



SLOVENSKI STANDARD

SIST EN 12430:1999

01-september-1999

Toplotnoizolacijski proizvodi za uporabo v gradbeništvu – Ugotavljanje obnašanja pri točkovni obremenitvi

Thermal insulating products for building applications - Determination of behaviour under point load

Wärmedämmstoffe für das Bauwesen - Bestimmung des Verhaltens unter Punktlast

Produits isolants thermiques destinés aux applications du bâtiment - Détermination du comportement sous charge ponctuelle

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ICS:

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
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EUROPEAN STANDARD

EN 12430

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 1998

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Descriptors: thermal insulation, buildings, thermal insulating materials, mechanical tests, compression tests, penetration tests, test equipment, specimen preparation, testing conditions, fidelity, strain measurements, test results

English version

Thermal insulating products for building applications - Determination of behaviour under point load

Produits isolants thermiques destinés aux applications du
bâtiment - Détermination du comportement sous charge
ponctuelle

Wärmedämmstoffe für das Bauwesen - Bestimmung des
Verhaltens unter Punktlast

This European Standard was approved by CEN on 5 June 1998.

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 Central Secretariat 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 Central Secretariat 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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard 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 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 normative annex:

Annex A - Modifications to the general test method for cellular glass products

This European Standard has been drafted for applications in buildings but it may also be used in other areas where it is relevant.

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 December 1998, and conflicting national standards shall be withdrawn at the latest by December 1998.

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.

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1 Scope

This European Standard specifies equipment and procedures for determining the behaviour of products under a force applied to a small area of a test specimen at a given speed. It is applicable to thermal insulating products.

The standard can be used to determine whether the products have sufficient strength to withstand forces applied directly to them either during installation or during application, mainly caused by pedestrian traffic.

NOTE: The test methods given in the main body of the standard and in annex A are reported and interpreted in different ways. The similarities that exist between the methods are not sufficient to permit reasonable comparisons to be made.

2 Normative references

This European Standard incorporates, by dated or undated reference, 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 these publications apply to this draft European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 12085 Thermal insulating products for building applications -
Determination of linear dimensions of test specimens

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3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 **point load:** Compressive force applied to a test specimen by a circular indenter with a circular cross section of 50 cm² (diameter 79,8 mm).

3.2 **critical point:** Point on the force-deformation curve, where a straight line, forming a tangent to the curve, separates from the curve (see figure 4a).

4 Principle

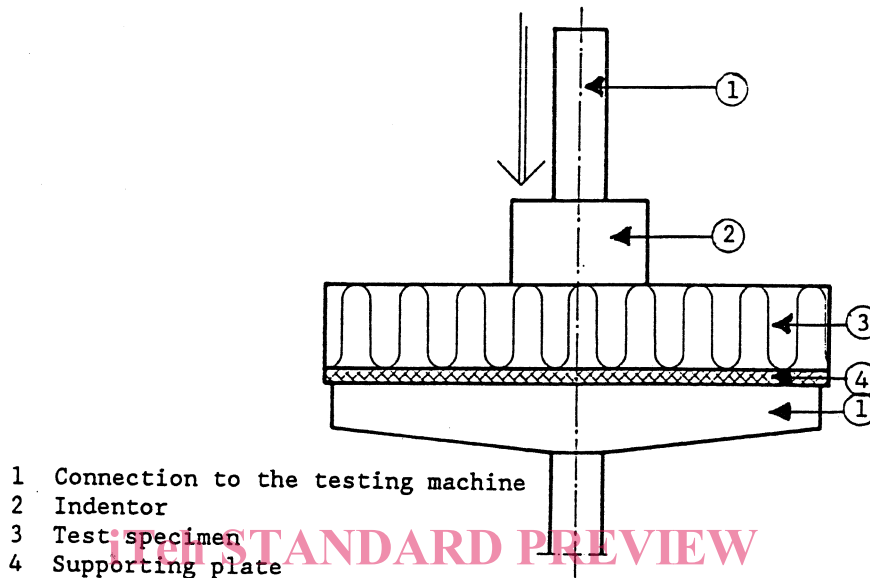
A point load is applied with an indenter at a given speed in an axial direction perpendicular to the major faces of a squarely cut square test specimen and the compressive force at the critical point and/or the force for a given deformation is calculated.

5 Apparatus

5.1 Compression testing machine

5.1.1 Compression testing machine appropriate to the range of force and displacement involved and having one rigid, polished, fixed or vertically movable square or circular plane plate of which the length of one side (or the diameter) is at least as large as the length (or the diagonal length) of the test specimen (see figure 1).

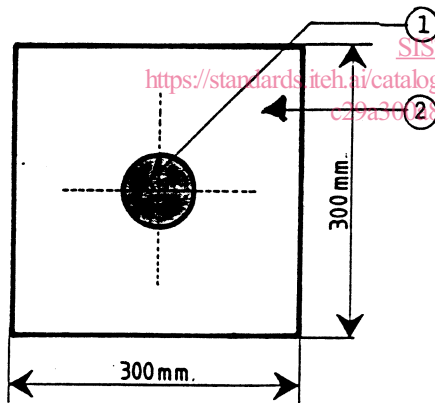
5.1.2 Cylindrical indenter of steel having a diameter of $(79,8 \pm 0,1)$ mm, connected to a vertically movable or fixed support. If appropriate the indenter shall be connected to the compression machine through a centrally positioned ball joint to ensure that only axial force is applied to the relevant area of the test specimen. The indenter or the supporting plate shall be capable of moving at a constant speed in accordance with 7.2 (see figures 2 and 3).



- 1 Connection to the testing machine
- 2 Indentor
- 3 Test specimen
- 4 Supporting plate

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Figure 1: Test setup



- 1 Cylindrical indenter
- 2 Test specimen

Figure 2: Test specimen

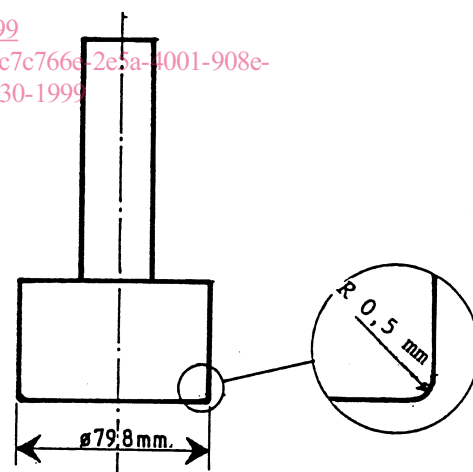


Figure 3: Cylindrical indenter.

5.2 Measurement of displacement

Device for the measurement of the displacement fitted to the compression testing machine which allows continuous measurement of the displacement of the indenter or the movable plate and which permits reading to $\pm 5\%$ or $\pm 0,1$ mm, whichever is the smaller (see 5.1.1.).

5.3 Measurement of force

Sensor fitted to the machine plate or the indenter to measure the force produced by the reaction of the test specimen upon the plate and the indenter. This sensor shall be such that its own deformation during the course of the measuring operation is negligible compared with that being measured or if not, it shall be taken into account by calculation. In addition it shall allow the continuous measurement of the force permitting reading to $\pm 1\%$.

5.4 Recording device

Device for the simultaneous recording of the force F and the displacement X which provides a curve of F as a function of X (see 7.2).

6 Test specimens

6.1 Dimensions of test specimens

Test specimens shall be at the original product thickness. Any skins, facings, and/or coatings shall be retained. The test specimens shall be squarely cut and square with sides having dimensions of 300 mm x 300 mm.

NOTE: Other dimensions may be specified in the relevant product standard or any other European technical specification or may be agreed between parties.

The linear dimensions shall be determined in accordance with EN 12085, to the nearest millimetre.

The tolerance on parallelism and flatness between the two major faces of the test specimens shall not be greater than 0,5 % of the test specimen side with a maximum of 0,5 mm.

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 three 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

Test specimens shall be cut so that the specimen base is normal to the direction of compression of the product in its application. The test specimens shall be cut and prepared by methods that do not change the original structure of the product. Moulded skins that do not remain with the product in use shall be removed.

Rectangular test specimens with parallel major faces shall be cut from the product so that the test specimen base is normal to the direction of the force which is experienced in its application.

6.4 Conditioning of test specimens

The test specimens shall be stored for at least 6 h at (23 ± 5) °C. In case of dispute they shall be stored at (23 ± 2) °C and (50 ± 5) % relative humidity for the time specified in the relevant product standard.

7 Procedure

7.1 Test conditions

The test shall be carried out at (23 ± 5) °C. In case of dispute it shall be carried out at (23 ± 2) °C and (50 ± 5) % relative humidity.

7.2 Test procedure

Measure the linear dimensions to the nearest millimetre in accordance with EN 12085.

Place the test specimen in the compression testing machine on the fixed plate so that the indenter is centrally located above the test specimen (see figure 1).

Preload with a force of $(2,5 \pm 0,25)$ N corresponding to a pressure of (500 ± 50) Pa.

Compress the area of the test specimen under the indenter with the indenter set to move at a constant speed of (50 ± 5) mm/min and record the force-deformation curve.

The test shall be stopped when the critical point can be determined (see figure 4a) and/or when the deformation reaches 20 % (see figure 4b).