# SLOVENSKI STANDARD
# SIST EN 998-2:2010

**01-december-2010**

**Nadomešča:**
**SIST EN 998-2:2004**

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**Specifikacija malt za zidanje - 2. del: Malta za zidanje**

Specification for mortar for masonry - Part 2: Masonry mortar

Festlegungen für Mörtel im Mauerwerksbau - Teil 2: Mauermörtel

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

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**ICS:**

| | | |
|---|---|---|
| 91.100.10 | Cement. Mavec. Apno. Malta | Cement. Gypsum. Lime. Mortar |

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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# 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.

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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

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of an identical text or by endorsement, at the latest by March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.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

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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.

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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.

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## 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.

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## 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.

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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)*

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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*

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# 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

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

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**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

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**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

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

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**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.

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# 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.

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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.

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**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.