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NSAI Standards

Irish Standard
I.S. EN 16012:2012+A1:2015

Thermal insulation for buildings - Reflective insulation products - Determination of the declared thermal performance

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I.S. EN 16012:2012+A1:2015

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16012:2012+A1

February 2015

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Supersedes EN 16012:2012

English Version

Thermal insulation for buildings - Reflective insulation products - Determination of the declared thermal performance

Isolation thermique des bâtiments - Produits d'isolation réfléchissants - Détermination de la performance thermique déclarée

Wärmedämmstoffe für Gebäude - Reflektierende Wärmedämm-Produkte - Bestimmung der Nennwerte der wärmetechnischen Eigenschaften

This European Standard was approved by CEN on 23 December 2011 and includes Amendment 1 approved by CEN on 29 November 2014.

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Contents

Page

Foreword 4

Introduction 5

1 Scope 6

2 Normative references 6

3 Terms, definitions, symbols and units 7
3.1 Terms and definitions 7
3.2 Symbols and units 7

4 Description of product types 8
4.1 Product classification 8
4.2 Product Type 1 8
4.3 Product Type 2 9
4.4 Product Type 3 9
4.5 Product Type 4 10

5 Methods of assessment 11
5.1 General 11
5.2 Thickness measurement 11
5.3 [A1⟩ Test specimens ⟨A1] 11
5.4 Determination of thermal resistance – outline 11
5.5 Determination of core thermal resistance of Product Type 1 12
5.6 Determination of core thermal resistance of Product Type 2 13
5.7 Determination of core thermal resistance of Product Type 3 (METHOD C) 13
5.8 Determination of the thermal performance of Product Type 4 18
5.9 Emissivity 19

6 Uncertainty 20
6.1 General 20
6.2 Thickness measurements 20
6.3 Use of surface thermocouples on thin samples in a guarded hot plate or in heat flow meter measurement 20
6.4 Use of dummy insulation specimens 20
6.5 Derivation of the core resistance of a Type 3 Product from hot box measurements 20

7 Expression of results 21
7.1 Results derived from hot plate and emissivity measurements (Products Type 1 & 2) 21
7.2 Results derived from hot box and emissivity measurements (Product Types 1, 2 & 3) 21
7.3 Results derived from emissivity measurements only (product Type 4) 21

8 Report 22

Annex A (normative) 23

Annex B (normative) 24

Annex C (normative) 25

Annex D (normative) **Measurement of emissivity using a Thermal Infra-Red apparatus** 26

D.1 Principle of the hemispherical blackbody radiator 26

D.2 Description of suitable hemispherical blackbody radiator and specimen holder 26

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D.3 Calibration standards 27
D.4 Calculation of the emissivity 28
D.5 Sampling and preparation of the test specimens 28
D.5.1 Sampling 28
D.5.2 Dimensions and numbers of specimens 28
D.5.3 Conditioning of specimens for ageing 28
D.6 Procedure for measurement of specimens 28
D.7 Expression of results 29
Annex E (normative) **"Dummy specimen" technique for the heat flow meter apparatus** 30
E.1 Principle 30
E.2 Procedure 30
E.3 Specimens of low thermal resistance 31
E.4 Calibration 31
Bibliography 32

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Foreword

This document (EN 16012:2012+A1:2015) has been prepared by Technical Committee CEN/TC 89 “Thermal performance of buildings and building components”, the secretariat of which is held by SIS.

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 August 2015, and conflicting national standards shall be withdrawn at the latest by August 2015.

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 document includes Amendment 1, approved by CEN on 2014-11-29.

This document supersedes EN 16012:2012.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1⟩ ⟨A1▌.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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.

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Introduction

Reflective (low emissivity at the appropriate wavelength) surfaces are utilized in a number of ways to enhance the thermal performance of insulating products. Their role is to reduce the heat transfer by thermal radiation in some parts of the system. This is achieved because low emissivity surfaces reduce the radiant heat transferred through a product that is wholly or partially transparent to infra-red radiation (e.g. very low density fibrous insulation). They will also reduce the radiant heat transfer across any air gap or gaps that are present in the system. In some cases, air gaps can be an intrinsic part of the structure and in other cases the insulation can be installed in such a way as to deliberately create an air gap between the reflective surfaces and the structure.

Unless otherwise stipulated by the manufacturer, the declared thermal performance should include an adjacent vertical air space on either side of the product, and the declared thermal performance should also include a statement of the thickness of these airspaces included as part of the declared value. The declared value can, alternatively, be given as the combination of the thermal resistance of the “core” of the product together with the measured value of the emissivity of the surfaces.

Since all conventional thermal insulation products declare their thermal performance on the basis of the value to be expected over a reasonable working life, this is also addressed in a limited manner in this standard in the assessment of emissivity of the surface(s) of reflective insulation. In the absence of any quantified and certified data on the aged performance of a facing over a normal lifetime for a building material, the ageing of the low emissivity surface is assessed by use of an accelerated ageing procedure.

How the thermal properties of insulation materials that utilize reflective surfaces are determined will depend on the form in which they are sold and how they are intended to be used. This standard describes a number of different approaches which can be utilized and specifies which approach to use for the different types of product. Where a product is already subject to a product specification that describes procedures for the measurement of the aged 90/90 fractile thermal conductivity or thermal resistance of the core insulation material, the following guidance should only be used to determine the component of its thermal performance that depends on the emissivity of its external faces. However, it should be remembered that the declared value is only the first step, giving comparative performance values under specified conditions, and the design value can give more information for use by the designer in specific applications, especially under different climatic conditions.

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1 Scope

This European Standard describes a set of procedures for using existing standardized CEN or ISO test and calculation methods to determine the declared thermal performance of reflective insulation products. This European Standard supports and does not replace existing CEN or ISO test methods.

This European Standard applies to any thermal insulation product that derives a proportion of its claimed thermal properties from the presence of one or more reflective or low emissivity surfaces together with any associated airspace(s). It does not replace the existing procedures for the determination of the thermal performance of products already covered by an existing harmonized product standard where the declared value of these products does not specifically include any claims attributable to the emissivity of the facing.

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 823:1994, *Thermal insulating products for building applications — Determination of thickness*

EN 1946-1, *Thermal performance of building products and components — Specific criteria for the assessment of laboratories measuring heat transfer properties — Part 1: Common crieteria*

EN 1946-2, *Thermal performance of building products and components - Specific criteria for the assessment of laboratories measuring heat transfer properties - Part 2: Measurements by guarded hot plate method*

EN 1946-3, *Thermal performance of building products and components - Specific criteria for the assessment of laboratories measuring heat transfer properties - Part 3: Measurements by heat flow meter method*

EN 1946-4, *Thermal performance of building products and components - Specific criteria for the assessment of laboratories measuring heat transfer properties - Part 4: Measurements by hot box methods*

EN 12664, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal 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 ISO 6946, *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method (ISO 6946)*

EN ISO 7345, *Thermal insulation — Physical quantities and definitions (ISO 7345)*

EN ISO 8990, *Thermal insulation — Determination of steady-state thermal transmission properties — Calibrated and guarded hot box (ISO 8990)*

EN ISO 9229, *Thermal Insulation — Vocabulary (ISO 9229)*

EN ISO 9288, *Thermal insulation — Heat transfer by radiation — Physical quantities and definitions (ISO 9288)*

EN ISO 10456, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values (ISO 10456)*

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