

# norm

# NEN-EN 13166

Producten voor thermische isolatie van gebouwen - Fabrieksmatig vervaardigde producten van fenolschuim - Specificatie

Publicatie uitsluitend voor commentaar

Thermal insulation products for buildings - Factory made products of phenolic foam (PF) - Specificatie

mei 2008  
ICS 91.100.60

Commentaar voor 2008-08-10

Zal vervangen NEN-EN 13166:2001; NEN-EN 13166:2001/A1:2004; NEN-EN 13166:2001/C1:2006

Als Europees normontwerp is gepubliceerd: prEN 13166:2008, IDT

Definitief vastgestelde normen zullen als Nederlandse norm gelden. Daarom wordt dit normontwerp in Nederland voor commentaar gepubliceerd. Op het ontwerp ingebracht commentaar zal aan de bevoegde normcommissie worden voorgelegd die hiermee rekening zal houden bij de bepaling van de Nederlandse stem. Indien er geen bezwaar bij NEN wordt ingebracht, kan dat leiden tot ongewijzigd definitieve vaststelling van het ontwerp als norm.

Van Europese normen bestaan drie officiële versies: Engels, Frans en Duits. Voor Nederland zal de Engelse versie gelden, tenzij voor een geautoriseerde versie in het Nederlands wordt gekozen.

Normcommissie 353 033 "Thermische isolatiematerialen"

Apart from exceptions provided by the law, nothing from this publication may be duplicated and/or published by means of photocopy, microfilm, storage in computer files or otherwise, which also applies to full or partial processing, without the written consent of the Netherlands Standardization Institute.

The Netherlands Standardization Institute shall, with the exclusion of any other beneficiary, collect payments owed by third parties for duplication and/or act in and out of law, where this authority is not transferred or falls by right to the Reproduction Rights Foundation.

Auteursrecht voorbehouden. Behoudens uitzondering door de wet gesteld mag zonder schriftelijke toestemming van het Nederlands Normalisatie-instituut niets uit deze uitgave worden verveelvoudigd en/of openbaar gemaakt door middel van fotokopie, microfilm, opslag in computerbestanden of anderszins, hetgeen ook van toepassing is op gehele of gedeeltelijke bewerking.

Het Nederlands Normalisatie-instituut is met uitsluiting van ieder ander gerechtigd de door derden verschuldigde vergoedingen voor verveelvoudiging te innen en/of daartoe in en buiten rechte op te treden, voor zover deze bevoegdheid niet is overgedragen c.q. rechtens toekomt aan de Stichting Reprorecht.

Although the utmost care has been taken with this publication, errors and omissions cannot be entirely excluded. The Netherlands Standardization Institute and/or the members of the committees therefore accept no liability, not even for direct or indirect damage, occurring due to or in relation with the application of publications issued by the Netherlands Standardization Institute.

Hoewel bij deze uitgave de uiterste zorg is nagestreefd, kunnen fouten en onvolledigheden niet geheel worden uitgesloten. Het Nederlands Normalisatie-instituut en/of de leden van de commissies aanvaarden derhalve geen enkele aansprakelijkheid, ook niet voor directe of indirecte schade, ontstaan door of verband houdend met toepassing van door het Nederlands Normalisatie-instituut gepubliceerde uitgaven.



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**FINAL DRAFT**  
**prEN 13166**

April 2008

ICS 91.100.60

Will supersede EN 13166:2001

English Version

**Thermal insulation products for buildings - Factory made  
products of phenolic foam (PF) - Specification**

Wärmedämmstoffe für Gebäude- Produits manufacturés en  
mousse phénolique (PF) - Spécification

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 88.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN Management Centre has the same status as the official versions.

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

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Contents

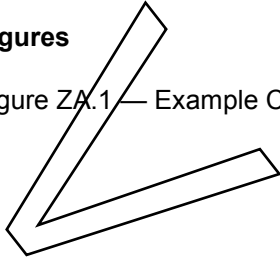
Page

Foreword.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms, definitions, symbols, units and abbreviated terms.....	6
4 Requirements.....	9
5 Test methods.....	15
6 Designation code.....	18
7 Evaluation of conformity.....	18
8 Marking and labelling.....	19
Annex A (normative) Determination of the declared values of thermal resistance and thermal conductivity.....	20
Annex B (normative) Factory production control.....	22
Annex C (normative) Determination of the aged values of thermal resistance and thermal conductivity.....	25
Annex D (informative) Additional properties.....	30
Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive.....	31
Bibliography.....	39
Tables	
Table 1 — Tolerances for length and width.....	10
Table 2 — Classes for thickness tolerances.....	10
Table 3 — Tolerances for deviation from flatness.....	11
Table 4 — Levels for compressive strength.....	13
Table 5 — Levels for short term water absorption by partial immersion.....	14
Table 6 — Levels for long term water absorption by partial immersion.....	14
Table 7 — Test methods, specimens and conditions.....	17
Table A.1 — Values for $k$ for one side 90 % tolerance interval with a confidence level of 90 %.....	21
Table B.1 — Minimum product testing frequencies.....	22
Table B.2 — Minimum product testing frequencies for the reaction to fire characteristics.....	23
Table C.1 — Test times for product thicknesses.....	27
Table C.2 — Increments to be added to accelerated aged values of thermal conductivity to obtain the time averaged value over 25 years (W/m·K).....	28
Table D.1 — Test methods, test specimens, conditions and minimum testing frequencies.....	30
Table ZA.1 — Relevant clauses for factory made products of phenolic foam and intended use.....	32
Table ZA.2 — Systems of attestation of conformity.....	33

**Table ZA.3 — Assignment of evaluation of conformity tasks for products under system 1 .....34**  
**Table ZA.4 — Assignment of evaluation of conformity tasks for products under system 3 or  
system 3 combined with system 4 for reaction to fire ..... 35**

**Figures**

Figure ZA.1 — Example CE marking information .....38



Copyright  
Preview

## Foreword

This document (prEN 13166:2008) 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 13166:2001.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship with EC Directive(s) see informative Annex ZA, which is an integral part of this document.

This document is one of a series of standards for insulation products used in buildings, but this standard may be used in other areas where appropriate.

In pursuance of Resolution BT20/1993 revised, CEN/TC 88 have proposed defining the standards listed below as a package of documents.

The package of standards comprises the following group of interrelated standards for the specifications of factory made thermal insulation products, all of which come within the scope of CEN/TC 88:

EN 13162, *Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification*

EN 13163, *Thermal insulation products for buildings — Factory made products of expanded polystyrene (EPS) — Specification*

EN 13164, *Thermal insulation products for buildings — Factory made products of extruded polystyrene foam (XPS) — Specification*

EN 13165, *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PUR) products — Specification*

EN 13166, *Thermal insulation products for buildings — Factory made products of phenolic foam (PF) — Specification*

EN 13167, *Thermal insulation products for buildings — Factory made cellular glass (CG) products — Specification*

EN 13168, *Thermal insulation products for buildings — Factory made wood wool (WW) products — Specification*

EN 13169, *Thermal insulation products for buildings — Factory made products of expanded perlite (EPB) — Specification*

EN 13170, *Thermal insulation products for buildings — Factory made products of expanded cork (ICB) — Specification*

EN 13171, *Thermal insulation products for buildings — Factory made wood fibre (WF) products — Specification*

## 1 Scope

This European Standard specifies the requirements for factory made products of phenolic foam, with or without facings, which are used for the thermal insulation of buildings. The products are manufactured in the form of boards and laminates.

This European Standard describes product characteristics and includes procedures for testing, evaluation of conformity, marking and labelling.

Products covered by this European Standard are also used in prefabricated thermal insulation systems and composite panels; the performance of systems incorporating these products is not covered.

This European Standard does not specify the required level of a given property to be achieved by a product to demonstrate fitness for purpose in a particular application. The levels required for a given application are to be found in regulations or non-conflicting standards.

Products with a declared thermal resistance lower than  $0,40 \text{ m}^2\text{-K/W}$  or a declared thermal conductivity greater than  $0,050 \text{ W/(m}\cdot\text{K)}$  at  $10 \text{ }^\circ\text{C}$  are not covered by this European Standard.

This European Standard does not cover in-situ insulation products, products intended to be used for the insulation of building equipment and industrial installations or products intended for acoustic insulation.

## 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.

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 apparent density*

EN 1603, *Thermal insulating products for building applications — Determination of dimensional stability under constant normal laboratory conditions (25 °C/50 % relative humidity)*

EN 1604, *Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity 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 1609, *Thermal insulating products for building applications — Determination of short term water absorption by partial immersion*

EN 12086:1997, *Thermal insulating products for building applications — Determination of water vapour transmission properties*

**prEN 13166:2008 (E)**

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

EN 12089:1997, *Thermal insulating products for building applications — Determination of bending behaviour*

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

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

EN 12667, *Thermal performance for building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Products of high and medium thermal resistance*

EN 12939, *Thermal performance for building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Thick products of high and medium thermal resistance*

EN 13172:2001, *Thermal insulating products — Evaluation of conformity<sup>1</sup>*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire test*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN ISO 4590, *Rigid cellular plastics — Determination of the volume percentage of open cells and of closed cells (ISO 4590:2002)*

EN ISO 9229:2007, *Thermal insulation — Vocabulary (ISO 9229:2007)*

EN ISO 11925-2, *Reaction to fire tests for building products — Ignitability of building products when subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)*

ISO 12491, *Statistical methods for quality control of building materials and components*

### **3 Terms, definitions, symbols, units and abbreviated terms**

#### **3.1 Terms and definitions**

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

##### **3.1.1 Terms and definitions as given in EN ISO 9229:2007**

###### **3.1.1.1**

###### **phenolic foam**

rigid cellular foam, the polymer structure of which is made primarily from the polycondensation of phenol, its homologues and/or derivatives, with aldehydes or ketones

<sup>1</sup> Under review



**3.1.1.2****board  
slab**

rigid or semi-rigid (insulation) product of rectangular shape and cross section in which the thickness is uniform and substantially smaller than the other dimensions

NOTE Boards are usually thinner than slabs. They may also be supplied in tapered form.

**3.1.1.3****laminated**

combination of two or more materials that are bonded together during manufacture to produce a single item or product

**3.1.2 Additional terms and definitions****3.1.2.1****level**

given value which is the upper or lower limit of a requirement. The level is given by the declared value of the characteristic concerned

**3.1.2.2****class**

combination of two levels of the same property between which the performance shall fall

**3.2 Symbols, units and abbreviated terms****3.2.1 Symbols and units used in this standard.**

$b$	is the width	mm
$d$	is the thickness	mm
$d_N$	is the nominal thickness of the product	mm
$\Delta S$	is the overall change in flatness	mm
$\Delta \varepsilon_b$	is the relative change in width	%
$\Delta \varepsilon_d$	is the relative change in thickness	%
$\Delta \varepsilon_l$	is the relative change in length	%
$\Delta \lambda_a$	is the ageing increment of thermal conductivity	W/(m·K)
$\Delta \lambda_s$	is the ageing increment of thermal conductivity as determined by the slicing method	W/(m·K)
$\varepsilon_{ct}$	is the compressive creep	%
$\varepsilon_t$	is the total thickness reduction	%
$k$	is a factor related to the number of test results available	—
$k_a$	is a factor related to the number of test results of aged thermal conductivity	—
$k_i$	is a factor related to the number of test results of initial thermal conductivity	—
$l$	is the length	mm
$\lambda_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity	W/(m·K)
$\lambda_D$	is the declared thermal conductivity	W/(m·K)

# Bestelformulier

# NEN

## Stuur naar:

NEN Standards Products & Services  
t.a.v. afdeling Klantenservice  
Antwoordnummer 10214  
2600 WB Delft

## NEN Standards Products & Services

Postbus 5059  
2600 GB Delft

Vlinderweg 6  
2623 AX Delft

T (015) 2 690 390  
F (015) 2 690 271

[www.nen.nl/normshop](http://www.nen.nl/normshop)

## Ja, ik bestel

\_\_ ex. NEN-EN 13166:2008 Ontw. en Producten voor thermische isolatie van gebouwen - Fabrieksmatig vervaardigde producten van fenolschuim - Specificatie € 35.70

**Wilt u deze norm in PDF-formaat? Deze bestelt u eenvoudig via [www.nen.nl/normshop](http://www.nen.nl/normshop)**

### Gratis e-mailnieuwsbrieven

Wilt u op de hoogte blijven van de laatste ontwikkelingen op het gebied van normen, normalisatie en regelgeving? Neem dan een gratis abonnement op een van onze e-mailnieuwsbrieven. [www.nen.nl/nieuwsbrieven](http://www.nen.nl/nieuwsbrieven)

### Retourneren

Fax: (015) 2 690 271  
E-mail: [klantenservice@nen.nl](mailto:klantenservice@nen.nl)  
Post: NEN Standards Products & Services,  
t.a.v. afdeling Klantenservice  
Antwoordnummer 10214,  
2600 WB Delft  
(geen postzegel nodig).

## Gegevens

Bedrijf / Instelling \_\_\_\_\_

T.a.v. \_\_\_\_\_ O M O V

E-mail \_\_\_\_\_

Klantnummer NEN \_\_\_\_\_

Uw ordernummer \_\_\_\_\_

BTW nummer \_\_\_\_\_

Postbus / Adres \_\_\_\_\_

Postcode \_\_\_\_\_

Plaats \_\_\_\_\_

Telefoon \_\_\_\_\_

Fax \_\_\_\_\_

**Factuuradres** (indien dit afwijkt van bovenstaand adres)

Postbus / Adres \_\_\_\_\_

Postcode \_\_\_\_\_

Plaats \_\_\_\_\_

Datum \_\_\_\_\_

Handtekening \_\_\_\_\_

### Voorwaarden

- De prijzen zijn geldig tot 31 december 2016, tenzij anders aangegeven.
- Alle prijzen zijn excl. btw, verzend- en handelingskosten en onder voorbehoud bij o.m. ISO- en IEC-normen.
- Bestelt u via de normshop een pdf, dan betaalt u geen handeling en verzendkosten.
- Meer informatie: telefoon (015) 2 690 391, dagelijks van 8.30 tot 17.00 uur.
- Wijzigingen en typfouten in teksten en prijsinformatie voorbehouden.
- U kunt onze algemene voorwaarden terugvinden op: [www.nen.nl/leveringsvoorwaarden](http://www.nen.nl/leveringsvoorwaarden).