SLOVENSKI STANDARD
SIST EN 1015-17:2001

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Metode preskuġanja zidarske malte - 17. del: Doloļ evanje vsebnosti vodotopnega klorida v sveġih maltah

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

Prüfverfahren für Mörtel für Mauerwerk - Teil 17: Bestimmung des Gehalts an wasserlöslichem Chlorid von Frischmörteln

Méthodes d'essai des mortiers pour maçonnerie - Partie 17: Détermination de la teneur en chlorure soluble des mortiers frais

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard 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of an identical text or by endorsement, at the latest by September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard calls for the use of substances and procedures that may be injurious to health if adequate precautions are not taken. It refers only to the technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

1 Scope

This European Standard specifies a method for determining the water-soluble chloride content of fresh mortars.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 998-1 Specification for mortar for masonry - Part 1 : Rendering and plastering mortar

prEN 998-2 Specification for mortar for masonry - Part 2 : Masonry mortar

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

EN 1015-3 Methods of test for mortar for masonry - Part 3 : Determination of consistence of fresh mortar (by flow table)

ISO 384 Laboratory glassware - Principles of design and construction of volumetric glassware.

3 Principle

An aqueous extract containing water soluble chlorides from the mortar sample is prepared. The dissolved chloride is precipitated using a known volume of standard silver nitrate solution. Any sulfide present is oxidised to sulfate or decomposed and does not interfere. After boiling, the precipitate is washed with dilute nitric acid and discarded. The filtrate and washings are cooled to less than 25 °C. The excess silver nitrate is then titrated with a standard ammonium thiocyanate solution using an iron (III) salt as indicator. This method gives the total halogen content except for fluoride and expresses the result as percentage of Cl. of sample.

4 Symbols

V_1	is the sample titre of 0,1 M ammonium thiocyanate solution, (ml)
$V2$	is the blank titre of 0,1 M ammonium thiocyanate solution, (ml)
m	is the mass of the test portion, (g)
f	is the factor of molarity relating to ammonium thiocyanate solution (usually 0,10 mol/l)

5 Apparatus

5.1 General

The volumetric glassware shall be of analytical accuracy, i.e. class A or class B, defined in **ISO 384.**

5.2 **Weighing instrument**, with a capacity of 200g and an accuracy of 0,0001g.

5.3 **10 ml burette**, graduated to 0,01 ml.

5.4 **Desiccator**, containing anhydrous magnesium perchlorate ($Mg(ClO_4)_2$) or other suitable desiccant.

5.5 **Filter paper**, coarse (pore diameter approximately 20µm)

5.6 **5 ml pipette**

5.7 **500 ml stoppered conical flask**

5.8 **250 ml borosilicate glass beaker**

5.9 **Sieves,** with 10 mm and 0,125 mm apertures

5.10 **Polyethylene bottle with a screw-on cap,** capacity approximately 150 ml.

5.11 **Rotary shaker ,** capable of revolving at 60 rev/min or **magnetic stirrer and polyethylene covered follower.**

5.12 **1 000 ml volumetric flask.**

5.13 **Borosilicate glass wide-mouthed jar with airtight cap,** capacity approximately 500 ml.

6 Reagents

6.1 General

The degree of dilution of the concentrated nitric acid (6.2) is given as a volumetric sum, for example, dilute nitric acid 1+2 (6.3) means that 1 volume of concentrated nitric acid is mixed with 2 volumes of water.

Use reagents of recognized analytical grade.

For the determination of factor f see 6.8.

6.2 Concentrated nitric acid (HNO_3), density 1,40 to 1,42 kg/l at 20° C.

6.3 Dilute nitric acid, 1+2

6.4 Dilute nitric acid, 1+100

6.5 Silver nitrate ($AgNO_3$), dried at 150 °C, then cooled and stored in a desiccator (5.4).

6.6 Silver nitrate solution 0,10 mol/l. Dissolve 16,988 g of silver nitrate (6.5) in water (6.10) in a 1000 ml volumetric flask (5.12)and make up to the mark. Store the solution in a brown glass flask and protect it from the light.

6.7 Ammonium thiocyanate (NH_4SCN)

6.8 Ammonium thiocyanate solution, approximately 0,10 mol/l. Dissolve 7,6 g of ammonium thiocyanate (6.7) in water and make up to 1000 ml H_2O.

Determine factor f by titrating the ammonium thiocyanate solution (6.8) against a known volume of the standard silver nitrate solution (0,01 mol/l) (6.6) using ammonium iron (III) sulfate indication (6.9).

6.9 Ammonium iron (III) sulfate ($NH_4Fe(SO_4)_2.12H2O$ indicator solution. Add 10 ml of dilute nitric acid 1+2 (6.3) to 100 ml of a cold saturated solution of ammonium iron (III) sulfate in water.

6.10 Water, with a maximum electrical conductivity of 2mS/cm.

7 Sampling and sample preparation

7.1 General

The fresh mortar for this test shall have a minimum volume of 1,5 l or at least 1,5 times the quantity needed to perform the test, whichever is the greater, and shall either be obtained by reduction of the bulk test sample of dry mortar for factory made dry mortars or the bulk test sample of fresh mortar for all other mortar (see **EN 1015-2**) i.e. by quartering or by preparation in the laboratory from water and the other constituents. Two test samples shall be prepared.

Factory made wet mortars and prebatched air-lime/sand wet mortars shall be used within their specified workable life. Laboratory prepared mortars, unless retarded, shall be used immediately.

For factory made dry mortars and laboratory prepared mortars the length of mixing period shall be measured from the moment when the last of the constituents are introduced into the mixer.

7.2 Preparation

7.2.1 Factory made dry mortar

If necessary, crush the sample to pass completely through a 10 mm test sieve (5.9). Then treat the sample as in 7.3.

7.2.2 Fresh mortar

Thoroughly mix each sample and reduce to about 250 g. Then place in a wide-mouthed jar (5.13) and enclose with an airtight cap. Immediately before starting the test, remix the reduced sample with a spatula. Dry at 105 °C ± 5 °C to a constant mass (where organic constituents are used ,e.g. aggregates made of expanded polystyrene, a drying temperature of 60 °C ± 5 °C shall be used). The sample is considered to have reached constant mass if two successive weighings, 2 h apart during the drying, do not differ by more than 0,2 % of the mass of the dry specimen. Crush the dried sample to pass completely through a 10 mm test sieve (5.9). Then treat the sample as in 7.3.

7.3 Grinding

Reduce the sample to 50 g and crush to pass completely through a 0,125 mm test sieve. This shall be the analytical sample.

If suitable mechanical grinding equipment is not available, use the following procedure to obtain the analytical sample. Crush the remainder of the sample to pass completely through a 2,4 mm test sieve. Grind a representative sub-sample of mass not less than 30 g to pass completely a 0,500 mm test sieve. Mix the ground sub-sample well and from this take a further sub-sample of mass at least 12 g and grind to pass completely a 0,125 mm test sieve. This shall be the analytical sample.

NOTE Metallic iron introduced during the grinding procedure should be removed with a magnet before any chemical analysis is commenced.