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Specification for mortar for masonry

Part 1: Rendering and plastering mortar

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National foreword

This British Standard is the UK implementation of EN 998-1:2016. It supersedes BS EN 998-1:2010 which is withdrawn.

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European foreword

This document (EN 998-1:2016) has been prepared by Technical Committee CEN/TC 125 “Masonry”, the secretariat of which is held by BSI.

This document supersedes EN 998-1:2010.

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of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by August 2018.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports basic requirements for construction works of the EU Construction Products Regulation (Regulation (EU) No 305/2011).

For relationship with EU Regulation, see informative Annex ZA, which is an integral part of this document.

The most significant changes compared to the previous edition include:

a) implementation of new regulatory (CPR) terminology where relevant;

b) the order of 5.2 to 5.4 has been changed (fresh mortar before hardened mortar);

c) revised clauses on Assessment and verification of constancy of performance (AVCP);

d) new annex with indicative frequencies on testing for factory production control (informative);

e) revised Annex ZA (informative);

f) some minor editorial changes.

No changes to existing technical classes and/or threshold levels have been made.

EN 998 *Specification for mortar for masonry* consists of:

— *Part 1: Rendering and plastering mortar*

— *Part 2: Masonry mortar*

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According to the CEN/CENELEC Internal Regulations, the national standards organisations 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

The characteristics of rendering and plastering mortars depend essentially on the type or types of binders used and their respective proportions. Special properties can be achieved by the type of aggregates, admixtures and/or additions used.

Rendering/plastering mortars are defined:

a) according to the concept as either:

   1) designed mortar; or

   2) prescribed mortar.

b) according to the mode of manufacture as either:

   1) factory-made mortar;

   2) semi-finished factory mortar; or

   3) site-made mortar.

c) according to the properties and/or use, as either:

   1) general purpose rendering/plastering mortars;

   2) lightweight rendering/plastering mortars;

   3) coloured rendering mortar;

   4) one-coat rendering mortar;

   5) renovation rendering/plastering mortars;

   6) thermal rendering/plastering insulating mortars.

Rendering/plastering mortars do not attain their final characteristics until properly hardened after application. The functions performed by a rendering/plastering mortar depend on the characteristics of the types of material used, on the thickness of the coats and the type of application. In addition, rendering/plastering mortars determine the surface of the construction.

Regional differences in construction practices and climate, and different constituents for rendering/plastering mortars do not allow for the establishment of standard mix proportions for prescribed mortar that would be applicable in all of Europe. Therefore, the specification of such mix proportions (recipes) and fields of application should be based on practice and experience available in the place of use.

1 Scope

This European Standard is applicable to factory-made rendering/plastering mortars based on inorganic binders for external (rendering) and internal (plastering) use on walls, ceilings, columns and partitions. It contains definitions and final performance requirements.

This European Standard provides for the assessment and verification of constancy of performance (AVCP) of the product to this European Standard. The marking requirement for products covered by this European Standard is included.

It does not cover mortars where calcium sulphate binder is the principal active binding agent.

Calcium sulphate binder can be used as an additional binder together with air lime. If air lime is the principal active binding component, the rendering/plastering mortar is covered by this European Standard. If the calcium sulphate binder is the principal active binding component, the mortar is covered by EN 13279.

Special fire resistant- and acoustical mortars, mortars for structural repair and surface treatments of building elements such as materials for smoothing or trueing, paints, coatings, thin-layer organic renders/plasters and prefabricated units (e.g. plasterboards) are not dealt with in this European Standard.

This European Standard covers rendering/plastering mortars defined in Clause 3 with the exception of site-made rendering/plastering mortars. However, this European Standard or part of this European Standard may be used in conjunction with codes of application and national specifications covering site-made mortar.

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 1015-2, *Methods of test for mortar for masonry - Part 2: Bulk sampling of mortars and preparation of test mortars*

EN 1015-7, *Methods of test for mortar for masonry - Part 7: Determination of air content of fresh mortar*

EN 1015-9, *Methods of test for mortar for masonry - Part 9: Determination of workable life and correction time of fresh mortar*

EN 1015-10, *Methods of test for mortar for masonry - Part 10: Determination of dry bulk density of hardened mortar*

EN 1015-11, *Methods of test for mortar for masonry - Part 11: Determination of flexural and compressive strength of hardened mortar*

EN 1015-12, *Methods of test of mortar for masonry - Part 12: Determination of adhesive strength of hardened rendering and plastering mortars on substrates*

EN 1015-18, *Methods of test for mortar for masonry - Part 18: Determination of water absorption coefficient due to capillary action of hardened mortar*

EN 1015-19, *Methods of test for mortar for masonry - Part 19: Determination of water vapour permeability of hardened rendering and plastering mortars*

EN 1015-21, *Methods of test for mortar for masonry - Part 21: Determination of the compatibility of one-coat rendering mortars with substrates*

EN 1745:2012, *Masonry and masonry products - Methods for determining thermal properties*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
rendering/plastering mortar
mix of one or more inorganic binders, aggregates, water and sometimes admixtures and/or additions, used as external renders or internal plasters

3.1.2
fresh rendering/plastering mortar
mortar completely mixed and ready for use

3.1.3
Types of rendering/plastering mortar defined according to concept

3.1.3.1
designed rendering/plastering mortar
mortar whose composition and manufacturing method is chosen by the producer in order to achieve specified properties (performance concept)

3.1.3.2
prescribed rendering/plastering mortar
mortar made in pre-determined proportions, the properties of which are assumed from the stated proportion of the constituents (recipe concept)

3.1.4
Types of rendering/plastering mortar according to the mode of manufacture

3.1.4.1
factory-made rendering/plastering mortar
mortar batched and mixed in a factory

Note 1 to entry: It can be 'dry mortar', which is ready mixed only requiring the addition of water, or ' wet mortar', which is supplied ready for use.

3.1.4.2
Semi-finished rendering/plastering factory mortar

3.1.4.2.1
pre-batched rendering/plastering mortar
mortar whose constituents are wholly batched in a factory, supplied to the building site and mixed there according to the manufacturer's specification and conditions

3.1.4.2.2
premixed lime-sand rendering/plastering mortar
mortar whose constituents are wholly batched and mixed in a plant, supplied to the building site where further constituents specified or provided by the factory are added (e.g. cement)

3.1.4.3
site-made rendering/plastering mortar
mortar composed of individual constituents batched and mixed on the building site

3.1.5
Types of rendering/plastering mortar according to properties and/or use

3.1.5.1
general purpose rendering/plastering mortar
rendering/plastering mortar without special characteristics

Note 1 to entry: It can be prescribed or designed.

3.1.5.2
lightweight rendering/plastering mortar
designed rendering/plastering mortar with a dry hardened density below a prescribed figure (see Table 2, L1)

3.1.5.3
coloured rendering/plastering mortar
designed rendering/plastering mortar specially coloured

Note 1 to entry: The colour is achieved, e.g. with pigments or coloured aggregates.

3.1.5.4
one-coat rendering mortar for external use
designed rendering mortar applied in one coat which fulfils all the functions of a multicoat system used externally and which is usually specifically coloured

Note 1 to entry: One-coat mortars for external use can be manufactured using normal and/or lightweight aggregates.

3.1.5.5
renovation mortar
designed rendering/plastering mortar used on moist masonry walls containing water soluble salts

Note 1 to entry: These mortars have a high porosity and vapour permeability and reduced capillary action.

3.1.5.6
thermal insulating mortar
designed mortar with specific insulating properties

3.1.6
Further definitions

3.1.6.1
declared value
value that a manufacturer is confident in achieving, taking into account the precision of test method, the variability of the production process(es) and the product performance

3.1.6.2
render/plaster
materials used externally are referred to as render/rendering and materials used internally as plaster/plastering

3.1.6.3
rendering/plastering system
sequence of coats to be applied to a background which can be used in conjunction with the possible use of a support and/or reinforcement and/or a pre-treatment

Note 1 to entry: In some cases, the pre-treatment can be regarded as a separate coat in addition to the specified system.

3.1.6.4
render/plaster coat
layer applied in one or more operations or passes with the same mix, with the previous pass not being allowed to set before the next one is made (i.e. fresh on fresh)

3.1.6.5
undercoat
lower coat or coats of a system

3.1.6.6
final coat
last coat, decorative or not, of a multicoat rendering or plastering system

3.1.6.7
product-type
set of representative performance levels or classes of a construction product, in relation to its essential characteristics, produced using a given combination of raw materials or other elements in a specific production process

Note 1 to entry: The definition is taken from Regulation (EU) No. 305/2011.

3.2 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

GP General purpose rendering/plastering mortar

LW Lightweight rendering/plastering mortar

CR Coloured rendering mortar

OC One-coat rendering mortar for external use

R Renovation mortar

T Thermal insulating mortar

FP Fracture pattern

4 Materials

Raw materials shall have characteristics permitting the finished product to conform with the requirements of this European Standard. The manufacturer shall keep records of how suitability of materials is established.

5 Product characteristics

5.1 General

The requirements on characteristics for fresh and hardened mortar specified in this European Standard shall be defined in terms of the test methods and other procedures referred to in this European Standard. For these tests, the mortar shall be sampled in accordance with EN 1015-2.

The conformity criteria given in 5.2 for fresh mortar and in Table 2 for hardened mortar relate to product-type determination (see 8.2) and consignment testing (see Annex A). For production evaluation purposes the conformity criteria shall be defined in the factory production control documentation (see 8.3).

NOTE The characteristics of mortar are specified under laboratory conditions and cannot always be directly compared with the characteristics obtained under site conditions.

5.2 Characteristics of fresh mortar

5.2.1 Workable life

The workable life shall be declared by the manufacturer. When the rendering/plastering mortar is sampled in accordance with EN 1015-2 and tested in accordance with EN 1015-9 the workable life shall not be less than the declared value.

The workable life shall be tested only in the case of rendering/plastering mortars which contain admixtures for controlling the setting, e.g. factory-made 'wet' mortar.

5.2.2 Air content

When relevant for the use for which the rendering/plastering mortar is placed on the market the range in which the air content will fall shall be declared by the manufacturer. When sampled in accordance with EN 1015-2 and tested in accordance with EN 1015-7 the air content shall fall within the declared range.

For rendering/plastering mortar where porous aggregates are used the air content may alternatively be determined by testing the fresh mortar density according to EN 1015-6.

5.3 Characteristics of hardened mortar

5.3.1 General

Different fields of use and exposure conditions require mortars with different characteristics and performance levels. For this purpose, compressive strength, water absorption and thermal conductivity shall be classified according to Table 1. The characteristics relevant to the intended use and/or type of product shall be declared according to Table 2. The declared values and/or classes shall meet the requirements specified in Table 2.

When relevant for the use for which the rendering/plastering mortar is placed on the market, additional characteristics to those specified in Table 2 may be declared for each type of mortar where a dash indicates 'no requirement'.

The declaration for durability and reaction to fire of mortar shall be made in accordance with the following provisions:

5.3.2 Durability

5.3.2.1 One-coat rendering mortar

The durability against freeze/thaw of one-coat rendering mortar shall be assessed by testing adhesion and water permeability after weathering cycles (see Table 2, L4 and L7).

5.3.2.2 All rendering mortars except one-coat

Until a European test method is available, the freeze-thaw resistance shall be evaluated and declared to the provisions valid in the intended place of use of the mortar.

5.3.3 Reaction to fire

Rendering/plastering mortars containing a mass or volume fraction of ≤ 1,0 % (whichever is the most onerous) of homogeneously distributed organic materials are classified as reaction to fire Class A1 without the need to test.

Rendering/plastering mortar containing a mass or volume fraction of > 1,0 % (whichever is the most onerous) of homogeneously distributed organic materials shall be classified in accordance with EN 13501-1 and the appropriate reaction to fire class declared.

NOTE Attention is drawn to the Commission Decision 96/603/EC, as amended, in which non-combustible mortar containing not more than a mass or volume fraction of 1,0 % (whichever is the more onerous) of homogeneously distributed organic materials are classified as reaction to fire Class A1 without testing.

5.3.4 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 Growth web site on EUROPA accessed through:

http://ec.europa.eu/growth/tools-databases/cp-ds/index_en.htm

Table 1 — Classification for hardened mortar properties

Properties	Categories	Values
Range of compressive strength at 28 d	CS I	0,4 N/mm² to 2,5 N/mm²
	CS II	1,5 N/mm² to 5,0 N/mm²
	CS III	3,5 N/mm² to 7,5 N/mm²
	CS IV	≥ 6 N/mm²
Capillary water absorption	W_c 0	not specified
	W_c 1	C ≤ 0,40 kg/(m²·min^{0,5})
	W_c 2	C ≤ 0,20 kg/(m²·min^{0,5})
Thermal conductivity	T 1	≤ 0,1 W/m·K
	T 2	≤ 0,2 W/m·K

Table 2 — Summary of requirements for hardened mortars

No.	Test parameter	Method of test	GP	LW	CR	OC	R	T
L1	Dry bulk density (kg/m^3)	EN 1015-10	Declared range of values	Declared range of values ≤ 1 300 kg/m^3	Declared range of values	Declared range of values	Declared range of values	Declared range of values
L2	Compressive strength (categories)	EN 1015-11 [a]	CS I to CS IV	CS I to CS III	CS I to CS IV	CS I to CS IV	CS II	CS I to CS II
L3	Adhesion (N/mm^2 and fracture pattern (FP) A, B or C)	EN 1015-12	≥ Declared value and fracture pattern (FP)	≥ Declared value and fracture pattern (FP)	≥ Declared value and fracture pattern (FP)	-	≥ Declared value and fracture pattern (FP)	≥ Declared value and fracture pattern (FP)
L4	Adhesion after weathering cycles (N/mm^2 and fracture pattern (FP) A, B or C)	EN 1015-21	-	-	-	Declared value and fracture pattern (FP)	-	-
L5	Capillary water absorption (categories) (for mortars intended to be used in external elements)	EN 1015-18	W_c 0 to W_c 2	W_c 0 to W_c 2	W_c 0 to W_c 2	W_c 1 to W_c 2	≥ 0,3 kg/m^2 after 24 h	W_c 1
L6	Water penetration after capillary water absorption test (in mm)	EN 1015-18	-	-	-	-	≤ 5 mm	-
L7	Water permeability on relevant substrates after weathering cycles (ml/cm^2 after 48 h)	EN 1015-21	-	-	-	≤ 1 ml/cm^2 after 48 h	-	-
L8	Water vapour permeability coefficient (μ) (for mortars intended to be used in external elements)	EN 1015-19 [a] [b]	≤ Declared value	≤ Declared value	≤ Declared value	≤ Declared value	≤ 15	≤ 15

No.	Test parameter	Method of test	GP	LW	CR	OC	R	T
L9	Thermal conductivity mean $\lambda_{10,dry,mat}$ -values (W/m·K) [c] (for mortars intended to be used in elements subject to thermal requirements)	EN 1745:2012, Table A.12	Tabulated mean value (P = 50 %)	Tabulated mean value (P = 50 %)	Tabulated mean value (P = 50 %)	Tabulated mean value (P = 50 %)	Tabulated mean value (P = 50 %)	-
L10		EN 1745:2012, 4.2.2	-	-	-	-	-	T 1: ≤ 0,10 T 2: ≤ 0,20
L11	Reaction to fire (class)	EN 13501-1	Declaration as per 5.3.3					
L12	Durability	-	Declaration as per 5.3.2					
L13	Dangerous substances	National provision in place of use of mortar	National provisions					

[a] For determination of storage conditions, the air lime content shall be calculated as calcium hydroxide $Ca(OH)_2$..

[b] Test method EN 1015-19 determines water vapour permeability W_{vp} in kg/ m·s·Pa whereas the value specified in this European Standard is the water vapour permeability coefficient μ.. The calculation of μ from W_{vp} is given by the following equation: μ = 1,94E-10/W_{vp}. 1,94E-10 corresponding to air equivalent water vapour permeability factor for a temperature of 20 °C and atmospheric air pressure of 101 325 Pa.

[c] In addition, another fractile may be used. If so, the used fractile shall be provided together with the additional provided $\lambda_{10,dry,mat}$ –value.

5.4 Mixing of mortar on site

If certain types of mortar need specific site mixing equipment procedures or times, these shall be specified by the manufacturer. Mixing time is measured from the time when all constituents have been added.

6 Designation of rendering and plastering mortars

The designation shall include the following, as relevant:

a) number of this European Standard;

b) product name and/or type of mortar according to 3.1.5.1 to 3.1.5.6;

c) name of manufacturer;

d) a code for or the date of production.

The properties for mortar shall be designated as relevant by declaring specific values or categories for hardened mortar according to Table 2 and for fresh mortar according to 5.2.

7 Marking and labelling

The designation (see Clause 6) or abbreviation identifying the designation shall be marked on the packaging, delivery ticket or the manufacturer's data sheet or other information accompanying the product.

8 Assessment and verification of constancy of performance (AVCP)

8.1 General

Conformity assessment is needed to demonstrate, by product-type determination (see 8.2), that the product complies with the requirements of this European Standard and that the performance declarations represent the true behaviour of the product and, by Factory Production Control, FPC (see 8.3), that the performance declarations based on product-type determination results remain valid for subsequent products.

The manufacturer (or his agent) shall demonstrate the compliance for his product with the requirements of this European Standard by carrying out both product-type determination and FPC and is responsible for the product being in compliance with all the provisions.

8.2 Product-type determination

8.2.1 General

After completion of the development of a new product-type and before the commencement of the manufacture and the offering for sale, appropriate product-type determination shall be carried out that the properties predicted during the development meet the requirements of this European Standard and the values to be declared for the product.

In the product-type determination-process, a manufacturer may take in consideration already existing test results.

For the verification of product characteristics requiring testing which is needed to be performed only during product-type determination, an individual manufacturer may use the product-type determination results obtained by someone else (another manufacturer) or carried out by industry to

justify his own declaration of conformity regarding a product that is manufactured according to the same design and with raw materials, constituents and manufacturing methods of the same kind, provided that permission is given, and the test is valid for both products.

Where a manufacturer produces the same product on more than one production line or unit, or in more than one factory, there may be no need to repeat product-type determination for these different production lines or units (the manufacturer takes responsibility for ensuring that the products are indeed the same).

8.2.2 Sampling

Sampling shall be carried out in accordance with Annex A.

8.2.3 Reference test

The tests to be conducted shall be reference tests as described in this European Standard for properly dried and hardened product characteristics according to Clause 5, consistent with the intended use(s) of the product-type.

8.2.4 Repeating of product-type determination

Product-type determination shall also be carried out on existing products when a change in the basic materials or manufacturing processes requires the consideration by the manufacturer if leading to a change in the declared performance of the product or the intended use(s) of the product. In these cases, the appropriate product-type determinations to be carried out are for those characteristics which are affected or need confirming and any new characteristics introduced by a change of intended use(s).

8.2.5 Recording

The results of the product-type determinations shall be recorded.

8.2.6 Application of test methods

When declaration is based on tabulated values as defined in relevant clauses, testing is not required.

NOTE For CE marking, where some characteristics are not subject to regulations, it might be possible using the NPD option.

8.3 Factory Production Control, FPC

8.3.1 General

The manufacturer shall establish, document and maintain an FPC-system to enable continuing conformity with the standard and the declared values of the product placed on the market.

The FPC-system shall consist of procedures for process control (incoming raw material and production process), finished products (tests on finished products and test equipment), and traceability treatment of non-conforming products.

Any FPC system complying with EN ISO 9001, and made specific to the requirements of this European Standard, is deemed to satisfy the requirement of FPC.

8.3.2 Process control

8.3.2.1 Incoming raw materials

The manufacturer shall define the acceptance criteria of raw materials, and the procedures operated to ensure that these are met.

8.3.2.2 Production process

The relevant features of the production processes shall be defined giving the frequency of the manufacturer's inspection checks, together with the required criteria and the required in-progress product characteristics. Actions to be taken, when the criteria or the product characteristics are not achieved, shall be specified by the manufacturer within the FPC documentation.

All production equipment that has an influence on the declared values shall be controlled and regularly inspected according to the documented procedures, frequencies and criteria.

8.3.3 Finished product conformity

8.3.3.1 Tests on the finished product

The FPC system shall incorporate a sampling plan containing the frequencies of testing of the products. The results of testing shall be recorded.

NOTE Examples for test frequencies are given in Annex B.

For production evaluation the manufacturer shall define the conformity criteria in the FPC documentation.

Alternative methods of test, to the reference methods specified in this European Standard may be adopted except for product-type determinations and in case of dispute, provided that these alternative methods satisfy the following:

a) a correlation can be demonstrated between the results from the reference test and those from the alternative test, and

b) the information is available on which the correlation is based on.

The sampling shall be representative for the production.

The results of testing shall meet the specified compliance criteria and shall be recorded.

8.3.3.2 Test equipment

All weighing, measuring and testing equipment which has an influence on the declared values shall be calibrated and regularly inspected in accordance with the documented procedures and frequencies, as stated in the FPC manual.

8.3.4 Statistical techniques

Where and when possible and applicable, the results of inspections and testing shall be interpreted by means of statistical techniques, by attributes or by variables, to verify the product characteristics and to determine if the production conforms to the compliance criteria and the product conforms to the declared values.

NOTE Guidance is given in FprCEN/TR 16886.

8.3.5 Traceability – marking and stock control of products

The marking and stock control shall be documented. Products shall be identifiable and traceable with regard to their production origin.

8.3.6 Non-conforming products

The procedure for dealing with non-conforming products shall be documented. Products that do not conform to the requirements shall be segregated and marked accordingly. However, these may be reclassified by the manufacturer and given different declared values. The manufacturer shall take action to avoid recurrence of the non-conformity.

Annex A
(normative)

Sampling for product-type determination and independent testing of consignments

A.1 General

This sampling procedure shall apply for product-type determination and in the event that there is a requirement for an assessment of product compliance. For independent testing where only those properties declared by the manufacturer shall be assessed, representatives of all parties shall have the opportunity to be present at the time of sampling.

The required amount of rendering/plastering mortar for one sample shall be sampled from a lot of mortar not more than 10 m^3.

A.2 Sampling procedure

The sampling shall follow one of the procedures laid down in EN 1015-2.

NOTE The choice of the method of sampling will normally be dictated by the physical form of the lot in question.

Annex B
(informative)

Indicative test frequencies for Factory Production Control (FPC)

Table B.1 — Testing of rendering and plastering mortars

Subject	Purpose of testing	Reference method [a]	Indicative frequency of testing by the manufacturer for a product-type
Reaction to fire (for rendering/plastering mortars intended to be used in elements subject to fire requirements) [b]	Conformity with the declared class	EN 13501-1	— Every 5 years or — As given in the FPC documentation
Water absorption (for rendering/plastering mortars intended to be used in external elements)	Conformity with the declared water absorption categories according to EN 998-1	EN 1015-18	— Once a year or — As given in the FPC documentation
Water permeability after weathering (OC rendering mortar only)	Conformity with the declared water vapour permeability value according to EN 998-2	EN 1015-21	— Every 5 years or — As given in the FPC documentation
Water vapour permeability (for rendering/plastering mortars intended to be used in external elements)	Conformity with the declared water vapour permeability coefficient according to EN 998-2	EN 1015-19	— Once a year or — As given in the FPC documentation
Adhesion (all rendering/plastering mortars except OC)	Conformity with the declared value and fracture pattern according to EN 998-2	EN 1015-12	— Once a year or — As given in the FPC documentation
Adhesion after weathering cycles (OC rendering mortar only)	Conformity with the declared value and fracture pattern according to EN 998-2	EN 1015-21	— Every 5 years or — As given in the FPC documentation

Subject	Purpose of testing	Reference method [a]	Indicative frequency of testing by the manufacturer for a product-type
Thermal conductivity/Density (for rendering/plastering mortars intended to be used in elements subject to thermal insulation requirements except T) [b]	Conformity with declared value	EN 1745	— Every 5 years or — As given in the FPC documentation
Thermal conductivity (for T mortars only) [b]	Conformity with tested declared value	EN 1745	— Every 5 years or — As given in the FPC documentation
Durability of OC mortar (against freeze/thaw)	No need for testing separately since assessed by testing adhesion and water permeability after weathering for OC	-	-
Durability of all mortars except OC (in external use)	Conformity with declared value	National test method valid in the intended use	— As given in the national provisions or — As given in the FPC documentation
Dangerous substances [b]	Conformity with declared value	National test method valid in the intended use	— As given in the national provisions or — As given in the FPC documentation

[a] The tests should be carried out in accordance with the reference methods given in the standard or by applying alternative test methods with a proven correlation or a safe relationship to the reference methods.

[b] Only when declared by the manufacturer based on testing. The manufacturer does not necessarily have to declare a value against every property and some may be on the basis of, for example, tabulated values. Where the declared value is taken from a table (tabulated value) no FPC testing is required.

Annex ZA
(informative)

Relationship of this European Standard with Regulation (EU) No.305/2011

(When applying this standard as a harmonized standard under Regulation (EU) No. 305/2011, the manufacturers and Member States are obliged by this regulation to use this Annex.)

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under standardization request M 116 'Masonry and related products' (as amended) given to CEN and CENELEC by the European Commission (EC) and the European Free Trade Association (EFTA).

When this European Standard is cited in the Official Journal of the European Union (OJEU), under Regulation (EU) No 305/2011, it shall be possible to use it as a basis for the establishment of the Declaration of Performance (DoP) and the CE marking from the date of the beginning of the co-existence period as specified in the OJEU.

Regulation (EU) No 305/2011, as amended, contains provisions for the DoP and the CE marking.

Table ZA.1.1 — Relevant clauses for rendering mortars for external use

Product: Factory-made rendering mortars, comprising the following types • General purpose mortar (GP); • Lightweight mortar (LW); • Coloured rendering mortar (CR); • One-coat rendering mortar (OC); • Renovation mortar (R); • Thermal insulating mortar (T). **Intended use:** On external walls, ceilings and columns			
Essential characteristics	**Clauses of this European Standard related to essential characteristics**	**Classes and/or threshold levels**	**Notes**
Reaction to fire *(for rendering mortars intended to be used in elements subject to fire requirements)*	5.3.3	Euroclasses A1 to F	Declared Euroclass
Water absorption *(for rendering mortars intended to be used in external elements)*	Table 2, L5	Classes	Categories (W_c 0 to W_c 2) except R for which declared values of water absorption (≥ 0,3 kg/m² after 24 h) are required
Water permeability after weathering cycles *(OC rendering mortar only)*	Table 2, L7	Threshold level	Water permeability (≤ 1 ml/cm² after 48 h)
Water vapour permeability *(for rendering mortars intended to be used in external elements)*	Table 2, L8	Threshold level	Declared coefficient μ (≤ 15 for R and T)
Adhesion *(all rendering mortars except OC rendering mortar)*	Table 2, L3	None	Declared value (N/mm²) and fracture pattern (FP)
Adhesion after weathering cycles *(OC rendering mortar only)*	Table 2, L4	None	Declared value (N/mm²) and fracture pattern (FP)
Thermal conductivity/Density *(for rendering mortars intended to be used in elements subject to thermal requirements except T mortar)*	Table 2, L9	None	Declared tabulated or measured mean value P = 50 %)
Thermal conductivity *(for T mortar only)*	Table 2, L10	Classes	Categories (T1 to T2)
Durability of OC mortar *(against freeze/thaw)*	5.3.2.1 and Table 2, L4 and L7	None	Declaration as per 5.3.2.1
Durability of all mortars except OC *(against freeze/thaw)*	5.3.2.2 and Table 2, L3 and L5	None	Declaration as per 5.3.2.2
Dangerous substances	5.3.4	None	Declaration as per 5.3.4

Table ZA.1.2 — Relevant clauses for plastering mortars for internal use

Product: Factory-made plastering mortars, comprising the following types • General purpose mortar (GP); • Lightweight mortar (LW); • Renovation mortar (R); • Thermal insulating mortar (T). **Intended use:** On walls, ceilings, columns and partitions			
Essential characteristics	**Clauses of this European Standard related to essential characteristics**	**Classes and/or threshold levels**	**Notes**
Reaction to fire *(for plastering mortars intended to be used in elements subject to fire requirements)*	5.3.3	Euroclasses A1 to F	Declared Euroclass
Water absorption *(for plastering mortars intended to be used in external elements)*	Table 2, L5	Classes	Categories (W_c 0 to W_c 2) except R for which declared values of water absorption (≥ 0,3 kg/m^2 after 24 h) are required
Water vapour permeability *(for plastering mortars intended to be used in external elements)*	Table 2, L8	Threshold level	Declared coefficient μ (≤ 15 for R and T)
Adhesion	Table 2, L3	None	Declared value (N/mm^2) and fracture pattern (FP)
Thermal conductivity/Density *(for plastering mortars intended to be used in elements subject to thermal requirements except T mortar)*	Table 2, L9	None	Declared tabulated or measured mean value P = 50 %)
Thermal conductivity *(for T mortar only)*	Table 2, L10	Classes	Categories (T1 to T2)
Dangerous substances	5.3.4	None	Declaration as per 5.3.4

ZA.2 System of Assessment and Verification of Constancy of Performance (AVCP)

The AVCP system of rendering and plastering mortars indicated in Tables ZA.1.1 to ZA.1.2 can be found in the EC legal acts adopted by the EC: Commission Decision 97/740/EC of 14.10.1997 (OJEU L299 of 4.11.1997, p. 42) as amended by the Commission Decision 2001/596/EC of 8 January 2001 (OJEU L209 of 2.8.2001, p. 33).

ZA.3 Assignment of AVCP tasks

The AVCP of rendering and plastering mortars as provided in Tables ZA.1.1 to ZA.1.2 is defined in Table ZA.3 resulting from application of the clauses of this or other European Standard indicated therein. The content of the tasks assigned to the notified body shall be limited to those essential

characteristics, if any, as provided for in Annex III of the relevant standardization request and to those that the manufacturer intends to declare.

Taking into account the AVCP systems defined for the products and the intended uses the following tasks are to be undertaken by the manufacturer for the assessment and verification of the constancy of performance of the product.

Table ZA.3 — Assignment of AVCP tasks for factory-made rendering and plastering mortars under system 4

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	An assessment of the performance of the construction product on the basis of testing, calculation, tabulated values or descriptive documentation of that product	Essential characteristics of Tables ZA.1.1 to ZA.1.2 relevant for the intended use(s) which are declared	8.2
	Factory production control (FPC)	Parameters related to essential characteristics of Tables ZA.1.1 to ZA.1.2 relevant for the intended use(s) which are declared	8.3

Bibliography

[1] EN 1015-1, *Methods of test for mortar for masonry - Part 1: Determination of particle size distribution (by sieve analysis)*

[2] EN 1015-6, *Methods of test for mortar for masonry - Part 6: Determination of bulk density of fresh mortar*

[3] EN 13279 (all parts), *Gypsum binders and gypsum plasters*

[4] FprCEN/TR 16886, *Guidance on the application of statistical methods for determining the properties of masonry products*

[5] 2003/424/EC, *Commission Decision of 6 June 2003 amending Commission Decision 96/603/EC of 4 October 1996 establishing the list of products belonging to Classes A "No contribution to fire" provided for in Commission Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products (Text with EEA relevance) (notified under document number C(2003) 1673)*

[4] EN ISO 9001, *Quality management systems - Requirements (ISO 9001)*

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