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**Toplotnoizolacijski proizvodi za opremo stavb in industrijske inštalacije - Proizvodi iz trde poliuretanske pene (PUR) in poliizocianuratne pene (PIR), oblikovani na mestu vgradnje - 2. del: Specifikacija za vgrajene izolacijske proizvode**

Thermal insulating products for building equipment and industrial installations - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate foam (PIR) products - Part 2: Specification for the installed insulation products

**iTeh STANDARD PREVIEW**

Wärmedämmstoffe für die technische Gebäudeausrüstung und für betriebstechnische Anlagen in der Industrie - An der Verwendungsstelle hergestellte Wärmedämmung aus Polyurethan (PUR)- und Polyisocyanurat (PIR)-Spritzschaum - Teil 2: Spezifikation für die eingebauten Produkte

Produits isolants thermiques destinés aux équipements de bâtiment et aux installations industrielles - Produits en mousse rigide de polyuréthane (PUR) et de polyisocyanurate (PIR) projetée, formés en place - Partie 2: Spécifications relatives aux produits isolants après mise en œuvre

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**ICS:**

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
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Thermal insulating products for building equipment and industrial installations - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate foam (PIR) products - Part 2: Specification for the installed insulation products

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This European Standard was approved by CEN on 24 November 2012.

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## Foreword

This document (EN 14320-2:2013) 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of an identical text or by endorsement, at the latest by July 2013, and conflicting national standards shall be withdrawn at the latest by July 2013.

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

This European Standard consists of two parts which form a package. The first part is the harmonised part satisfying the mandate and the CPD and which is the basis for the CE marking covering the products, which are placed on the market. The second part, which is the non-harmonised part, covers the specification for the installed products. Both parts need to be used for the application of the insulation products in the end-use applications covered by EN 14320.

Attention is drawn to the need to take into account any complementary member state rules (e.g. installation rules) which together with Part 2 of this European Standard ensures the fitness for purpose of the installed product.

This European Standard is one of a series for expanded perlite, exfoliated vermiculite and polyurethane/polyisocyanurate in-situ formed insulation products used in building equipment and industrial installations, but this standard may be used in other areas where appropriate.

The reduction in energy used and emissions produced during the installed life of insulation products exceeds by far the energy used and emissions made during the production and disposal processes.

EN 14320, *Thermal insulating products for building equipment and industrial installations — In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate foam (PIR) products* consists of the following parts:

- *Part 1: Specification for the rigid foam dispensed system before installation*
- *Part 2: Specification for the installed insulation products* (the present document)

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**EN 14320-2:2013 (E)****1 Scope**

This European Standard specifies requirements for in-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products for the insulation of building equipment industrial installations, for example storage vessels, pipes and ducts used for the supply of fuels, oil, other liquids, hot and cold water, air and other gases.

Depending on the type of foam products complying with this standard, they may have service temperature ranges which lie within the limits of  $\pm 200$  °C.

This Part 2 of this European Standard is a specification for the installed insulation product.

This Part 2 of this European Standard describes, when taken together with Part 1 of EN 14320, the product characteristics that are linked to the essential requirements of the EU Construction Products Directive. It also specifies the checks and tests to be used for the declarations made by the installer of the product.

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

This European Standard does not cover factory made rigid polyurethane (PUR) or polyisocyanurate (PIR) foam products or in-situ products intended to be used for the insulation of buildings.

The products are not intended for use for direct airborne sound insulation or acoustic absorption applications.

**NOTE** Foam products are either called flexible or rigid. The flexible products are used in upholstery and mattresses and are characterised by their ability to deflect, support and recover to their original thickness continually during their in-use phase. Those that are not flexible are termed rigid and do not possess these flexible characteristics. They are mostly used for thermal insulation purposes and vary widely in their compression strength values. Once the cell structure is crushed in a rigid foam, it does not recover its thickness fully. Some of these rigid foams are very low in density with very low compression strengths and are sometimes described "commercially" as "soft foams" or "semi-rigid" foams. This note has been included to clarify that all foams with such descriptions are covered by this standard's used of the term rigid foam.

**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 1602, *Thermal insulating products for building applications — Determination of the apparent density*

EN 14320-1, *Thermal insulating products for building equipment and industrial installations — In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate foam (PIR) products — Part 1: Specification for the rigid foam dispensed system before installation*

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

**3 Terms, definitions, abbreviations and symbols****3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 9229:2007 and the following apply.

**3.1.1****polyurethane foam PUR  
(in-situ formed products)**

rigid cellular plastics insulation material or product with a structure based on polymers mainly of the polyurethane type

**3.1.2****polyisocyanurate foam PIR  
(in-situ formed products)**

rigid cellular plastics insulation material or product with a structure based on polymers mainly of the polyisocyanurate type

**3.1.3****polyurethane foam PU**

rigid cellular plastics insulation materials or products including both polymer types based mainly on polyurethane (PUR) or mainly on polyisocyanurate (PIR) groups

**3.1.4****rigid foam spray system**

kit of constituent components which when sprayed generates the rigid polyurethane (PUR) or the rigid polyisocyanurate foam (PIR) characterised by the specified properties of the foam generated

**3.1.5****isocyanate component**

liquid isocyanate product which is one of the components of the rigid foam spray system

**3.1.6****polyol component**

liquid polyhydroxyl product containing an expanding agent, catalysts and other additives which is one of the components of the rigid foam spray system

**3.1.7****machine**

equipment used to mix and spray the foam

**3.1.8****industrial storage vessels**

storage vessels used as building equipment or located in industrial installations

**3.1.9****mixing ratio**

proportions of the components of the rigid foam dispensing system specified by the manufacturer to be dispensed to generate the rigid polyurethane or polyisocyanurate foam

Note 1 to entry: This can be expressed either as a weight or a volume ratio or both.

**3.1.10****installation**

process of spraying the mixture of the components onto the surface to be insulated

Note 1 to entry: The procedure is carried out by the application of successive rigid foam layers until the specified foam thickness is obtained.

**3.1.11****declared installed density**

representative overall density for the installed product (see 5.3)

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**EN 14320-2:2013 (E)****3.1.12****declared installed insulation thickness**

insulation thickness as installed by the installer (see 5.1)

**3.1.13****declared installed aged thermal resistance**

time average value of the thermal resistance of the installed insulation over 25 years (see 5.2)

**3.2 Symbols and abbreviations**

Symbols used in this standard:

$d$	is the declared installed aged insulation thickness	mm
$\lambda_D$	is the declared aged thermal conductivity	W/(m·K)
$R_D$	is the declared installed aged thermal resistance	m <sup>2</sup> K/W

Abbreviations used in this standard:

PUR is Rigid PolyUrethane Foam

PU is Rigid PolyUrethane foam including PUR and PIR types

PIR is Rigid PolyIsocyanurate Foam

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**4 Requirements****4.1 General**

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The installer shall use a PUR or PIR foam system that complies with EN 14320-1.  
<http://standards.iteh.ai/catalog/standards/sist/en-14320-2-2013/4f9c3e68c3d1/sist-en-14320-2-2013>

NOTE The range of properties exhibited by PUR products is very wide. The same is true for PIR products and these two ranges often overlap. Although not in every case, generally PIR products have a higher upper service temperature and can perform better in reaction to fire tests. In all cases, for both PIR and PUR products, their individual performance claimed by the manufacturer are described by the levels of properties obtained. Accordingly, therefore, all the declaration clauses will be completed using the term PU to include both PUR and PIR products (see 3.1.3).

**4.2 Suitability of the building equipment or industrial installation for the installation of the product**

The installer shall inspect the building equipment or industrial installation in accordance with manufacturer's technical information and any national rules, in order to determine whether it is suitable for application of the product (see Annex E).

**5 In-situ measurements and calculations****5.1 Declared installed insulation thickness**

The declared installed insulation thickness,  $d$ , shall be measured in accordance with the procedure given in Annex A. However, the value shall not be less than the minimum installed insulation thickness specified by the client or given in the manufacturer's technical information.

**5.2 Declared installed aged thermal resistance,  $R_D$** 

The declared installed aged thermal resistance  $R_D$  for the installed insulation shall be declared according to the thermal conductivity versus temperature curve given by the manufacturer in accordance with the procedure given in EN 14320-1.



NOTE 1 The correction of the values of thermal conductivity due to the influence of moisture and temperature can be calculated using the procedures given in EN ISO 10456.

NOTE 2 For calculating the thermal resistance of complete building elements involving the use of these products, the procedures given in EN ISO 6946 can be used.

### 5.3 Declared installed insulation density

The declared installed insulation density shall not be less than the specified minimum when determined by the method given in Annex B.

### 5.4 Foam quality checks carried out by the installer

The installer shall carry out those on site checks defined by the manufacturer, and check compliance with EN 14320-1 prior to commencing the application of the foam, generate test samples in accordance with either the procedures in Annex G of EN 14320-1:2013 and by any procedures required by the local rules of a Member State.

## 6 Guidelines for installation

National Practice, National Standards, National Regulations or Local Rules may exist, covering for example the spraying conditions and the mixing ratio. In the absence of national regulations, national standards or any local rules, the manufacturer's technical information shall be followed together with the procedure given in Annex D.

## 7 Installer's declaration

The installer shall declare to the customer that the work has been carried out in accordance with the requirements of this Part 2 of this standard using a foam system that complies with EN 14320-1.

The installer shall also state at least the following information:

- a) date of the installation;
- b) declared installed insulation thickness;
- c) declared installed aged thermal resistance according to 5.2;
- d) declared installed insulation density;
- e) surface area insulated;
- f) for the installed product, the trade name, designation code of the foam system (complying with EN 14320-1, from which it has been generated);
- g) the number of the EC certificate of conformity.