
**Thermal insulating products for building
applications — Determination of tensile
strength parallel to faces**

*Produits isolants thermiques destinés aux applications du bâtiment —
Détermination de la résistance à la traction parallèlement aux faces*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 29766 was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 1, *Test and measurement methods*.

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Introduction

This International Standard comprises the original EN 1608:1996, EN 1608:1996/AC:1997 and its Amendment 1:2006 prepared by Technical Committee CEN/TC 88, *Thermal insulating materials and products*, which have been amended by ISO/TC 163/SC 1 with reference to conditioning and testing conditions in tropical countries.

This International Standard is one of a series of documents specifying test methods, based on existing European Standards, that are being adopted by ISO. This “package” of standards includes the following group of interrelated documents.

International Standard	Respective EN standard
ISO 29465, <i>Thermal insulating products for building applications — Determination of length and width</i>	EN 822
ISO 29466, <i>Thermal insulating products for building applications — Determination of thickness</i>	EN 823
ISO 29467, <i>Thermal insulating products for building applications — Determination of squareness</i>	EN 824
ISO 29468, <i>Thermal insulating products for building applications — Determination of flatness</i>	EN 825
ISO 29469, <i>Thermal insulating products for building applications — Determination of compression behaviour</i>	EN 826
ISO 29470, <i>Thermal insulating products for building applications — Determination of the apparent density</i>	EN 1602
ISO 29471, <i>Thermal insulating products for building applications — Determination of dimensional stability under constant normal laboratory conditions (23 °C/50 % relative humidity)</i>	EN 1603
ISO 29472, <i>Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions</i>	EN 1604
ISO 29764, <i>Thermal insulating products for building applications — Determination of deformation under specified compressive load and temperature conditions</i>	EN 1605
ISO 29765, <i>Thermal insulating products for building applications — Determination of tensile strength perpendicular to faces</i>	EN 1607
ISO 29766, <i>Thermal insulating products for building applications — Determination of tensile strength parallel to faces</i>	EN 1608
ISO 29767, <i>Thermal insulating products for building applications — Determination of short-term water absorption by partial immersion</i>	EN 1609

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ISO 29768, <i>Thermal insulating products for building applications — Determination of linear dimensions of test specimens</i>	EN 12085
ISO 29769, <i>Thermal insulating products for building applications — Determination of behaviour under point load</i>	EN 12430
ISO 29770, <i>Thermal insulating products for building applications — Determination of thickness for floating-floor insulating products</i>	EN 12431
ISO 29771, <i>Thermal insulating materials for building applications — Determination of organic content</i>	EN 13820
ISO 29803, <i>Thermal insulation products for building applications — Determination of the resistance to impact of external thermal insulation composite systems (ETICS)</i>	EN 13497
ISO 29804, <i>Thermal insulation products for building applications — Determination of the tensile bond strength of the adhesive and of the base coat to the thermal insulation material</i>	EN 13494
ISO 29805, <i>Thermal insulation products for building applications — Determination of the mechanical properties of glass fibre meshes</i>	EN 13496

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Thermal insulating products for building applications — Determination of tensile strength parallel to faces

1 Scope

This International Standard specifies the equipment and procedures for determining the tensile strength of a product parallel to its faces. This International Standard is applicable to thermal insulating products.

This International Standard can be used to determine whether the product has sufficient strength to withstand stresses during transportation and application.

2 Normative references

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

ISO 29466, *Thermal insulating products for building applications — Determination of thickness*

ISO 29768, *Thermal insulating products for building applications — Determination of linear dimensions of test specimens*

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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 document, the following term and definition apply.

3.1

tensile strength parallel to faces

σ_t

maximum recorded tensile force parallel to the product faces during the pulling operation, divided by the cross-sectional testing area of the specimen

4 Principle

A specimen is attached to two clamps that are fastened in a tensile testing machine and pulled apart at a given speed.

The maximum tensile force is recorded and the tensile strength of the specimen is calculated.

5 Apparatus

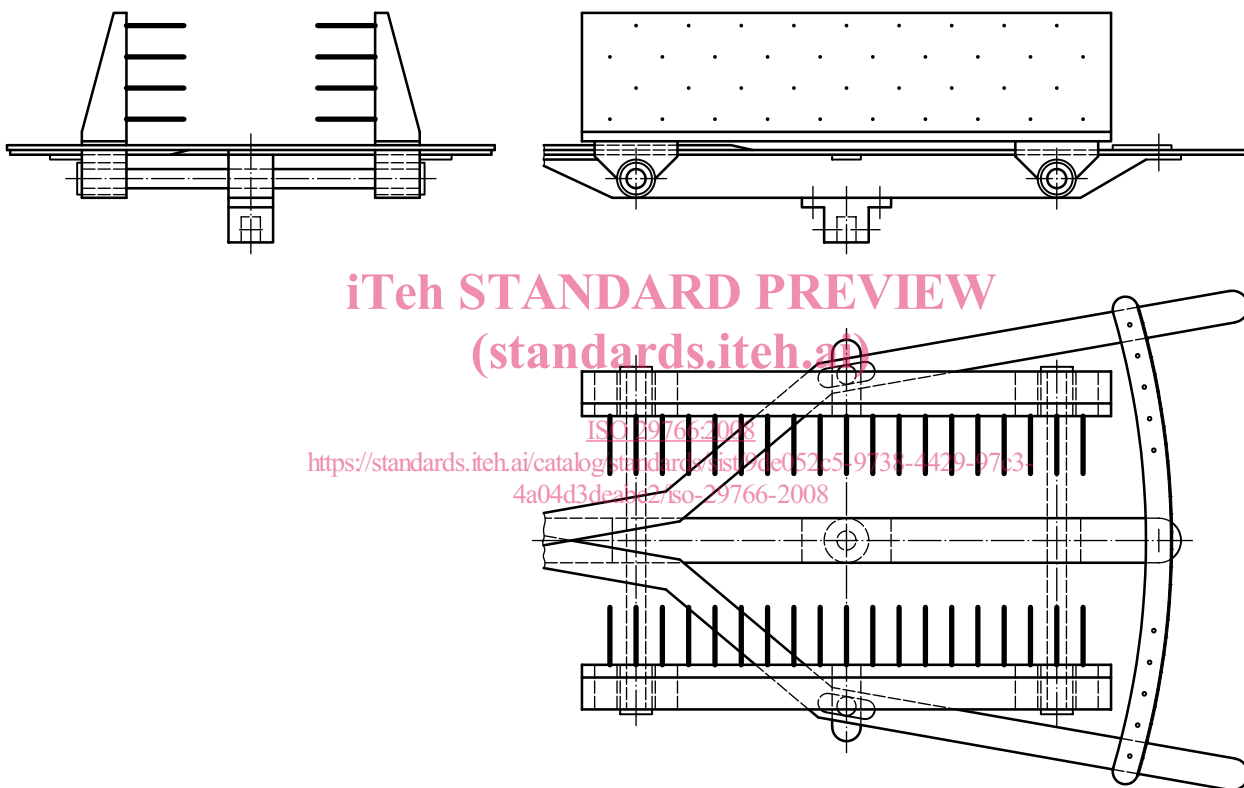
Any test equipment or method which provides the same result with at least the same accuracy may be used.

5.1 Tensile testing machine, appropriate for the range of force and displacement involved, capable of having a constant crosshead speed adjusted to (10 ± 1) mm/min and capable of measuring the force to an accuracy of $\pm 1\%$.

5.2 Two clamps, designed so as to avoid failure of the specimen in the area of the clamps.

The clamps shall be positioned so that the tensile stress is uniformly distributed during the test.

An example of suitable equipment is shown in Figure 1.



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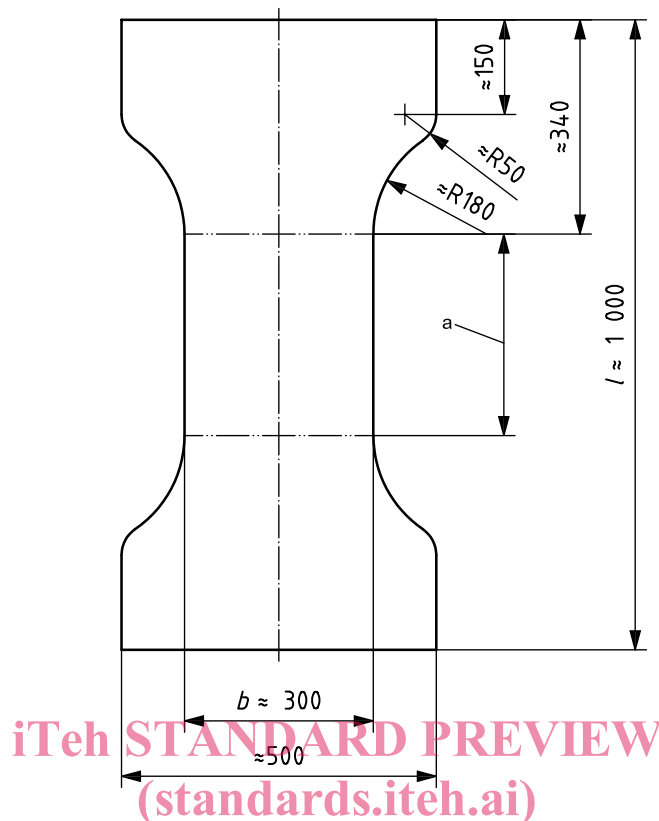
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Figure 1 — Example of a suitable clamp

6 Test specimens

6.1 Dimensions of test specimens

The thickness of the specimens shall be the original product thickness including any skins, facings and/or coatings. The specimens shall be cut with the shape and with the dimensions shown in Figure 2. For small products or because of equipment limitations, the specimen length and width shall be adjusted proportionally, but with a minimum length of 500 mm. Other specimen shapes which provide the same result to at least the same accuracy may be used.



a Testing area.

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Figure 2 — Test specimen shape and dimensions

6.2 Number of test specimens

The number of specimens shall be as specified in the relevant product standard. If the number is not specified, then at least three specimens shall be used. In the absence of a product standard or any other international or European technical specification, the number of specimens may be agreed between parties.

6.3 Preparation of test specimens

The specimens shall be cut from the full-size product so that the length direction corresponds to the direction in which the tensile force is applied to the product in its application.

Specimens shall be prepared by methods that do not change the original structure of the product.

NOTE Special methods of preparation, when needed, are given in the relevant product standard or any other international or European technical specification.

6.4 Conditioning of test specimens

The specimens shall be conditioned for at least six hours at $(23 \pm 5) ^\circ\text{C}$. In case of dispute, they shall be conditioned at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \%$ relative humidity for the time stated in the relevant product standard.

In tropical countries, different conditioning and testing conditions can be relevant. In this case, the conditions shall be $27 ^\circ\text{C}$ and 65% RH and be stated clearly in the test report.