SLOVENSKI STANDARD
SIST EN 14064-1:2019

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Toplotnoizolacijski proizvodi za stavbe - Razsuti proizvodi iz mineralne volne (MW) - 1. del: Specifikacija za razsute proizvode pred vgradnjo

Thermal insulation products for buildings - In-situ formed loose-fill mineral wool (MW) products - Part 1: Specification for the loose-fill products before installation

Wärmedämmstoffe für Gebäude - An der Verwendungsstelle hergestellte Wärmedämmung aus Mineralwolle (MW) - Teil 1: Spezifikation für Schüttdämmstoffe vor dem Einbau

Produits isolants thermiques pour le bâtiment - Isolation thermique formée sur chantier à base de laine minérale (MW) - Partie 1: Spécification des produits en vrac avant l'installation

Ta slovenski standard je istoveten z: **EN 14064-1:2018**

ICS:

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

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English Version

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This European Standard was approved by CEN on 2 March 2018.

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This European Standard exists 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-CENELEC Management Centre has the same status as the official versions.

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Contents

Page

European foreword

This document (EN 14064-1:2018) 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of an identical text or by endorsement, at the latest by April 2019 and conflicting national standards shall be withdrawn at the latest by July 2020.

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 document supersedes EN 14064-1:2010.

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

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

EN 14064-1:2018 includes the following significant technical changes with respect to EN 14064-1:2010:

— Improved clarification regarding how to determine lambda value in the application: Annex A has been totally revised and Annex C has been revised to be more precise;

— New ways to assess settlement in cavity wall application and then a new Annex J has been defined;

— Clarification of Annex H;

— Specimen preparation method for coverage and density measurement: Annex I has been totally revised;

— Introduction of glowing combustion;

— New Annex ZA.

EN 14064, *Thermal insulation products for buildings — In situ formed loose-fill mineral wool (MW) products*, consists of two parts which form a package. The first part (this European Standard), which is the harmonized part satisfying the mandate, Construction Product regulation (CPR) and is the basis for the CE marking, covers the products, which are placed on the market. The second part, which is the non-harmonized part, covers the specification for the installed products. Both parts need to be used for the application of the insulation product in the end-use applications covered by EN 14064.

This European Standard contains twelve annexes:

— Annex A (normative) Determination of the declared values of thermal resistance and thermal conductivity

— Annex B (normative) Factory production control

— Annex C (normative) Specimen preparation for thermal resistance and thermal conductivity test

— Annex D (normative) Specimen preparation for water absorption test

— Annex E (normative) Specimen preparation for airflow resistivity test

— Annex F (normative) Testing for reaction to fire of products

— Annex G (normative) Testing for reaction to fire of products in standardized assemblies simulating end-use applications

— Annex H (normative) Rules for creating performance charts for loose-fill insulation and examples of performance charts

— Annex I (normative) Specimen preparation method for coverage and density measurement

— Annex J (normative) Determination of settlement for blown loose fill insulation

— Annex K (informative) Masonry cavity walls – Method for determining suitable spacing for blowing holes

— Annex ZA (informative) Relationship of this European Standard with Regulation (EU) No.305/2011

This European Standard is one of a series for mineral wool, expanded clay, expanded perlite, exfoliated vermiculite, polyurethane/polyisocyanurate, cellulose and bound expanded polystyrene *in situ* formed insulation products used in buildings, 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.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the requirements for blown and injected loose-fill mineral wool products for *in situ* installation in lofts, masonry cavity walls and frame constructions.

This document is a specification for the insulation products before installation. It describes the product characteristics and includes procedures for testing, marking and labelling.

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 are to be found in regulations or non-conflicting standards.

NOTE To avoid water penetration in masonry walls special tests adjusted to local climate might be needed.

This document does not cover factory made mineral wool (MW) insulation products or *in situ* products intended to be used for the insulation of building equipment and industrial installations.

Products with a declared thermal resistance lower than 0,25 $m^2 \cdot K/W$ or a declared thermal conductivity greater than 0,060 $W/(m \cdot K)$ at 10 °C are not covered by this document.

This document does not cover products intended for airborne sound insulation and for acoustic absorption applications.

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 823, *Thermal insulating products for building applications - Determination of thickness*

EN 1609, *Thermal insulating products for building applications - Determination of short term water absorption by partial immersion*

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 13172, *Thermal insulation products - Evaluation of conformity*

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

EN 13820, *Thermal insulating materials for building applications - Determination of organic content*

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

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

EN 16516:2017, *Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air*

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

EN 29053, *Acoustics - Materials for acoustical applications - Determination of airflow resistance (ISO 9053)*

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

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

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

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

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

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
mineral wool
insulation material having a woolly consistency, manufactured from molten rock, slag or glass

3.1.2
blowing hole
hole, cut or formed, in a masonry cavity wall or frame construction, through which the mineral wool is blown

3.1.3
class
combination of two levels of the same property between which the performance shall fall

3.1.4
coverage
mass of insulation per unit area

3.1.5
frame construction
walls with wood or metal studs, sloping roof with insulation between rafters

3.1.6
level
given value, which is the upper or lower limit of a requirement, where the level is given by the declared value of the characteristic concerned

3.1.7
performance chart
table giving thickness and coverage requirements for different values of declared thermal resistance

3.1.8
settlement
decrease of installed insulation thickness in lofts or height in cavities and frame constructions with time, expressed as a percentage of the initial installed thickness or installed height

3.2 Symbols and abbreviations

For the purposes of this document, the following symbols apply:

$\lambda_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity	W/(m·K)
$\lambda(\rho_{90/90})$	is the conductivity referring to $\rho_{90/90}$ according to the curve conductivity / density (see Annex A method 2)	W/(m·K)
λ_D	is the declared thermal conductivity	W/(m·K)
λ_i	is one test result of thermal conductivity	W/(m·K)
λ_{mean}	is the mean thermal conductivity	W/(m·K)
$\lambda(\rho)$	is the curve of thermal conductivity versus density	
a, b, c	*are constants used in the formula* $\lambda(\rho) = a + b\rho + c/\rho$	
$\rho_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the density	kg/m³
k,k_1, k_2	are factors related to the number of test results	––-
ρ_I	is one test result of density	kg/m³
ρ_{mean}	is the mean value of density	kg/m³
$\rho_{rounded}$	is the rounded $\rho_{90/90}$	kg/m³
ρ_x	is the specified density given by the manufacturer in some specific applications	kg/m³
ρ_{x1} and ρ_{x2}	are specified density of method A1 and method A2	kg/m³
A	is the area of the test specimen	m²
d	is the thickness of the test specimen	mm
n	is the number of test results	–
$R_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal resistance	m²·K/W
R_D	is the declared thermal resistance	m²·K/W
R_i	is one test result of thermal resistance	m²·K/W
$s\lambda$	is the estimate of the standard deviation of the thermal conductivity	W/(m·K)
s_R	is the estimate of the standard deviation of the thermal resistance	W/(m·K)
s_ρ	is the estimate of the standard deviation of the density	kg/m³
W_p	is the short-term water absorption	kg/m²
B_{nom}	is the nominal weight of the bag	kg
AFr	is the symbol of the declared level of airflow resistivity	
MU	is the symbol for the declared value for water vapour diffusion resistance factor	
S	is the symbol of the declared class for settlement	

S_D	is the maximum value of the declared settlement class	
WS	is the symbol of the declared level for short-term water absorption	
G-NoG	is the Continuous Glowing Combustion declaration (NoG means no Glowing Combustion, G means Glowing Combustion)	
GANP	Glowing assessment not possible	
d_{after}	is the thickness of the insulation after settlement	mm
$d_{to\ be\ installed}$	is the thickness of wool just after blowing operation	mm

For the purposes of this document, the following abbreviations apply:

MW	Mineral Wool
AVCP	Assessment and Verification of Constancy of Performance
FPC	Factory Production Control

4 Characteristics

4.1 General

Product properties shall be assessed in accordance with Clause 5. To comply with this standard, products shall meet the characteristics of 4.2, and the characteristics of 4.3 as appropriate.

This document gives performance charts for three different applications:

— loft insulation;

— masonry cavity wall insulation;

— frame insulation.

One test result on a product property is the average of the measured values on the number of test specimens given in Table 3.

4.2 For all applications

4.2.1 Thermal conductivity – Thermal resistance

Thermal resistance and thermal conductivity shall be based upon measurements carried out in accordance with EN 12667.

The thermal values shall be determined in accordance with Annex A and declared by the manufacturer, according to the following:

— the reference mean temperature shall be 10 °C;

— the measured values shall be expressed with three significant figures;

— the thermal resistance, R_D, shall always be declared. The thermal conductivity, λ_D, shall be declared where possible;

— the thermal resistance, R_D, and the thermal conductivity, λ_D, shall be given as limit values representing at least 90 % of the production determined with a confidence level of 90 %;

— the value of thermal conductivity $\lambda_{90/90}$ shall be rounded upwards to the nearest 0,001 W/(m·K) and declared in levels with steps of 0,001 W/(m·K);

— the declared thermal resistance, R_D, shall be calculated from the insulation thickness and the corresponding thermal conductivity, $\lambda_{90/90}$ (see NOTE below);

— The value of thermal resistance, R_D, shall be rounded downward to the nearest 0,05 m^2·K/W and declared in levels with steps of 0,05 m^2·K/W.

NOTE The declaration of the installed thermal resistance for blown mineral wool is described in EN 14064-2.

4.2.2 Weight of the sale unit

The quantity of material in one sale unit shall not be lower than the nominal weight of the sale unit.

4.2.3 Settlement

4.2.3.1 General

The difference between the three applications listed in 4.1 lies in the requirement for settlement. Loft insulation can have any class of settlement, but closed constructions as masonry cavity wall insulation and frame insulation should fulfil the requirements of settlement class S1 unless otherwise specified in non-conflicting application standards or regulations.

4.2.3.2 Lofts

Settlement shall be declared in accordance with Table 1.

The declaration shall be based upon the expected settlement 25 years after installation. The installed insulation shall have been made on constructions similar to those declared by the manufacturer in the performance chart.

The declaration shall be derived from test as described in Annex J.

If the settlement after the completion of any of the above tests is not measurable (≤1 %), settlement class S1 shall be declared.

If the settlement after the completion of any of the above tests is more than 1 % but less or equal to 5 %, settlement class S2 shall be declared.

If settlement after the completion of any of the above tests is more than 5 % but less than or equal to 10 % then settlement class S3 shall be declared.

If settlement after the completion of any of the above tests is more than 10 %, the product does not comply with this standard.

Table 1 — Classes for settlement for lofts application

Class	Requirement
S1	settlement (≤ 1 %)
S2	> 1 % and ≤ 5 %
S3	> 5 % and ≤ 10 %

NOTE The 1 % limit does correspond to a maximum rounded value of 1,49. If value is ≤ 1,49 % then settlement is S1.

4.2.3.3 Walls, masonry walls and frame constructions (closed cavities)

As these constructions are difficult or impossible to re-fill, no settlement shall be accepted and only settlement class S1 is accepted.

The settlement should be measured following protocol written in J.1.3.

Documented minimum densities to avoid settlement shall be applied. These densities are related to structure type and climatic conditions and are confirmed by the relevant authority dealing with the application in the “works”.

Alternatively, the minimum densities in Table 2 shall apply.

NOTE 1 The 1 % limit does correspond to a maximum rounded value of 1,49. If value is less than 1,49, then settlement declaration is S1.

NOTE 2 Above 5 % of slope is not considered as horizontal.

Table 2 — Minimum densities for closed cavities (masonry walls and frame constructions)

Product	Masonry Wall	Frame construction	
		Vertical and inclined	Horizontal
Glass Wool	25 kg/m³	30 kg/m³	30 kg/m³
Stone Wool	60 kg/m³	70 kg/m³	65 kg/m³

4.2.4 Reaction to fire

Reaction to fire classification of the product, as placed on the market, shall be determined in accordance with EN 13501-1:2007+A1:2009 and the Annex F of this standard.

Manufacturers declaring Euroclass A1 without further test shall demonstrate by testing in accordance with EN 13820 that the products do not contain more than 1,0 % by weight of organic matter.

NOTE 1 The Commission Decision 96/603/EC of 4 October 1996 amended by the Commission Decision 2000/605/EC of 26 September 2000 gives the list of products to be considered as reaction to fire class Euroclass A1 without the need for testing.

NOTE 2 European classification for reaction to fire is commonly named "Euroclass".

4.2.5 Durability characteristics

4.2.5.1 General

The appropriate durability characteristics have been considered and are covered in 4.2.5.2, 4.2.5.3 and 4.2.5.4.

4.2.5.2 Durability of reaction to fire against ageing/degradation

The fire performance of mineral wool does not deteriorate with time. The Euroclass classification of the product is related to the organic content, which cannot increase with time.

4.2.5.3 Durability of thermal conductivity against ageing/degradation

Thermal conductivity of mineral wool products does not change with time, experience has shown the fibre structure to be stable and the porosity contains atmospheric air.

4.2.5.4 Durability of thermal resistance against ageing/degradation

Durability of the thermal resistance is covered by the durability of the installed thickness influence by settlement treated in 4.2.3.

4.3 For specific applications

4.3.1 General

If there is no requirement for a property described in 4.3, for a product in use, then the property need not be determined and declared by the manufacturer.

4.3.2 Airflow resistivity

Airflow resistivity shall be determined in accordance with EN 29053:1993, method A, and Annex E. The value of airflow resistivity shall be declared in levels with steps of 1 kPa·s/m^2. No test result shall be lower than the declared value.

NOTE Airflow resistivity can be used when estimating the risk for reduced thermal resistance caused by convection (see EN ISO 10456:2007, 7.5).

4.3.3 Water absorption

Short-term water absorption by partial immersion, W_p, shall be determined in accordance with EN 1609:2013 method A, with specimen preparation in accordance with Annex D. No test result of the water absorption W_p, shall exceed 1,0 kg/m^2.

4.3.4 Water vapour diffusion resistance

Water vapour transmission properties shall be declared as the water vapour diffusion resistance factor μ.

The blown mineral wool has a structure that is highly permeable to water vapour. The water vapour resistance factor, μ, can be assumed to be 1.

4.3.5 Reaction to fire of product in standardized assemblies simulating end-use applications

Reaction to fire classification of products in standardized assemblies simulating end-use applications, shall be determined in accordance with EN 13501-1:2007+A1:2009, Annex G and the basic Mounting and Fixing rules given in EN 15715.

This classification offers the opportunity to give a complementary and optional declaration on reaction to fire for standard test configurations of assemblies which include the insulation product.

The number of the selected test configuration of assembly (EN 15715:2009, Table 5) which is used in the test shall be quoted with the Euroclass.

Detailed information about the test conditions and the field of application of the classification as stated in the reaction to fire classification report shall be given in the manufacturer's literature.

4.3.6 Release of dangerous substances

If declared, the release of VOC and formaldehyde into indoor air shall be tested according to EN 16516.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction website on EUROPA accessed through: http://ec.europa.eu/growth/tools-databases/cp-ds.