulic road binders containing more than 60 % by mass of granulated blastfurnace slag (see 7.4), a limit value of 10,0 % by mass of SO_3 is allowed. A limit value of 12,0 % by mass of SO_3 is allowed for normal hardening hydraulic road binders containing burnt shale or calcareous fly ash (see 7.4).					

9.3 Conformity criteria for normal hydraulic road binder composition

At least once per month the composition of the normal hardening hydraulic road binder shall be checked by the manufacturer, using as a rule a spot sample taken at the point of release of the normal hardening hydraulic road binder. The normal hardening hydraulic road binder composition shall meet the requirements specified (see 7.5). The limiting quantities of the main constituents specified in Table 3 are reference values to be met by the average composition calculated from the spot samples taken in the control period. For single results, maximum deviations of – 2 at the lower and + 2 at the higher reference value are allowed. Suitable procedures during production and appropriate verification methods to ensure conformity to this requirement shall be applied and documented.

9.4 Conformity criteria for properties of the normal hardening hydraulic road binder constituents

The constituents of a normal hardening hydraulic road binder shall meet the requirements specified in Clause 5. Suitable procedures during production to ensure conformity with this requirement shall be applied and documented.

Annex A
(informative)

Slaking procedure for hydraulic road binders containing quicklime (CL-Q) as main constituent

A.1 Principle

This annex describes a procedure which is applied only when the hydraulic road binder contains quicklime (CL-Q) among main constituents and the available CaOab of the normal hardening hydraulic road binder (see 3.7) exceeds 10 % by mass.

The described procedure aims to slake the quicklime (CL-Q) contained in the hydraulic road binder in order to avoid swelling when performing usual tests (compressive strength, soundness and setting time).

The principle consists in slaking the quicklime (CL-Q) of the hydraulic road binder by adding a calculated quantity of water without initiating any hydration process of the hydraulic road binder.

The kinetic of the slaking depends on the available CaOab of the hydraulic road binder, the reactivity (t_{60}) of the quicklime (CL-Q) and the initial temperature of the mix (20 °C or 60 °C if preheating is needed).

A.2 Terms and definitions

A.2.1 Residual water content

Wr

quantity of water remaining in the hydraulic road binder after slaking, determined in accordance with the method for the determination of free water of hydrated lime described in EN 459-2

NOTE The residual water content is expressed in percent by mass (%).

A.2.2 Soundness after slaking

Sdr

soundness of the hydraulic road binder after slaking, determined in accordance with the method for the determination of soundness of hydrated calcium lime as described in EN 459-2

NOTE The soundness is expressed in mm.

A.2.3 Quicklime reactivity

t_{60}

time taken by a mix of quicklime and water to reach a temperature of 60 °C in accordance with EN 459-2

NOTE The reactivity is expressed in min.

A.2.4 Temperature of the mix

T_x

Temperature of the mix (water plus hydraulic road binder) during slaking, after x minutes

NOTE The temperature is expressed in °C.

A.2.5 Available lime of the quicklime

CaOaq

Quantity of available CaO of a quicklime, expressed in % by mass of the quicklime, determined in accordance with EN 459-2

NOTE See clause 3 for other terms also used in this annex.

A.3 General requirements for testing

A.3.1 Laboratory

Carry out all the tests described in this procedure in a laboratory where the air temperature is maintained at (20 ± 2) °C and the relative humidity at not less than 50 %RH.

A.3.2 Samples of hydraulic road binder conforming to FprEN 13282-2

Take samples in accordance with EN 196-7.

A.3.3 Water

Use distilled water to perform the slaking of the quicklime (CL-Q) content of the hydraulic road binder.

A.3.4 Equipment

A.3.4.1 Mixer

Use a mixer in accordance with EN 196-1. Other mixers with containers not exceeding 20 l, for safety reasons, may be used.

A.3.4.2 Evacuation system (protection against dust and water vapour)

For tests performed with mixers with a capacity greater than 1 kg, an evacuation system should be provided to disperse larger volume of steam produced.

A.3.4.3 Temperature measurement

To estimate the slaking completion, but also to handle materials with care, the temperature of the sample after the mixing should be measured with a device calibrated up to 200 °C, with a resolution of 1 °C.

A.3.4.4 Oven, capable of maintaining (60 ± 10) °C (see A.3.5)

A.3.4.5 Balance, with a resolution of 1 g

A.3.4.6 Safety equipment

— Respiratory protection: approved dust respirators according to EN 149, category FFP2.

— Hand protection: use approved nitrile impregnated gloves in possession of CE marking, and heat resistant gloves according to EN 407 to handle hot materials.

— Eye protection: tight fitting goggles with side shields, or wide vision full goggles; contact lenses should be not allowed when handling the sample.

NOTE It is also advisable to have individual pocket eyewash.

Additional or different safety equipment should be used when requested by any applicable regulation.

A.3.5 Precautions / Warning

The temperature of the material or of the container should be continuously monitored.

NOTE A temperature above 100 °C can easily be reached in a few minutes.

The sample should not be put in a totally closed container before the reaction completion in order to avoid overpressures.

In case of slow reaction (higher than 60 min) the mix should be discarded (or leftover) in an open metallic box without any other product.

A.4 Procedure

A.4.1 General

The slaking water content (Ws) of the hydraulic road binder is recorded (percentage in mass of the hydraulic road binder). This value, used to calculate m_2, is taken for the preparation (the slaking) of the sample before final testing. If Ws is unknown, m_2 is determined following A.4.3.1.

A.4.2 Quantity of hydraulic road binder to be prepared

Prepare a total quantity of hydraulic road binder sufficient to carry out the necessary conformity tests.

The reference method is the method established in EN 196-1.

Use a mass of (1000 ± 5) g of sample, m_1, to ensure complete slaking. Where more than 1 kg of sample is required, several batches of 1 kg each are prepared.

An alternative method is permitted to produce up to a maximum of 4,5 kg subject to the conditions specified in A.3.4.2.

NOTE Because of the important increase of volume (up to 3 times the initial volume of sample) during the slaking, the volume of the container should be sufficient to accommodate to the quantity of material prepared.

A.4.3 Water to be added for the first slaking test

A.4.3.1 Where Ws is unknown

If the available CaOab of the hydraulic road binder is known or has been determined in accordance with the method specified in 3.7, this value should be used for the calculation of the water quantity.

Alternatively, if the available CaOaq of the quicklime (CL-Q) is known or has been determined in accordance with EN 459-2, this value might also be used for the calculation of the water quantity.

NOTE It is also convenient to know the reactivity which gives information about preheating whether will be needed or not.

If both the available CaOab of the hydraulic road binder and the available CaOaq of the quicklime are unknown, use the relevant value given in Table A.1.

Table A.1 — Available CaOaq of the quicklime (percent by mass, %) to be used for calculation of water to be added in the first slaking test when both CaOaq and CaOab are unknown

Type of quicklime	CaOaq
CL 90 Q	80
CL 80 Q	65
CL 70 Q	55

NOTE Values in Table A.1 are the minimum specified in EN 459-1 for each type of quicklime.

Calculate the mass of water to be added for the first slaking test, m_2, in kg, from formulas (A.1) or (A.2):

$$m_2 = 0{,}6 \times (\text{CaOab} / 100) \times m_1 \quad \text{(A.1)}$$

or

$$m_2 = 0{,}6 \times (\text{CaOaq} / 100) \times (Q / 100) \times m_1 \quad \text{(A.2)}$$

where

m_1 mass of sample to slake (kg);
m_2 mass of water to add (kg) for the first slaking test;
Q content of quicklime (CL-Q) in the sample (% by mass);
CaOab available CaO of the hydraulic road binder (% by mass);
CaOaq available CaO of the quicklime (% by mass).

A.4.3.2 Where Ws is known

Determine the mass of water to be added for the first slaking test, m_2, in kg, from the formula (A.3):

$$m_2 = (\text{Ws} \times m_1) / 100 \quad \text{(A3)}$$

where

m_1 mass of sample to be slaked (kg);
Ws slaking water content declared by the producer (% by mass).

A.4.4 Slaking procedure

The temperature of the sample before starting the slaking procedure is 20 °C or 60 °C if preheating is needed.

Perform the slaking in a mixer meeting the requirements of EN 196-1, in accordance with the following procedure:

a) Introduce the sample (m_1) into the mixer bowl and pour quickly and continuously the water (m_2).

b) Start the mixer immediately at low speed and run for 5 min.

c) Record the time of the end of mixing and start recording the temperature T_x (A.2.4).

d) Record the temperature every 5 min as T_0, T_5, etc.

e) After 30 min, check if sample temperature (T_{30}) is decreasing ($T_{30} < T_{25}$)- Should this not happen before 60 min, repeat the process preheating the sample (see A.4.5).

f) The slaking is completed when the two following conditions are verified within 60 min:

   1) Temperature reaches a maximum and begins to decrease;

   2) The mix has the appearance of fine powder.

If one of the two conditions is not met, carry out preheating (A.4.5) of sample (Precautions / Warning, A.3.5). If, after preheating both conditions 1) and 2) are not met the hydraulic road binder does not need to be slaked.

g) Once slaking is completed, let the sample cool in an open metallic box.

h) Measure the sample residual water content Wr and soundness (expansion) Sdr and verify the following conditions:

   1) Wr < 2 % by mass;

   2) Sdr < 20 mm.

If one of them is not satisfied, perform a new slaking test according to A.4.4, list entries a) to g) after increasing or decreasing the slaking water quantity m_2 by 10 % by mass, i. e. the new slaking water quantity m_2' should be:

m_2' (second slaking test) = $m_2 \pm 0{,}1 \times m_2$

Both conditions, Wr < 2 % by mass and Sdr < 20 mm, cannot be unsatisfied together. An excess of water means there is no more quicklime to slake, so Sdr is lower than 20 mm. A high soundness value means there is not enough water to slake the remaining quicklime, so Wr is lower than 2 % by mass. If such a case occurs it means the mix is not enough homogeneous, thus restart with a new sample.

NOTE m_2 calculated with measured CaOab or CaOaq (see A.4.3.1) may give a slaking water quantity leading to a sample residual water content (Wr) greater than 2 % by mass. m_2 calculated from Table A1 may give a slaking water quantity leading to a sample soundness (Sdr) greater than 20 mm.

If the m_2' leads to an opposite behaviour (excess of water or lack of water), conduct a final test using a slaking water m_2''calculated with the following formula:

m_2'' (third slaking test) = (m_2 + m_2') / 2

A flow chart for the slaking procedure is reported in Figure A.1.

When Ws in unknown (A.4.3.1), the mass of water, m_2, or m_2', or m_2'', that fulfils both the conditions Wr < 2 % by mass and Sdr < 20 mm should be taken as the slaking water content of the hydraulic road binder, Ws.

A.4.5 Preheating

If necessary, preheat the sample to 60 °C using an oven (A.3.4.4). Once the sample has reached this temperature, carry out immediately the slaking procedure (A.4.4).

NOTE 1 The purpose of preheating is to accelerate the slaking process in cases where the quantity of quicklime (CL-Q) is low and/or reactivity of the lime in the sample is low.

NOTE 2 About 1 h is needed to preheat 1 kg of sample to 60 ºC.

A.4.6 Conditioning for further tests

Maintain slaked samples at room temperature before preparing specimens for the tests specified in this European Standard.

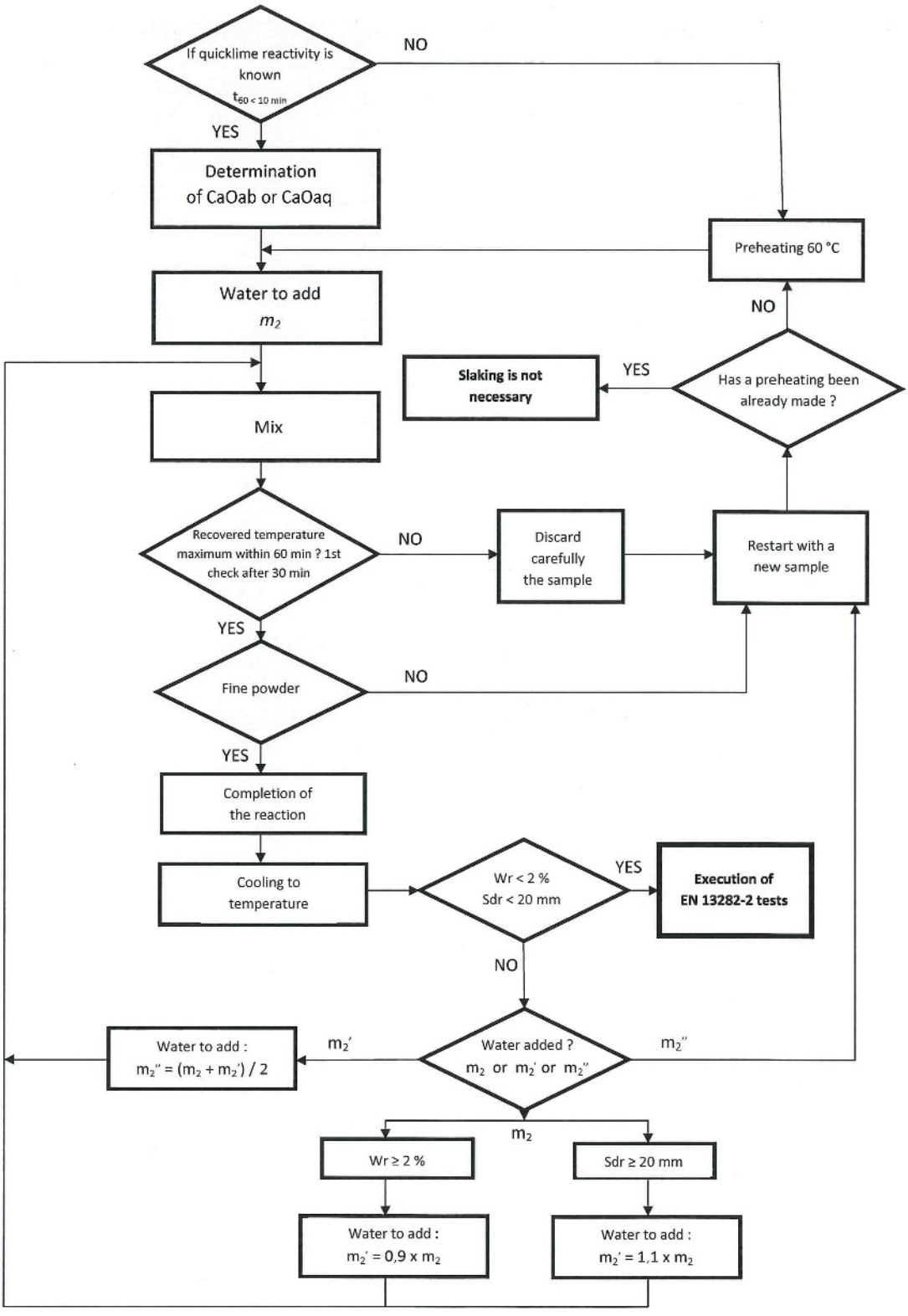

Figure A.1 — Flow chart for the slaking procedure

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/114 cement, building limes and other hydraulic binders given to CEN by the European Commission and the European Free Trade Association.

If this European standard is cited in the Official Journal of the European Union (OJEU), the clauses of this standard, shown in this annex, are considered to meet the provisions of the relevant mandate, under the Regulation (EU) No. 305/2011, amended by the Commission Delegated Regulations (CDR) No 157/2014, No 574/2014 and No 568/2014.

This annex deals with the CE marking of the normal hardening hydraulic road binder intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as in Clause 1 of this standard related to the aspects covered by the mandate and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for normal hardening hydraulic road binder and intended use

Product:	Normal hardening hydraulic road binder		
Intended use:	Treatment of materials for bases, sub-bases, capping layers and earthworks in roads, railways, airports and other types of infrastructures		
Essential characteristics	**Clauses in this and other European Standard(s) related to essential characteristics**	**Regulatory classes**	**Notes**
Compressive strength	7.2	-	Requirements expressed in terms of strength classes and limits
Initial setting time	7.3.2	-	Requirement expressed in terms of lower limit
Fineness	7.3.1	-	Requirement expressed in terms of upper limit
Soundness - maximum expansion	7.3.3	-	Requirement expressed in terms of upper limit
Sulfate content	7.4	-	Requirements expressed in terms of upper limits
Composition	7.5	-	Requirements expressed in terms of lower and upper

Product:	Normal hardening hydraulic road binder		
Intended use:	Treatment of materials for bases, sub-bases, capping layers and earthworks in roads, railways, airports and other types of infrastructures		
Essential characteristics	**Clauses in this and other European Standard(s) related to essential characteristics**	**Regulatory classes**	**Notes**
			limits
Durability	7.6	-	-
Dangerous substances	7.7	-	-

The declaration of the product performance related to certain essential characteristics is not required in those Member States (MS) where there are no regulatory requirements on these essential characteristics for the intended use of the product.

In this case, manufacturers placing their products on the market of these MS are not obliged to determine nor declare the performance of their products with regard to these essential characteristics and the option “No performance determined” (NPD) in the information accompanying the CE marking and in the declaration of performance (see ZA.2.2) may be used for those essential characteristics.

ZA.2 Procedure for AVCP of normal hardening hydraulic road binders

ZA.2.1 System of AVCP

The AVCP system of normal hardening hydraulic road binder indicated in Table ZA.1, established by EC Decision 97/555/EC (OJ L229) amended by EC Decision 2010/683EU (OJ L293) is shown in Table ZA.2 for the indicated intended use(s) and relevant level(s) or class(es) of performance.

Table ZA.2 — System of AVCP

Product	**Intended use**	**Level(s) or class(es)**	**AVCP system**
Normal hardening hydraulic road binder	Treatment of materials for bases, sub-bases, capping layers and earthworks in roads, railways, airports and other types of infrastructures	-	2+
System 2+: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.3 including certification of the factory production control by a notified production control certification body on the basis of initial inspection of the manufacturing plant and of factory production control as well as of continuous surveillance, assessment and evaluation of factory production control.			

The AVCP of the normal hardening hydraulic road binder in Table ZA.1 shall be according to the AVCP procedures indicated in Table ZA.3 resulting from application of the clauses of this or other European Standard indicated therein. The content of tasks of the notified body shall be limited to those essential characteristics as provided for, if any, in Annex III of the relevant mandate and to those that the manufacturer intends to declare.

Table ZA.3 — Assignment of AVCP tasks for normal hardening hydraulic road binder under system 2+

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to essential characteristics of Table ZA.1 relevant for the intended use which are declared	Clause 9 of this standard and Clause 4 of EN 13282-3:2013
	Determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Parameters related to essential characteristics of Table ZA.1 relevant for the intended use which are declared	Clause 9 of this standard and Clause 5 of EN 13282-3:2013
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics of Table ZA.1 relevant for the intended use which are declared	Clause 9 of this standard and Clause 5 of EN 13282-3:2013
Tasks for the notified production control certification body	Initial inspection of the manufacturing plant and of FPC	Parameters related to essential characteristics of Table ZA.1, relevant for the intended use which are declared, namely compressive strength, initial setting time, fineness, soundness - maximum expansion, sulfate content. Documentation of the FPC.	Clause 9 of this standard and Clause 6 of EN 13282-3:2013
	Continuous surveillance, assessment and evaluation of FPC	Parameters related to essential characteristics of Table ZA.1, relevant for the intended use which are declared, namely compressive strength, initial setting time, fineness, soundness - maximum expansion, sulfate content. Documentation of the FPC.	Clause 9 of this standard and Clause 6 of EN 13282-3:2013

ZA.2.2 Declaration of performance (DoP)

ZA.2.2.1 General

The manufacturer draws up the DoP and affixes the CE marking on the basis of the different AVCP systems set out in Annex V of the Regulation (EU) No 305/2011:

— the determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; the factory production control and the testing of samples taken at the factory according to the prescribed test plan, carried out by the manufacturer; and

— the certificate of conformity of the factory production control, issued by the notified production control certification body on the basis of:

  — initial inspection of the manufacturing plant and of factory production control and

  — continuous surveillance, assessment and evaluation of factory production control.

ZA.2.2.2 Content

The model of the DoP is provided in Annex III of the Regulation (EU) No 305/2011.

According to this Regulation, the DoP shall contain, in particular, the following information:

— the reference of the product-type for which the declaration of performance has been drawn up;

— the AVCP system or systems of the construction product, as set out in Annex V of the CPR;

— the reference number and date of issue of the harmonized standard which has been used for the assessment of each essential characteristic;

— where applicable, the reference number of the Specific Technical Documentation used and the requirements with which the manufacturer claims the product complies.

The DoP shall in addition contain:

(a) the intended use or uses for the construction product, in accordance with the applicable harmonized technical specification;

(b) the list of essential characteristics, as determined in the harmonized technical specification for the declared intended use or uses;

(c) the performance of at least one of the essential characteristics of the construction product, relevant for the declared intended use or uses;

(d) where applicable, the performance of the construction product, by levels or classes, or in a description, if necessary based on a calculation in relation to its essential characteristics determined in accordance with the Commission determination regarding those essential characteristics for which the manufacturer shall declare the performance of the product when it is placed on the market or the Commission determination regarding threshold levels for the performance in relation to the essential characteristics to be declared.

(e) the performance of those essential characteristics of the construction product which are related to the intended use or uses, taking into consideration the provisions in relation to the intended use or uses where the manufacturer intends the product to be made available on the market;

(f) for the listed essential characteristics for which no performance is declared, the letters "NPD" (No Performance Determined);

Regarding the supply of the DoP, Article 7 of the Regulation (EU) No 305/2011 applies.

The information referred to in Article 31 or, as the case may be, in Article 33 of Regulation (EC) No 1907/2006, (REACH) shall be provided together with the DoP.

ZA.2.2.3 Example of DoP

The following gives an example of a filled-in DoP for a normal hardening hydraulic road binder:

DECLARATION OF PERFORMANCE

No. 0123-CPR-4567

1. Unique identification code of the product-type:

   HRB N 3 – S 55, V 25, CL-S 15

2. Intended use(s):

   Treatment of materials for bases, sub-bases, capping layers and earthworks in roads, railways, airports and other types of infrastructures

3. Manufacturer:

   AnyCo Ltd,PO Box 21, B-1050 Brussels

4. System(s) of AVCP:

   2+

5. Harmonized standard:

   EN 13282-2:2015

6. Notified body(ies):

   Name-of-body-in-original-language NB 0123

7. Declared performance(s)

Essential characteristics	Performance
Composition	HRB – S 55, V 25, CL-S 15
Compressive strength	N 3
Setting time	Pass
Fineness	Pass
Soundness - maximum expansion	Pass
Sulfate content	Pass

The performance of the product identified above is in conformity with the set of declared performance(s). This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Name: ……

Place: …..……...…….. Date of issue: …..……...……..

Signature: ..……...

ZA.3 CE marking and labelling

The CE marking symbol shall be in accordance with the general principles set out in Article 30 of Regulation (EC) No 765/2008 and shall be affixed visibly, legibly and indelibly [see clause 1.1.2.1.3]:

— to the packaging

or

— to the accompanying documents.

The CE marking shall be followed by:

— the last two digits of the year in which it was first affixed;

— the name and the registered address of the manufacturer, or the identifying mark allowing identification of the name and address of the manufacturer easily and without any ambiguity;

— the unique identification code of the product-type;

— the reference number of the declaration of performance [see example of DoP];

— the level or class of the performance declared;

— the reference to the harmonized technical specification applied;

— the identification number of the notified body;

— the intended use as laid down in the harmonized technical specification applied.

The CE marking shall be affixed before the construction product is placed on the market. It may be followed by a pictogram or any other mark notably indicating a special risk or use.

Figure ZA.1 gives an example of the information related to normal hardening hydraulic road binder.

CE	*CE marking, consisting of the "CE"-symbol*
0123	*Identification number of the product certification body*
AnyCo Ltd PO Box 21, B-1050 Brussels	*Name and the registered address of the manufacturer, or identifying mark*
14	*Last two digits of the year in which the marking was first affixed*
0123-CPR-4567	*Reference number of the DoP*
EN 13282-2	*No. of European standard applied, as referenced in OJEU*
Normal hardening hydraulic road binder EN 13282-2 HRB N 3 – S 55, V 25, CL-S 15	*Unique identification code of the product-type*
Treatment of materials for bases, sub-bases, capping layers and earthworks in roads, railways, airports and other types of infrastructures	*Intended use of the product*
The declared performance, by levels and classes, is defined by the designation of the normal hardening hydraulic road binder	*Declared performance*

Figure ZA.1 — Example CE marking information related to normal hardening hydraulic road binder

Bibliography

[1] EN 149, *Respiratory protective devices — Filtering half masks to protect against particles — Requirements, testing, marking*

[2] EN 407, *Protective gloves against thermal risks (heat and/or fire)*

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