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Resilient floor coverings — Identification of linoleum and determination of cement content and ash residue

Revêtements de sol résilients — Identification du linoléum et détermination de la teneur en ciment et du taux de cendres

Reference number
ISO 26985:2008(E)

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Foreword

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ISO 26985 was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

Resilient floor coverings — Identification of linoleum and determination of cement content and ash residue

1 Scope

This International Standard specifies methods for identifying linoleum and determining the cement content and ash residue of linoleum floor coverings.

2 Terms and definitions

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

2.1

ash residue

residue that remains following incineration at 500 °C for 3 h

2.2

linoleum cement

binder in linoleum, consisting of a mixture of linseed oil and/or vegetable drying oils, rosin and drying oil catalysts, which is converted to a semi-elastic mass by an oxidative curing process

3 Principles

3.1 Identification

A small specimen is saponified in a solution of potassium hydroxide in methanol to identify linoleum from other floor coverings.

3.2 Composition

3.2.1 Cement content

A specimen without the backing material is crumbled and mixed with a mixture of potassium hydroxide in methanol. After intensive stirring at 20 °C to 25 °C, the mixture is filtered and carefully dried. The difference between the initial mass and the mass of the residue is the defined mass of linoleum cement.

3.2.2 Ash residue

To determine the amount of ash residue, a specimen without the backing material is incinerated and the mass of the residual ash is measured.

4 Apparatus and materials

4.1 Apparatus

4.1.1 Grater.

4.1.2 Tared beakers.

4.1.3 Porcelain crucibles.

4.1.4 Desiccator (vacuum type), containing a suitable desiccant, e.g. silica gel.

4.1.5 Furnace, capable of being controlled at 500 °C ± 10 °C.

4.1.6 Balance, having an accuracy of 0,1 mg.

4.1.7 Laboratory sieve, with a nominal aperture size of 0,5 mm.

4.1.8 Ultrasonic bath, or equivalent device.

4.1.9 Centrifuge or vacuum filter (type A2) and **suction device**, e.g. a water-jet pump.

4.1.10 Bunsen burner.

4.2 Materials

4.2.1 Methanol (methyl alcohol), analytical grade.

4.2.2 Potassium hydroxide (analytical grade) **in methanol solution**, with a concentration of 0,5 mol/l.

5 Sampling and preparation of specimens

5.1 Sampling

Take a representative sample from the available material. Take five specimens, each with a minimum area of 50 cm^2, from across the width of the sample, or from individual tiles, the distance between the edge of the sample and the nearest edge of the specimen being at least 100 mm.

Cut a square of approximately 20 mm × 20 mm from a specimen.

5.2 Determination of cement content

Remove the backing material and grate the specimen. Use that part which passes through a 0,5 mm sieve.

5.3 Determination of ash residue

Remove the backing material and cut the specimen into small pieces of approximately 5 mm × 5 mm.

6 Atmosphere for conditioning and testing

Condition the specimen, at a temperature of 23 ± 2 °C and a relative humidity of 50 ± 5 %, for a minimum of 24 h. Maintain these conditions during the test.

7 Test procedure

7.1 Identification

Saponify the specimen in excess potassium hydroxide/methanol solution without stirring. After 24 h, record whether complete disintegration of the linoleum has taken place. If disintegration has not taken place, the sample is not identified as linoleum, so do not carry out the tests described in 7.2 and 7.3.

7.2 Determination of cement content

Weigh approximately 1 g of the grated specimen, with particle size $\leqslant$ 0,5 mm, in a tared beaker.

Add approximately 10 ml of the potassium hydroxide/methanol solution and stir for 10 $\pm$ 0,5 min. Ensure that the temperature does not exceed 25 °C, because wood- and/or cork-flour can be affected.

Weigh the type A2 filter (if used) and record the mass to the nearest 0,01 g.

Centrifuge or vacuum filter the mixture using the type A2 filter and rinse the residue at a temperature of 40 °C. Condition the dry residue in the filter or centrifuge, as described in Clause 6, for a minimum of 24 h, and record the mass (including the A2 filter, if used) to the nearest 0,01 g.

7.3 Determination of ash residue

Determine the tared mass of a porcelain crucible as follows. Prepare a crucible by heating in the furnace at 500 °C for at least 3 h. Allow cooling in the desiccator for at least 1 h and weigh the crucible. Repeat the process of heating, cooling and weighing until the results of two consecutive weighings do not differ from each other by more than 0,5 mg, i.e. the mass is virtually constant.

Weigh approximately 2 g of the crumbled specimen in the tared porcelain crucible. Heat the crucible using a Bunsen burner, in a way that allows the specimen to burn in a controlled manner. Place the crucible and contents in a furnace at 500 $\pm$ 10 °C, for at least 3 h, to allow incineration to proceed to completion, i.e. when no carbonaceous matter remains in the crucible.

Transfer the crucible and contents to the desiccator and allow to cool for at least 1 h. Determine the mass of the crucible and residue to the nearest 0,01 g. Repeat the process of incineration, cooling and weighting until the results of two consecutive weightings do not differ from each other by more than 0,5 mg, i.e. the mass is virtually constant.

8 Calculation and expression of results

8.1 Identification

Record whether complete disintegration takes place.

8.2 Determination of cement content

Calculate the linoleum cement content, as a percentage by mass, using the following fomula:

$$\frac{m_1 - m_2}{m_1} \times 100$$

where

m_1 is the initial mass of the specimen;

m_2 is the mass of the dry residue (excluding the A2 filter if used).

Express the linoleum cement content as the average of the results for the number of specimens tested, and record these to the nearest 0,5 %.

8.3 Determination of ash residue

Calculate the ash residue, as a percentage by mass, using the following fomula:

$$\frac{m_3}{m_1} \times 100$$

where

m_1 is the initial mass of the specimen;

m_3 is the mass of the ash residue.

Express the inorganic filler content as the average of the results for the number of specimens tested, and record these to the nearest 0,5 %.

9 Precision statement

A round-robin test will be conducted to determine the precision of this test method.

10 Test report

The test report shall contain the following information:

a) a statement that the tests were performed in accordance with this International Standard (ISO 26985:2008);

b) a complete identification of the product tested, including type, source, colour, and manufacturer's reference numbers;

c) previous history of the sample;

d) a statement as to whether the sample has been identified as linoleum;

e) the average cement content and the average ash residue, as a percentage, if relevant;

f) any deviation from this International Standard which could have affected the results;

g) the date of the test.

Bibliography

[1] EN 670, *Resilient floor coverings — Identification of linoleum and determination of cement content and ash residue*

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