

SLOVENSKI STANDARD kSIST FprEN 826:2012

01-september-2012

Toplotno izolacijski proizvodi za uporabo v gradbeništvu - Ugotavljanje obnašanja pri tlačni obremenitvi

Thermal insulating products for building applications - Determination of compression behaviour

Wärmedämmstoffe für das Bauwesen - Bestimmung des Verhaltens bei Druckbeanspruchung

Produits isolants thermiques destinés aux applications du bâtiment - Détermination du comportement en compression

Ta slovenski standard je istoveten z: FprEN 826

<u>ICS:</u>

91.100.60 Materiali za toplotno in zvočno izolacijo

Thermal and sound insulating materials

kSIST FprEN 826:2012

en,fr,de

kSIST FprEN 826:2012



EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

FINAL DRAFT FprEN 826

June 2012

ICS 91.100.60

Will supersede EN 826:1996

English Version

Thermal insulating products for building applications -Determination of compression behaviour

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

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FprEN 826:2012 (E)

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Foreword

This document (FprEN 826:2012) has been prepared by Technical Committee CEN/TC 88 "Thermal insulating materials and products", the secretariat of which is held by DIN.

This document is currently submitted to the Unique Acceptance Procedure.

This document will supersede EN 826:1996.

The revision of this standard contains no major changes only minor corrections and clarifications of editorial nature.

This European standard has been prepared for building applications, but it may also be used in other areas where it is relevant.

This EN test standard is one of the following group of 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:

EN 822, Thermal insulating products for building applications — Determination of length and width

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 dimension and shape 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

EN 12085, Thermal insulating products for building applications — Determination of linear dimension of test specimens

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EN 12086, Thermal insulating products for building applications — Determination of water vapour transmission properties

EN 12087, Thermal insulating products for building applications — Determination of long-term water absorption by immersion

EN 12088, Thermal insulating products for building applications — Determination of long-term water absorption by diffusion

EN 12089, Thermal insulating products for building applications — Determination of bending behaviour

EN 12090, Thermal insulating products for building applications — Determination of shear behaviour

EN 12091, Thermal insulating products for building applications — Determination of freeze-thaw resistance

EN 12429, Thermal insulating products for building applications — Conditioning to moisture equilibrium under specified temperature and humidity conditions

EN 12430, Thermal insulating products for building applications — Determination of behaviour under point load

EN 12431, Thermal insulating products for building applications — Determination of thickness for floating floor insulating products

EN 13793, Thermal insulating products for building applications — Determination of behaviour under cyclic loading

EN 13820, Thermal insulating products for building applications — Determination of organic content

1 Scope

This European Standard specifies the equipment and procedures to be used when determining the compression behaviour of test specimens. It is applicable to thermal insulating products and can be used to determine the compressive stress in compressive creep tests and for applications in which insulation products are only exposed to short-term loads.

The method can be used for quality control purposes. It may also be employed to obtain reference values from which design values can be calculated using safety factors.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 5725-1, Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions

ISO 5725-2, Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method

3 Terms and definitions

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

3.1

relative deformation

Е

ratio of the reduction in thickness of the test specimen to its initial thickness, d_0 , measured in the direction of loading and expressed as a percentage

3.2

compressive strength

 $\sigma_{\rm m}$

ratio of the maximum compressive force, F_m , reached when the strain, ε , at yield (see Figure 1b)) or rupture (see Figure 1a)) is less than 10 %, to the initial cross-sectional area of the test specimen

3.3

compressive stress at 10% strain

 σ_{10}

ratio of the compressive force, F_{10} , at 10 % strain, ε_{10} , to the initial cross section of the test specimen (see Figures 1c) and 1d)) for products presenting 10 % strain before possible yield or rupture

3.4

compression modulus of elasticity

Ε

compressive stress divided by the corresponding strain below the proportional limit, when the relationship is linear (see Figure 1)

4 Principle

A compressive force is applied at a given rate of displacement perpendicular to the major faces of a squarely cut test specimen and the maximum stress supported by the specimen calculated.

NOTE In case of tapered products the test specimens should be cut to obtain two parallel faces.

When the value of the maximum stress corresponds to a strain of less than 10 %, it is designated as compressive strength and the corresponding strain is reported. If no failure is observed before the 10 % strain has been reached, the compressive stress at 10 % strain is calculated and its value reported as compressive stress at 10 % strain.

5 Apparatus

5.1 Compression testing machine

Compression testing machine, designed to suit the range of force and displacement involved and having two very rigid, polished, square or circular plane parallel platens with a minimum side length (or diameter) equal to the side length (or diagonal) of the test specimen. One of the plates shall be fixed and the other be movable, if appropriate, with a centrally positioned ball joint to ensure that only axial force is applied to the test specimen. The movable plate shall be capable of moving at a constant rate of displacement in accordance with Clause 7.

5.2 Measurement of displacement

Displacement measuring device, fitted to the compression testing machine, which allows continuous measurement of the displacement of the movable plate to an accuracy of \pm 5 % or \pm 0,1 mm, whichever is smaller (see 5.3).

5.3 Measurement of force

Sensor fitted to one of the machine plates to measure the force produced by the reaction of the specimen upon the plates. This sensor shall be such that its own deformation during 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 to an accuracy of ± 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).

NOTE The curve gives additional information on the behaviour of the product and possibly enables the determination of the compression modulus of elasticity.

6 Test specimens

6.1 Dimensions of test specimens

The test specimens shall have the original product thickness. The width of the test specimens shall be not less than their thickness. Products with integrally moulded skins which are retained in use shall be tested with these skins intact.

Test specimens shall not be layered to produce a greater thickness for testing.

Test specimens shall be squarely cut and have the following dimensions: