



SLOVENSKI STANDARD

SIST EN 1602:1997

01-december-1997

Toplotnoizolacijski proizvodi za uporabo v gradbeništvu - Določanje gostote

Thermal insulating products for building applications - Determination of the apparent density

Wärmedämmstoffe für das Bauwesen - Bestimmung der Rohdichte

Produits isolants thermiques destinés aux applications du bâtiment - Détermination de la masse volumique apparente (standards.iteh.ai)

Ta slovenski standard je istoveten z: ^{SIST EN 1602:1997} EN 1602:1996
<https://standards.iteh.ai/catalog/standards/sist/4e877426-f6a2-44d6-8fca-be377252a608/sist-en-1602-1997>

ICS:

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

EN 1602

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 1996

ICS 91.120.10

Descriptors: buildings, thermal insulation, thermal insulating materials, tests, determination, density (mass/volume), bulk density

English version

**Thermal insulating products for building
applications - Determination of the apparent
density**

Produits isolants thermiques destinés aux
applications du bâtiment - Détermination de la
masse volumique apparente

Wärmedämmstoffe für das Bauwesen - Bestimmung
der Rohdichte

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This European Standard was approved by CEN on 1996-10-05. 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.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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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 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 1997, and conflicting national standards shall be withdrawn at the latest by December 1997.

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

In pursuance of Resolution BT 20/1993 Revised, CEN/TC 88 has proposed defining the standards listed below as a European "package" of standards, setting December 31, 1997 as the date of withdrawal (dow) of national standards which conflict with the European Standards of this package.

The "package" of standards comprises the following group of inter-related standards on test methods for determining dimensions and properties of thermal insulation materials and products, all of which come within the scope of CEN/TC 88:

- (standards.iteh.ai)
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|---------|---|
| EN 822 | Thermal insulating products for building applications - Determination of length and width
<small>https://standards.iteh.ai/catalog/standards/sist/4e877426-f6a2-44d6-8fca-be377252a608/sist-en-1602-1997</small> |
| EN 823 | Thermal insulating products for building applications - Determination of thickness |
| EN 824 | Thermal insulating products for building applications - Determination of squareness |
| EN 825 | Thermal insulating products for building applications - Determination of flatness |
| EN 826 | Thermal insulating products for building applications - Determination of compression behaviour |
| EN 1602 | Thermal insulating products for building applications - Determination of the apparent density |
| EN 1603 | Thermal insulating products for building applications - Determination of dimensional stability under constant normal laboratory conditions (23 °C/50 % relative humidity) |

EN 1604	Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions
EN 1605	Thermal insulating products for building applications - Determination of deformation under specified compressive load and temperature conditions
EN 1606	Thermal insulating products for building applications - Determination of compressive creep
EN 1607	Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces
EN 1608	Thermal insulating products for building applications - Determination of tensile strength parallel to faces
EN 1609	Thermal insulating products for building applications - Determination of short term water absorption by partial immersion
prEN 12085	Thermal insulating products for building applications - Determination of linear dimensions of test specimens
prEN 12086	Thermal insulating products for building applications - Determination of water vapour transmission properties
prEN 12087	Thermal insulating products for building applications - Determination of long term water absorption by immersion
prEN 12088	Thermal insulating products for building applications - Determination of long term water absorption by diffusion
prEN 12089	Thermal insulating products for building applications - Determination of bending behaviour
prEN 12090	Thermal insulating products for building applications - Determination of shear behaviour
prEN 12091	Thermal insulating products for building applications - Determination of freeze-thaw resistance

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

1 Scope

This European Standard specifies the equipment and procedures for determining the apparent overall density and the apparent core density under reference conditions. It is applicable to full size thermal insulating products and test specimens. This standard can also be applied to the individual layers of multi-layered products.

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 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.

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|------------|--|
| EN 822 | Thermal insulating products for building applications - Determination of length and width |
| EN 823 | Thermal insulating products for building applications - Determination of thickness |
| prEN 12085 | Thermal insulating products for building applications - Determination of linear dimensions of test specimens |

3 Definitions

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

- 3.1 **apparent overall density, ρ_a** : The mass per unit volume of a product, including all surface skins formed during production, but excluding any facings and/or coatings.
- 3.2 **apparent core density, ρ_c** : The mass per unit volume of the core of a product after all surface skins formed during production and all facings and/or coatings have been removed.

4 Principle

The density is determined as the quotient of the mass and the volume of the test specimen.

5 Apparatus

5.1 Balance capable of determining the mass of a test specimen to an accuracy of 0,5 %.

5.2 Equipment for the determination of linear dimensions (see 7.2).

6 Test specimens

6.1 Dimensions of test specimens

The test specimens shall be full size products or parts of them, or test specimens used for other tests.

The shape of the test specimens shall be such that their volume can be easily calculated.

When the apparent overall density is being determined using test specimens cut from a product with surface skins formed during production, the ratio of the area of the surface skin to the total volume shall be the same for the test specimen as for the product.

NOTE: The size of a test specimen should preferably be as large as possible, commensurate with the apparatus available and with the shape of the original product. The size of the test specimens may also be specified in other test methods.

6.2 Number of test specimens

The number of test specimens for full size products shall be as specified in the relevant product standard. If test specimens from other tests are used, the number shall be as specified in the test method. 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 by methods that do not change the original structure of the product.

The location from which the test specimens are taken shall be such that the density obtained is representative of the density of the product.

For determining the apparent overall density, any facings and/or coatings shall be removed from the product. For determining the apparent core density, any surface skins formed during production and any facings and/or coatings shall be removed from the product.

When it is not possible to remove the facings and/or coatings without influencing the apparent density of the product, the mass of the facings and/or coatings shall be deducted by calculation.

NOTE: Special methods of preparation, when needed, are given in the relevant product standard.

6.4 Conditioning of test specimens

The test specimens shall be conditioned at (23 ± 2) °C and (50 ± 5) % relative humidity until constant mass is achieved.

The time for conditioning and the required accuracy of the constant mass measurements shall be given in the relevant product standard.

NOTE 1: If it can be shown that temperature and humidity has negligible influence on the determination of the density, then the conditioning can be carried out at (23 ± 5) °C.

NOTE 2: The conditioning time can be shortened by pre-drying the test specimen in a ventilated drying chamber at a prescribed temperature. Appropriate procedures may be given in the relevant product standard.

7 Procedure

7.1 Test conditions

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

NOTE: If it can be shown that temperature and humidity has negligible influence on the determination of the density, the testing can be carried out at (23 ± 5) °C.

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7.2 Test procedure

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Measure the linear dimensions of full size products in accordance with EN 822 and EN 823.

Measure the linear dimensions of test specimens in accordance with prEN 12085.

For full size products the length, width, and thickness shall be rounded to the nearest millimetre. For test specimens the measurements shall be made with an accuracy of 0,5 %.

Calculate the volumes of the test specimens from these measurements.

Weigh each test specimen to an accuracy of 0,5 % and record its mass in kilogrammes.

If the facings and/or coatings are retained, the mass of the product shall be calculated by deducting the mass of the facings and/or coatings and adhesives, if any, from the overall mass.

If a higher accuracy for dimensions of full size products is needed, it shall be specified in the relevant product standard.