SLOVENSKI STANDARD
SIST EN 13820:2004

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Toplotnoizolacijski proizvodi za uporabo v gradbeniġtvu ï Doloļ evanje organskih snovi

Thermal insulating materials for building applications - Determination of organic content

Wärmedämmstoffe für das Bauwesen - Bestimmung des Gehalts an organischen Bestandteilen

Matériaux isolants thermiques destinés aux applications du bâtiment - Détermination du contenu organique

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91.100.60	Materiali za toplotno in zvoļ no izolacijo	Thermal and sound insulating materials

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Thermal insulating materials for building applications - Determination of organic content

Produits isolants thermiques destinés aux applications du bâtiment - Détermination du contenu organique

Wärmedämmstoffe für das Bauwesen - Bestimmung des Gehalts an organischen Bestandteilen

This European Standard was approved by CEN on 7 August 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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

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Contents

Foreword

This document (EN 13820:2003) has been prepared by Technical Committee CEN/TC 88 "Thermal insulating materials and products", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.

This European Standard is one of a series of standards which specify test methods for determining dimensions and properties of thermal insulating materials and products. It supports a series of product standards for thermal insulating materials and products which derive from the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products (Directive 89/106/EEC) through the consideration of the essential requirements.

This European Standard contains one informative annex:

Annex A Example of a simplified method for the determination of organic content

This European Standard has been prepared for products used to insulate buildings, building equipment and industrial installation, but it may also be applied for products used in other areas.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard gives the reference method. Other methods may be used, e.g. for quality control, provided a correlation has been established with the reference method; annex A gives an example of such a method.

1 Scope

This European Standard specifies the equipment and procedures for determining the organic content of thermal insulating materials.

The method is aimed at determining the organic content for products which are inorganic, i.e. products containing a low percentage of organic compounds, either unfaced products or the insulating material of a faced product.

NOTE 1 It can be used to verify that a thermal insulating product complies with the requirements in prEN 13501-1 Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire test to be in Euroclass A1 without testing.

NOTE 2 The standard is not intended for the determination of organic content in the presence of water of hydration and/or combined carbonate, sulphate etc.

NOTE 3 The standard is not intended for the determination of organic content of adhesives, facings and/or coatings.

2 Normative references

This European Standard contains no normative references.

3 Terms and definitions

For the purposes of this European Standard, the following term and definition applies:

Organic content, M_{oc}
total quantity of carbon compounds contained in a material or product. The organic content in a product shall be expressed as mass percentage

4 Principle

The organic content is determined as the loss of mass of a previously dried test specimen heated at a specific temperature for a specific time period.

5 Apparatus

5.1 Balance,

which allows the determination of the mass of a test specimen to 0,001 g.

5.2 Temperature controlled ventilated oven,

capable of maintaining a temperature of (105 ± 5) °C or a temperature specified in the relevant product standard or any other European technical specification.

5.3 Temperature controlled ventilated furnace,

capable of maintaining a temperature of (500 ± 20) °C or a temperature as specified in the relevant product standard or any other European technical specification.

5.4 Test specimen container,

which shall be made of inert materials and shall not change mass during the test, e.g. porcelain crucible or aluminium tray, that has been preheated at least once at 500 °C for 2 h before being used.

5.5 Desiccator,

capable of keeping the test specimen dry during cooling down.

NOTE Any test equipment which provides the same result with at least the same accuracy may be used.

6 Test specimens

6.1 Dimensions of test specimens

The thickness of the test specimens shall be the original product thickness. In the case of faced and/or coated products, all facings and/or coatings including adhesives shall be removed. A test specimen shall consist of at least 8 separate pieces taken from different positions evenly distributed over the total surface of a full size product. This can be accomplished by the use of a cork borer with a diameter of e.g. 21 mm or 25 mm; removing material throughout the full product thickness.

The mass of each test specimen shall be between 10 g and 200 g.

6.2 Number of test specimens

The number of test specimens shall be as specified in the relevant product standard. If the number is not specified, then at least five test specimens shall be used.

NOTE In the absence of a product standard or any other European technical specification, the number of test specimens may be agreed between parties.

6.3 Preparation of test specimens

The test specimens shall be cut so that they do not include product edges.

Each test specimen shall be placed in a separate test specimen container of known mass.

6.4 Conditioning of test specimens

The test specimens shall be dried in the ventilated oven at the temperature of (105 ± 5) °C or a temperature as specified in the relevant product standard or any other European technical specification for normally 2 h and cooled down in the desiccator to (23 ± 5) °C until constant mass is obtained.

The constant mass shall be considered as that mass recorded when the change in mass between two consecutive weighings, at a time interval of at least 1 h, is less than a mass fraction of 0,05 %. Once the conditioning time has been established for a product it is not necessary to repeat the consecutive weighings.

7 Procedure

7.1 Test conditions

The test specimen shall be placed in a previously weighed empty container with the mass m_1, and shall be dried and cooled down as specified in 6.4 before the test is carried out.

7.2 Test procedure

Remove the container with the test specimen inside from the desiccator and weigh it within 1 min to determine the combined mass, m_2.

Place the container with the test specimen inside in the furnace at a temperature of (500 ± 20) °C or at the temperature specified in the relevant product standard or any other European technical specification.

Remove the container with the test specimen inside from the furnace when it is considered that all organic compounds have burned off. This will normally take at least 2 h.

Place the container with the test specimen inside in the desiccator and cool down to (23 ± 5) °C.

Weigh the container with the test specimen inside within 1 min after removal from the dessicator.

Return the container with the test specimen inside to the furnace at a temperature of (500 ± 20)°C or at the temperature specified in the relevant product standard or any other European technical specification for at least 30 min. Remove the container from the furnace and place it in the desiccator and cool down to (23 ± 5) °C.

Repeat the procedure described in the previous paragraph until constant mass, as defined in 6.4, is obtained. Record this as m_3.

The container with the test specimen inside shall be stored in the desiccator between weighings.

Repeat the procedure for the other test specimens.

8 Calculation and expression of results

Calculate the organic content, M_{oc}, in mass percentage, for each test specimen using the equation:

$$M_{oc} = \frac{m_2 - m_3}{m_2 - m_1} \times 100$$

where:

m_1 is the mass of the test specimen container, in milligrams;

m_2 is the mass of the test specimen container with the dried test specimen inside, in milligrams;

m_3 is the mass of the test specimen container with the dried and heated test specimen inside, in milligrams.

The result shall be the mean value of the individual values. It shall be rounded to the nearest mass fraction of 0,01 %.

9 Accuracy of measurement

NOTE It has not been possible to include a statement on the accuracy of the measurements in this edition of the standard, but it is intended to include such a statement when the standard is next revised.

10 Test report

The test report shall include the following information:

a) Reference to this European Standard;

b) Product identification

1) product name, factory, manufacturer or supplier;

2) production code number;

3) type of product;

4) packaging;

5) the form in which the product arrived at the laboratory;

6) other information as appropriate, e.g. nominal thickness, nominal density;

c) Test procedure

1) pre-test history and sampling, e.g. who sampled and where;

2) conditioning;

3) if any deviation from clauses 6 and 7;

4) date of testing;

5) number of test specimens;

6) general information relating to the test, including the drying time and temperature, the furnace temperature and testing time in the furnace and if any coatings and/or facings have been removed;

7) events which may have affected the results;

NOTE Information about the apparatus and identity of the technician should be available in the laboratory, but it need not be recorded in the report.

d) Results

all individual values and the mean value of the organic content.