EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 998-2

September 2010

ICS 91.100.10

Supersedes EN 998-2:2003

English Version

Specification for mortar for masonry - Part 2: Masonry mortar

Définitions et spécifications des mortiers pour maçonnerie - Partie 2: Mortiers de montage des éléments de maçonnerie

Festlegungen für Mörtel im Mauerwerksbau - Teil 2: Mauermörtel

This European Standard was approved by CEN on 12 August 2010.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 998-2:2010: E

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Foreword

This document (EN 998-2:2010) has been prepared by Technical Committee CEN/TC 125 "Masonry", the Secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.

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 supersedes EN 998-2:2003.

The main technical changes compared to the previous edition are in relation to thermal conductivity, where the basis for the declared value has been specified, and in relation to evaluation of conformity, where more details have been given.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports the essential requirements of the EU Construction Products Directive (89/106/EEC).

It also takes into account the general rules for reinforced and unreinforced masonry in Eurocode 6.

For relationship with EU Directive(s), see informative Annex ZA which is an integral part of this document.

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

— *Part 1: Rendering and plastering mortar.*

— *Part 2: Masonry mortar.*

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

The properties required of a mortar are related to its use.

They are considered in two groups viz.: those relating to the fresh, unhardened mortar and those to the hardened mortar.

To support the aim of achieving a performance-related standard, as far as practicable, the standard refers only to the properties of the product and not to its method of manufacture, except where this is unavoidable in the description of the characteristics of the product.

1 Scope

This European Standard specifies requirements for factory made masonry mortars (bedding, jointing and pointing) for use in masonry walls, columns and partitions (e.g. facing and rendered masonry, load bearing or non-load bearing masonry structures for building and civil engineering).

This European Standard defines for fresh mortars the performance related to workable life, chloride content, air content, density and correction time (for thin-layer mortars only). For hardened mortars it defines e.g. performances related to compressive strength, bond strength, density measured according to the corresponding test methods contained in separate European Standards.

This European Standard provides for the evaluation of conformity of the product to this European Standard.

The marking requirement for products covered by this European Standard is included.

This European Standard covers masonry mortars defined in Clause 3 with the exception of site made mortars. However, this European Standard or part of this European Standard may be used in conjunction with codes of applications and national specifications covering site made mortars.

2 Normative references

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

EN 771 (all parts), *Specification for masonry units*

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

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 1015-17, *Methods of test for mortar for masonry — Part 17: Determination of water-soluble chloride content of fresh mortars*

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 1745:2002, *Masonry and masonry products — Methods for determining design thermal values*

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

3 Terms and definitions

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

3.1
masonry mortar
mix of one or more inorganic binders, aggregates, water, and sometimes additions and/or admixtures for bedding, jointing and pointing of masonry

3.1.1
fresh masonry mortar
mortar completely mixed and ready for use

3.2 Type of masonry mortar, defined according to concept

3.2.1
designed masonry mortar
mortar whose composition and manufacturing method is chosen by the producer in order to achieve specified properties (performance concept)

3.2.2
prescribed masonry mortar
mortar made in predetermined proportions, the properties of which are assumed from the stated proportion of the constituents (recipe concept)

3.3 Type of masonry mortar, defined according to properties and/or use

3.3.1
general purpose masonry mortar (G)
masonry mortar without special characteristics

3.3.2
thin layer masonry mortar (T)
designed masonry mortar with a maximum aggregate size less than or equal to a prescribed figure (see 5.5.2)

3.3.3
lightweight masonry mortar (L)
designed masonry mortar with a dry hardened density below a prescribed figure (see 5.4.5)

3.4 Type of masonry mortar, defined according to the mode of manufacture

3.4.1
factory made masonry mortar
mortar batched and mixed in a factory

NOTE It can be "dry mortar" which is ready-mixed, only requiring the addition of water or "wet mortar" which is supplied ready for use.

3.4.2
semi-finished factory made masonry mortar
mortar described in either 3.4.2.1 or 3.4.2.2

3.4.2.1
prebatched masonry 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

3.4.2.2
premixed lime-sand- masonry mortar
mortar whose constituents are wholly batched and mixed in a factory, supplied to the building site where further constituents specified or provided by the factory are added (e.g. cement)

3.4.3
site-made masonry mortar
mortar composed of individual constituents batched and mixed on the building site

3.5
binder
material used to hold solid particles together in a coherent mass, e.g. cement, building lime

3.6
aggregate
granular material that does not contribute to the hardening reaction of the mortar

3.7
admixture
material added in small quantities to produce specified modifications to the properties

3.8
addition
finely divided inorganic material (which is not an aggregate or binder) that can be added to mortar in order to improve or achieve special properties

3.9
bond strength
adhesion perpendicular to the bed between the masonry mortar and the masonry unit

3.10
declared value
value that a manufacturer is confident in achieving, bearing in mind the precision of test and variability of process

3.11
masonry subjected to severe exposure
masonry or elements of masonry which are subjected to saturation with water (driving rain, ground water) combined with frequent freeze/thaw-cycling due to climatic conditions, and absence of protective features

3.12
masonry subjected to moderate exposure
masonry or elements of masonry which are exposed to moisture and freeze/thaw-cycling, excluding constructions subjected to severe exposure

3.13
masonry subjected to passive exposure
masonry or elements of masonry which are not intended to be exposed to moisture and freezing conditions

4 Materials

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

5 Requirements

5.1 General

The requirements and properties specified in this European Standard shall be defined in terms of the test methods and other procedures referred to in this European Standard. The conformity criteria given in the following sub-clauses relate to initial type tests (see 8.2) and consignments testing (in accordance with Annex A). For production evaluation the manufacturer shall define the conformity criteria in the factory production control documentation (see 8.3).

5.2 Properties of fresh mortar

5.2.1 Workable life

The workable life shall be declared by the manufacturer. When the masonry mortar is sampled from a consignment 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.

5.2.2 Chloride content

When relevant, the chloride content of the mortar as delivered shall be declared by the manufacturer. When sampled from a consignment in accordance with EN 1015-2 and either tested in accordance with EN 1015-17 using the procedure for determining water soluble chloride content or using a calculation based on measured chloride ion content of the constituents of the mortar, the chloride content shall not be higher than the declared value.

NOTE The chloride content should not exceed 0,1 % Cl of the mortar by dry mass.

5.2.3 Air content

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

For masonry 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 Proportion of constituents

For prescribed mortars the mix proportions by volume or by weight of all the constituents shall be declared by the manufacturer. In addition, the compressive strength shall be declared using publicly available references establishing relationship between mix proportions and compressive strength.

5.4 Properties of hardened mortar

5.4.1 Compressive strength

For designed mortars the compressive strength of masonry mortar shall be declared by the manufacturer. The manufacturer may declare the compressive strength class in accordance with Table 1, where the compressive strength is designated by an 'M' followed by the compressive strength class in N/mm², which it exceeds.

Table 1 — Mortar classes

Class	M 1	M 2,5	M 5	M 10	M 15	M 20	M d
Compressive strength N/mm^2	1	2,5	5	10	15	20	d
d is a compressive strength greater than 20 N/mm^2 as a multiple of 5 declared by the manufacturer.							

When the masonry mortar is sampled from a consignment in accordance with EN 1015-2 and tested in accordance with EN 1015-11 the compressive strength shall not be less than the declared compressive strength or the declared compressive strength class. It shall be declared if the air-lime content calculated as calcium hydroxide $Ca(OH)_2$ is equal to or higher than 50 % of the total amount of binder mass.

5.4.2 Bond strength

For designed masonry mortars intended to be used in elements subjected to structural requirements the bond strength of the mortar in combination with a masonry unit shall be declared in terms of the characteristic initial shear strength. The declaration may be made either on the basis of tests as a) below or tabulated values as b) below. The manufacturer shall declare the basis for his declaration.

a) Declaration based on tests

The characteristic initial shear strength of the mortar in combination with a specific type of unit in accordance with EN 771 may be based on tests on mortar sampled from a consignment in accordance with EN 1015-2 and tested with the relevant unit in accordance with EN 1052-3. The characteristic initial shear strength shall not be less than the declared value.

b) Declaration based on tabulated values

When no declaration is made under a) the characteristic initial shear strength of the mortar in combination with a range of unit types shall be declared by reference to Annex C.

NOTE 1 Bond strength depends on the mortar, the masonry unit, its moisture content and the workmanship.

NOTE 2 Until a direct method of test for bond strength is available the test for initial shear strength should be used.

5.4.3 Water absorption

For masonry mortars intended to be used in external elements and exposed directly to the weather, the water absorption shall be declared by the manufacturer. When sampled from a consignment in accordance with EN 1015-2 and tested in accordance with EN 1015-18, the water absorption shall not be higher than the declared value.

5.4.4 Water vapour permeability

For masonry mortars intended to be used in external elements, the water vapour permeability shall be declared by the manufacturer by reference to EN 1745:2002, Table A.12 giving tabulated values for water vapour diffusion coefficient for mortar.

5.4.5 Density (dry hardened mortar)

When relevant for the use for which the masonry mortar is placed on the market the range in which the density of dry hardened mortar will fall shall be declared by the manufacturer. When the masonry mortar is sampled from a consignment in accordance with EN 1015-2 and tested in accordance with EN 1015-10 the density shall fall within the declared range.

For lightweight masonry mortars the density shall be equal to or less than 1 300 kg/m³.

5.4.6 Thermal conductivity

For masonry mortars intended to be used in elements subject to thermal requirements the manufacturer shall give the mean $\lambda_{10,dry,mat}$ -value for the thermal conductivity of the masonry mortar by reference to EN 1745:2002, Table A.12. Especially for lightweight masonry mortars, measured values according to EN 1745:2002, 4.2.2 may alternatively be declared. The manufacturer shall declare the basis for his declaration. 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.

When the masonry mortar is sampled from a consignment in accordance with EN 1015-2 and tested in accordance with EN 1745 the thermal conductivity shall be not greater than the declared value.

5.4.7 Durability

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

5.5 Additional requirements for thin layer mortars

5.5.1 General

NOTE Other requirements could be necessary if the thin layer mortar is intended to be used for joint thicknesses less than 1 mm.

Thin layer mortars shall comply with the requirements described in 5.2 and 5.4 and with the following additional requirements.

5.5.2 Aggregates

The aggregate size shall be not greater than 2 mm when the masonry mortar is sampled from a consignment in accordance with EN 1015-2 and tested in accordance with EN 1015-1. The manufacturer shall declare the maximum grain size.

5.5.3 Correction time

The correction time shall be declared. When the masonry mortar is sampled from a consignment in accordance with EN 1015-2 and tested according to EN 1015-9, the correction time shall be greater than the declared value.

5.6 Reaction to fire

The manufacturer shall declare the reaction to fire classification of the masonry mortar.

Masonry mortars containing a mass or volume fraction of $\leq$ 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.

Masonry mortars 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 masonry mortars 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.

5.7 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 masonry mortar

The designation shall include the following, as relevant:

— number and date of issue of this European Standard;

— name of manufacturer;

— a code for or the date of production;

— type of mortar (3.2, 3.3 and 3.4);

— workable life (5.2.1);

— chloride content (5.2.2);

— air content (5.2.3);

— proportion of constituents (for prescribed mortars) and relationship to compressive strength or compressive strength class (5.3);

— compressive strength, or compressive strength class (for designed mortars) (5.4.1);

— bond strength (5.4.2);

— water absorption (5.4.3);

— water vapour permeability (5.4.4);

— density (5.4.5);

— thermal conductivity (5.4.6);

— durability (5.4.7);

— maximum aggregate grain size (5.5.2);

— correction time (5.5.3);

— reaction to fire (5.6).

In the designation for a product, information about special qualities should be included when the mortar is intended for use in special construction.

7 Marking and labelling

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

NOTE For CE marking and labelling ZA.3 applies. ZA.3 requires the CE marking to be accompanied by the same information as required by this clause the requirements of this clause can be considered to have been met.

8 Evaluation of conformity

8.1 General

Conformity assessment is needed to demonstrate, by Initial Type Testing, ITT (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 (8.3), that the performance declarations based on initial type testing 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 ITT and FPC and is responsible for the product being in compliance with all the provisions.

8.2 Initial type testing, ITT

After completion of the development of a new product type and before the commencement of the manufacture and the offering for sale, appropriate initial type testing 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 ITT-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 ITT, an individual manufacturer may use the ITT 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, costituents and manufacturing methods of the same kind, provided that permission of the data owner 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 ITT for these different production lines or units (the manufacturer takes responsibility for ensuring that the products are indeed the same).

8.2.1 Sampling

Sampling shall be carried out in accordance with Annex A.

8.2.2 Reference test

The tests to be conducted shall be reference tests as described in this European Standard for properly dried and hardened product properties according to paragraph 5, consistent with the product type’s intended use.

8.2.3 Repeating of initial type test

Initial type test shall also be carried out on existing products when a change in the basic materials or manufacturing procedures leads to the manufacturers consider to be a change in the product designation or the use of the product. In these cases the appropriate initial type tests carried out are those for the properties which are affected or need confirming and any new properties introduced by a change of use.

8.2.4 Recording

The results of the initial type tests shall be recorded.

8.2.5 Application of test methods

As defined in the relevant clauses defining the requirements, tests are not to be performed when the declaration of characteristics is based on tabulated values.

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

8.3 Factory Production Control, FPC

8.3.1 General

The manufacturer shall establish, document and maintain a 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 manufacture 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 CEN/TR 15225.

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 initial type tests 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.

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 a recurrence of the non conformity.

Annex A
(normative)

Sampling for initial type testing and independent testing of consignments

A.1 General

This sampling procedure shall apply for initial type testing 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 masonry mortar for one sample shall be sampled from a lot of masonry mortar of not more than 10 m^3.

A.2 Sampling procedure

The sampling procedure shall follow one of the procedures as specified 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)

Use of masonry units and masonry mortar

European codes of practice have not yet been prepared dealing with architectural design and workmanship, encompassing the specification and use of units and masonry mortar to ensure that satisfactory durability in service is achieved in the finished masonry.

Until such time as these codes become available, this annex entitled "Use of masonry units and masonry mortar" has been attached, relating the masonry mortar grades specified for such properties as frost resistance and soluble salts content to service conditions, including the degree of exposure and risk of saturation.

Before choosing the mortar, the degree of exposure should be considered. This will include protection against saturation.

"Severe", "moderate", and "passive" environment are expressions for the degree of risk of having masonry exposed to a high water content coincident with the risk of a high frequency of freezing-thawing cycles due to local climatic conditions and/or to the design of the construction.

The factors forming part of the environmental evaluation are temperature and moisture conditions as well as the occurrence of any aggressive substances. In the evaluation it is necessary to use local or traditional experience.

The influence of possible surface coatings (e.g. painting) should be evaluated.

The examples given in the following, should only be regarded as such.

a) Constructions subjected to severe exposure

The following examples are given for masonry or masonry elements subjected to severe exposure:

— masonry near to external ground level (two courses above and below) where there is a high risk of saturation with freezing;

— unrendered parapets where there is a high risk of saturation with freezing, e.g. where the parapet is not provided with an effective coping;

— unrendered chimneys where there is a high risk of saturation with freezing;

— cappings, copings and sills in areas where freezing conditions may occur;

— free-standing boundary and screen walls where there is a high risk of saturation with freezing, for example if the wall is not provided with an effective coping;

— earth retaining walls where there is a high risk of saturation with freezing for example where the wall has not been provided with an effective coping or a water proofing treatment on the retaining face;

b) Constructions subjected to moderate exposure

The following suitable measures to prevent saturation of the masonry are given:

1) protection to wall heads by roof overhangs or copings;

2) projecting throated sills;

3) damp-proof courses at the top and base of walls;

c) Constructions subjected to passive exposure

The following examples are given for masonry or masonry elements subjected to passive exposure:

— masonry in external walls, if provided with suitable protection, the extent of which depends on climatic conditions. In some parts of Europe local experience shows that a thick layer of render provides such protection.

Annex C
(normative)

Characteristic initial shear strength of designed masonry mortars

The characteristic initial shear strength of designed masonry mortars in combination with masonry units according to EN 771 shall be as follows:

— 0,15 N/mm^2 for General purpose and lightweight mortar;

— 0,3 N/mm^2 for Thin layer mortar.

Annex ZA
(informative)

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

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/116 “Masonry and related products” given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard shown in this annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the masonry mortars covered by this annex for the intended uses indicated herein; reference shall be made to the information accompanying the CE marking.

WARNING: Other requirements and other EU Directives, not affecting the fitness of intended use(s), can be applicable to the masonry mortars falling within the scope of this European Standard.

NOTE In addition to any specific clauses relating to dangerous substances contained in this Standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply. An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (CREATE, accessed through http://ec.europa.eu/enterprise/construction/internal/dangsub/dangmain_en.htm).

This annex establishes the conditions for the CE marking of the masonry mortars intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

The scope of this annex is defined by Table ZA.1.

Table ZA.1 — Scope and relevant clauses

Product: Factory made masonry mortars as covered in Clause 1 of this standard, comprising the following types: • General purpose mortar; • Thin layer mortar; • Lightweight mortar. **Intended use:** In masonry walls, columns and partitions as covered by the Scope of this standard			
Essential characteristics	**Requirement clauses in this European Standard**	**Mandated levels and/or classes**	**Notes/ Type of declaration**
Compressive strength *(for designed masonry mortars)*	5.4.1	None	Categories or declared values (N/mm^2)
Proportion of constituents *(for prescribed masonry mortars)*	5.3	None	Mix proportions by volume or weight
Bond strength *(for designed masonry mortars intended to be used in elements subject to structural requirements))*	5.4.2 a) based on tests b) tabulated values	None	Declared value of initial shear strength (N/mm^2) measured tabulated
Contents of chlorides *(for mortars intended for reinforced masonry)*	5.2.2	None	Declared value (as a mass fraction in %)
Reaction to fire *(for masonry mortars intended to be used in elements subject to fire requirements))*	5.6	Euroclasses A1 to F	Declared Euroclass
Water absorption *(for masonry mortars intended to be used in external elements)*	5.4.3	None	Declared value [$kg/(m^2 \cdot min^{0,5})$]
Water vapour permeability *(for masonry mortars intended to be used in external elements)*	5.4.4	None	Declared tabulated water vapour diffusion coefficient μ
Thermal conductivity/Density *(for masonry mortars intended to be used in elements subject to thermal insulation requirements)*	5.4.6	None	Declared tabulated or measured mean value [W/(m·K)]
Durability	5.4.7	None	Declared value, as relevant
Dangerous substances	ZA.1 Note above	None	According to ZA.3 (paragraph after Figure ZA.1)

The requirement on a certain essential characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option shall not be used, however, where the characteristic is subject to a threshold level.

ZA.2 Procedure for the attestation of conformity of masonry mortars

ZA.2.1 System of attestation of conformity

The system of attestation of conformity of masonry mortars indicated in Table ZA.1, in accordance with the Decision of the Commission of 14 October 1997 as given in annex III of the mandate for “Masonry and related products M 116” is shown in Table ZA.2 for the indicated intended uses and relevant levels or classes.

Table ZA.2 — System of conformity

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Factory made designed masonry mortars	In walls, columns and partitions	-	2+ [a]
Factory made prescribed masonry mortar	In walls, columns and partitions	-	4 [b]
[a] See Directive 89/106 EEC (CPD) Annex III.2(ii), First possibility, including certification of the factory production control by an approved body. [b] See Directive 89/106/EEC (CPD) Annex III.2 (ii), Third possibility.			

The attestation of conformity of the masonry mortars indicated in Table ZA.1 shall be based on the evaluation of conformity procedures indicated in Tables ZA.3 and ZA.4 resulting from the application of the clauses of this European Standard.

Table ZA.3— Assignment of evaluation of conformity tasks for designed masonry mortars

Tasks			Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)		Parameters related to all relevant characteristics of Table ZA.1	8.3
	Initial type testing (ITT)		All relevant characteristics of Table ZA.1	8.2
	Testing of samples taken at the factory		All relevant characteristics of Table ZA.1	8.3.3 1)
Tasks for the notified body	Certification of FPC. on the basis of	Initial inspection of factory and FPC	Parameters related to all relevant characteristics of Table ZA.1	8.3
		Continuous surveillance, assessment and approval of FPC	Parameters related to all relevant characteristics of Table ZA.1, in particular compressive strength, bond strength, contents of chlorides	8.3

Table ZA.4 — Assignment of evaluation of conformity tasks for prescribed masonry mortars

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all relevant characteristics of Table ZA.1	8.3
	Initial type testing (ITT)	All relevant characteristics of Table ZA.1	8.2

ZA.2.2 EC Certificate and declaration of conformity

Designed masonry mortars (under system 2+): When compliance with the conditions of this annex is achieved, and once the notified body has drawn up the certificate mentioned below, the manufacturer or his agent established in the EEA shall prepare and retain a declaration of conformity (EC Declaration of conformity), which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and the place of production;

— description of the product (type, identification, use, ...), and a copy of the information accompanying the CE marking;

— provisions to which the product conforms (e.g. Annex ZA of this European Standard);

— particular conditions applicable to the use of the product, (e.g. provisions for use under certain conditions, etc.);

— the number of the accompanying factory production control certificate;

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

The declaration shall be accompanied by a factory production control certificate, drawn up by the notified body, which shall contain, in addition to the information above, the following:

— name and address of the notified body;

— the number of the factory production control certificate;

— conditions and period of validity of the certificate, where applicable;

— name of, and position held by, the person empowered to sign the certificate.

Prescribed masonry mortars (under system 4): When compliance with this annex is achieved, the manufacturer or his agent established in the EEA shall prepare and retain a declaration of conformity (EC Declaration of conformity), which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

— description of the product (type, identification, use, ...), and a copy of the information accompanying the CE marking;

— provisions to which the product conforms (e.g. Annex ZA of this European Standard);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc.);

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

The above mentioned declarations shall be presented in the official language or languages of the Member State in which the product is to be used.

ZA.3 CE marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EC and shall be shown on the packaging or an accompanying label or on the accompanying commercial documents, e.g. the delivery note. The following information shall accompany the CE marking symbol:

— identification number of the certification body (only for products under systems 2+);

— name or identifying mark and registered address of the producer;

— the last two digits of the year in which the marking is affixed;

— number of the EC certificate of conformity or factory production control certificate (if relevant);

— reference to this European Standard;

— description of the product: generic name (see 3.3 of this standard) and intended uses in Table ZA.1 of this annex;

— information on the relevant essential characteristics in Table ZA.1 presented as declared values and, where relevant, level or class to declare for each essential characteristic as indicated in the column "Notes/Type of declaration" of Table ZA.1;

— "No performance determined" for characteristics where this is relevant.

The “No performance determined” (NPD) option shall not be used where the characteristic is subject to a threshold level. Otherwise, the NPD option may be used when and where the characteristic, for a given intended use, is not subject to regulatory requirements in the Member State of destination.

Figure ZA.1 gives examples of the information to be given on the packaging, label and/or commercial documents.

CE 01234	*CE conformity marking, consisting of the"CE"-symbol given in Directive 93/68/EEC.* *Identification number of the certification body*
AnyCo Ltd, PO Box 21, B-1050 **10** **01234-CPD-00234**	*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed* *Certificate number*
EN 998-2:2010 Designed general purpose masonry mortar for external use in elements subject to structural requirements **Compressive strength:** Category M 5 **Initial shear strength:** 0,15 N/mm^2 (tab. value) **Contents of chloride:** 0,07 % Cl **Reaction to fire:** Class A1 **Water absorption:** 0,05 kg/(m^2·min^{0,5}) **Water vapour permeability**: μ 15/35 **Thermal conductivity:** ($\lambda_{10,dry}$) 0,83 W/mK (tab. mean value; P = 50 %) **Durability (against freeze-thaw):** evaluation based on provisions valid in the intended place of use of the mortar	*No. of European Standard* *Description of product* *and* *information on regulated characteristics*

Figure ZA.1 — Example CE marking information

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogations need not be mentioned.

CE	*CE conformity marking, consisting of the* *"CE"-symbol given in Directive 93/68/EEC.*
AnyCo Ltd, PO Box 21, B-1050 **10**	*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed*
EN 998-2:2010 Prescribed general purpose masonry mortar for external use in elements subject to structural requirements **Proportion of constituents (by volume):** Cement 15 % Lime 10 % Aggregates 75 % **Contents of chloride:** 0,07 % Cl **Reaction to fire:** Class A1 **Water absorption: 0,1** [kg/(m^2·min^{0,5})] **Water vapour permeability:** μ 15/35 **Thermal conductivity:** ($\lambda_{10,dry}$) 0,83 W/mK (tab. mean value; P = 50 %) **Durability (against freeze-thaw):** evaluation based on provisions valid in the intended place of use of the mortar	*No. of European Standard* *Description of product* *and* *information on regulated characteristics*

Figure ZA.2 — Example CE marking information

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogations need not be mentioned.

Bibliography

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

[2] EN 1052-3, *Methods of test for masonry — Part 3: Determination of initial shear strength*

[3] EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2008)*

[4] CEN/TR 15225, *Guidance on Factory Production Control for the CE Marking (Attestation of Conformity 2+) of designed masonry mortars*

[5] 96/603/EC, Commission Decision of 4 October 1996 establishing the list of products belonging to Classes A 'No contribution to fire' provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products (Text with EEA relevance)