SLOVENSKI STANDARD
SIST EN 16863:2023

01-november-2023

Toplotnoizolacijski proizvodi za stavbe - Tovarniško narejeni odsevni izolacijski proizvodi (RI) - Specifikacija

Thermal insulation products for buildings - Factory made reflective insulation (RI) products - Specification

Wärmedämmstoffe für Gebäude - Werkmäßig hergestellte reflektierende Wärmedämmstoffe - Spezifikation

Produits isolants thermiques pour le bâtiment - Produits d'isolation réfléchissants manufacturés - Spécification

Ta slovenski standard je istoveten z: **EN 16863:2023**

ICS:

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials

SIST EN 16863:2023 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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June 2023

ICS 91.100.60

English Version

Thermal insulation products for buildings - Factory made reflective insulation (RI) products - Specification

Produits isolants thermiques pour le bâtiment - Produits d'isolation réfléchissants manufacturés - Spécification

Wärmedämmstoffe für Gebäude - Werkmäßig hergestellte reflektierende Wärmedämmstoffe - Spezifikation

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 16863:2023) 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of an identical text or by endorsement, at the latest by December 2023, and conflicting national standards shall be withdrawn at the latest by March 2025.

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

This standard is one of a series of standards for thermal insulation products used in buildings but this standard can be used in other areas where appropriate. A list of all parts in a series can be found on the CEN website.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

Reflective insulation products are made from low emissive film(s) and infrared semi-transparent material layer(s) called spacers; like waddings of synthetic or natural fibres, synthetic foam or plastic filled with air bubbles.

Reflective (low emissivity at the appropriate wavelengths) surfaces are used to reduce the heat transfer by thermal radiation. This may occur across the product itself when it includes air cavities or a material that is wholly or partially transparent to infrared radiation, and/or across air gap(s) that are deliberately created between the external reflective surface(s) of the product and the structure of the building element.

1 Scope

This document is applicable to factory-made reflective insulation (RI) products intended for use as thermal and acoustic insulation of buildings. The products are manufactured in the form of rolls or boards. They are made from low emissive film(s) and infrared semi-transparent material layer(s) or air cavities.

This document describes the methods and criteria for assessing the performance of factory-made reflective insulation products in relation to essential product characteristics and includes the procedures for assessment and verification of the constancy of performance.

Reflective insulation products require specific setup instruction(s) depending on their level of compressibility.

This document 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 can be found in regulations or non-conflicting standards.

This document does not cover:

— products intended to be used for the insulation of building equipment and industrial installations;

— products made of mineral wool, polystyrene or polyurethane foams (not inclusive) faced with aluminium or metalized foil on one or both external surfaces (which are already covered by a corresponding harmonized European product standard);

— membranes used as vapour control layer (VCL) or vapour-permeable roof or wall underlay (which are already covered by a specific harmonized European product standard).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 824:2013, *Thermal insulating products for building applications — Determination of squareness*

EN 1928:2000, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

EN 1931:2000, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties*

EN 12114:2000, *Thermal performance of buildings — Air permeability of building components and building elements — Laboratory test method*

EN 12310-1:1999, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for waterproofing — Determination of resistance to tearing (nail shank)*

EN 12311-1:1999, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of tensile properties*

EN 13172:2012, *Thermal insulation products — Evaluation of conformity*

EN 13501-1:2018, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13820:2003, *Thermal insulating materials for building applications — Determination of organic content*

EN 13823:2020+A1:2022, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN 13859-1:2014, *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Part 1: Underlays for discontinuous roofing*

EN 15101-1:2013+A1:2019, *Thermal insulation products for buildings — In-situ formed loose fill cellulose (LFCI) products — Part 1: Specification for the products before installation*

EN 15715:2009, *Thermal insulation products — Instructions for mounting and fixing for reaction to fire testing — Factory made products*

EN 16012:2012+A1:2015, *Thermal insulation for buildings — Reflective insulation products — Determination of the declared thermal performance*

EN 16516:2017+A1:2020, *Construction products: Assessment of release of dangerous substances — Determination of emissions into indoor air*

EN 16733:2016, *Reaction to fire tests for building products — Determination of a building product's propensity to undergo continuous smouldering*

EN 29052-1:1992, *Acoustics — Determination of dynamic stiffness — Part 1: Materials used under floating floors in dwellings*

EN ISO 354:2003, *Acoustics — Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 1182:2020, *Reaction to fire tests for products — Non-combustibility test (ISO 1182:2020)*

EN ISO 1716:2018, *Reaction to fire tests for products — Determination of the gross heat of combustion (calorific value) (ISO 1716:2018)*

EN ISO 9053-1:2018, *Acoustics — Determination of airflow resistance — Part 1: Static airflow method (ISO 9053-1:2018)*

EN ISO 9229:2020, *Thermal insulation — Vocabulary (ISO 9229:2020)*

EN ISO 11654:1997, *Acoustics — Sound absorbers for use in buildings — Rating of sound absorption (ISO 11654:1997)*

EN ISO 11925-2:2020, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2020)*

EN ISO 12572:2016, *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties — Cup method (ISO 12572:2016)*

EN ISO 16535:2019, *Thermal insulating products for building applications — Determination of long-term water absorption by immersion (ISO 16535:2019)*

EN ISO 29465:2022, *Thermal insulating products for building applications — Determination of length and width (ISO 29465:2022)*

EN ISO 29466:2022, *Thermal insulating products for building applications — Determination of thickness (ISO 29466:2022)*

EN ISO 29469:2022, *Thermal insulating products for building applications — Determination of compression behaviour (ISO 29469:2022)*

EN ISO 29770:2022, *Thermal insulating products for building applications — Determination of thickness for floating-floor insulating products (ISO 29770:2022)*

EN ISO 29767:2019, *Thermal insulating products for building applications — Determination of short-term water absorption by partial immersion (ISO 29767:2019)*

3 Terms, definitions, symbols, units and abbreviated terms

3.1 Terms and definitions

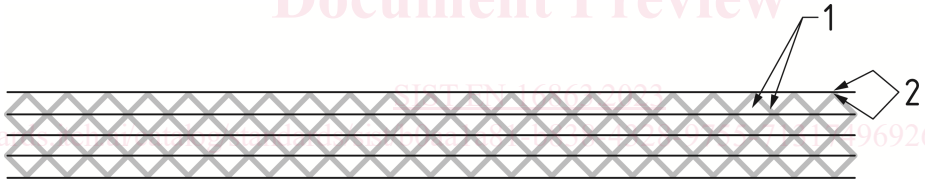
For the purposes of this document, the terms and definitions given in EN ISO 9229:2020 (with the exception of 3.7.15 and 3.7.16) and EN 16012:2012+A1:2015, and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

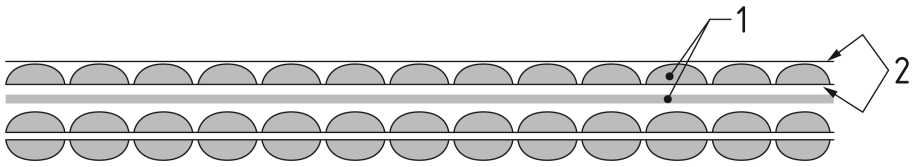
— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
reflective insulation product
RI product
product made from low emissive film(s) incorporating infrared semi-transparent material layer(s) and/or air cavities, of which there are three types (see Figure 1 to Figure 3)



Key
1 semi-transparent spacer
2 low emissive film

Figure 1 — Cellular reflective insulation comprising air cavities associated with low emissivity surfaces

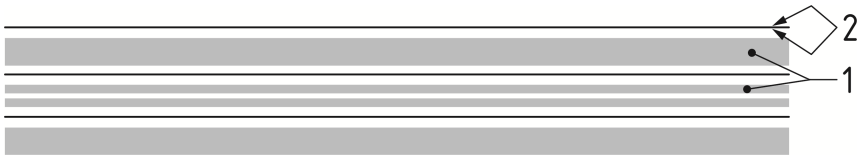


Key

1 semi-transparent spacer

2 low emissive film

Figure 2 — Bubble foil comprising external reflective film and one or more layers of plastic filled with air bubbles, in single or several layers or separated by synthetic fibres, foam, quilt and/or wadding



Key

1 semi-transparent spacer

2 low emissive film

Figure 3 — Multi-foils reflective insulation comprising internal reflective film(s) separated by synthetic or natural fibres, foam, quilt, plastic filled with air bubbles and/or wadding that may be faced with external reflective foil(s)

3.1.2
roll
flexible reflective insulation product, supplied rolled or flat

3.1.3
board

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

[SOURCE: EN ISO 9229:2020, 3.3.3, modified – Synonymous term and note have been omitted]

3.1.4
compressibility
measure of the relative volume change of a fluid or a solid as a response to a pressure change

3.1.5
core thermal resistance
thermal resistance of the product from face to face at the tested thickness, excluding the contribution of any air space(s)/layer(s) adjacent to the product

3.1.6
emissivity
ratio of the energy radiated from a material's surface to that radiated from a perfect emitter, known as a blackbody, at the same temperature and wavelengths and under the same viewing conditions

3.2 Symbols, units and abbreviated terms

AF_r	airflow resistivity	kPa·s/m^2
α_p	level of practical sound absorption coefficient	m^3/(s·Pa^n)
α_w	level of weighted sound absorption coefficient	-
b	width	mm
β*	thickness difference (see thickness reduction level test in 4.13.3)	mm
β	thickness reduction (see 4.13.3)	%
C	airflow coefficient	m^3/(s·Pa^n)
CP	level for compressibility	-
CS(10\Y)	declared level of compressive stress or compressive strength	kPa
d	thickness	mm
d_B	thickness under a load of 2 kPa after removal of an additional load of 48 kPa	mm
d_L	thickness of the product under 250 Pa	mm
d_N	nominal thickness	mm
d_{3Pa}	thickness of the product under 3 Pa	mm
d_{25Pa}	thickness of the product under 25 Pa	mm
ε	emissivity of a surface	-
ε_i	one test result of emissivity of a surface	-
ε_{mean}	mean of a number of test results of emissivity of a surface	-
$\varepsilon_{90/90}$	90 % fractile with a confidence level of 90 % for emissivity	-
ε_D	declared value of emissivity	-
k	factor related to the number of test results	-
λ_D	declared thermal conductivity for homogeneous products	W/m·K
l	length	mm
μ	value for water vapour diffusion resistance factor	-
n	exponent related to air permeability	-
n	number of test results	-
$R_{90/90}$	90 % fractile with a confidence level of 90 % for the thermal resistance	m^2·K/W
$R_{D(core)}$	declared core thermal resistance	m^2·K/W
$R_{(core)}$	thermal resistance of the core	m^2·K/W
$R_{(HFD)}$	total thermal resistance with heat flow downward	m^2·K/W
$R_{(HFH)}$	total thermal resistance with horizontal heat flow	m^2·K/W