

# SVENSK STANDARD

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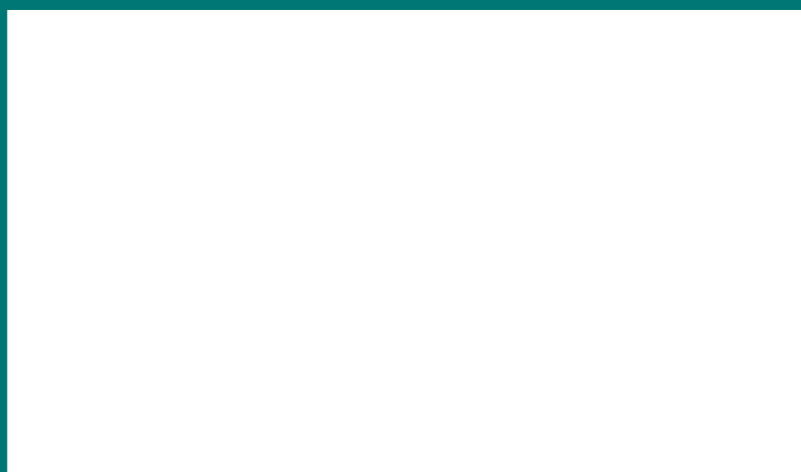
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### **Värmeisolering och lättfyllning för anläggningskonstruktioner – Fabrikstillverkade produkter av extruderad styrencellplast (XPS) – Egenskapsredovisning**

**Thermal insulation and light weight fill products for civil engineering  
applications – Factory made products of extruded polystyrene foam  
(XPS) – Specification**



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EUROPEAN STANDARD

**EN 14934**

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2007

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ICS 83.100; 93.010

English Version

**Thermal insulation and light weight fill products for civil  
engineering applications - Factory made products of extruded  
polystyrene foam (XPS) - Specification**

Produits isolants thermiques et de remblayage pour les  
applications de génie civil - Produits manufacturés en  
mousse de polystyrène extrudé (XPS) - Spécifications

Wärmedämmung und leichte Füllprodukte für  
Anwendungen im Tiefbau - Werkmäßig hergestellte  
Produkte aus extrudiertem Polystyrolschaum (XPS) -  
Spezifikation

This European Standard was approved by CEN on 13 July 2007.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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## EN 14934:2007 (E)

### Foreword

This document (EN 14934:2007) 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of an identical text or by endorsement, at the latest by March 2008, and conflicting national standards shall be withdrawn at the latest by March 2008.

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 EU Directive(s).

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

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## 1 Scope

This European Standard specifies the requirements for factory made products of extruded polystyrene foam which are used for frost insulation of roads, railways, trafficked areas, light weight fill for reduction of horizontal and vertical earth pressure and other civil engineering applications.

The products are manufactured in the form of boards, which are also available with special edge and surface treatment (tongue & grooves, shiplap etc.). The standard also covers multilayered insulation boards.

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

The 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 classes and levels required for a given application are to be found in regulations or non-conflicting standards.

For applications where thermal resistance is required, products with a declared thermal resistance lower than 0,25 m<sup>2</sup>·K/W or a declared thermal conductivity greater than 0,060 W/(m· K) are not covered by this standard. This standard does not cover in situ insulation products and products intended to be used for insulation of buildings, 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 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 12086:1997, *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 14934:2007 (E)

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

EN 12667, *Thermal performance of 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 of 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*

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

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

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

EN ISO 1182, *Reaction to fire tests for building products — Non combustibility test (ISO 1182:2002)*

EN ISO 1716, *Reaction to fire tests for building products — Determination of the heat of combustion (ISO 1716:2002)*

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

EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products 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

##### **extruded polystyrene foam**

rigid cellular plastics insulation material expanded and extruded with or without a skin, from polystyrene or one of its copolymers and which has a closed cell structure

##### 3.1.1.2

##### **board**

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

### 3.1.2 Additional 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

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
$d_s$	is the thickness of test specimen	mm
$D_i$	is the relative compression after $i$ number of cycles	%
$\Delta\varepsilon_b$	is the relative change in width	%
$\Delta\varepsilon_d$	is the relative change in thickness	%
$\Delta\varepsilon_l$	is the relative change in length	%
$\varepsilon_{ct}$	is the compressive creep	%
$\varepsilon_t$	is the total relative thickness reduction	%
$\varepsilon_{l,max}$	is the relative maximum deformation	%
$\varepsilon_1$	is the relative deformation after step A	%
$\varepsilon_2$	is the relative deformation after step B	%
$k$	is a factor related to the number of test results available	—
$l$	is the length	mm
$\lambda_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity	W/(m·K)
$\lambda_{90/90, 60d}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity of foam at 60 days	W/(m·K)
$\lambda_{90/90>60d}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity of foam older than 60 days	W/(m·K)
$\lambda_D$	is the declared thermal conductivity	W/(m·K)
$\lambda_i$	is one test result of thermal conductivity	W/(m·K)
$\lambda_{mean}$	is the mean thermal conductivity	W/(m·K)
$\lambda_{mean, a}$	is the mean thermal conductivity of aged values	W/(m·K)