
**Toplotnoizolacijski proizvodi za stavbe - Rzsuti proizvodi iz mineralne volne (MW)
- 1. del: Specifikacija za vezane in rzsute proizvode pred vgradnjo**

Thermal insulation products for buildings - In-situ formed loosefill 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

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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

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91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
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Thermal insulation products for buildings - In-situ formed loose-fill mineral wool (MW) products - Part 1: Specification for the loose-fill products before installation

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Foreword

This document (EN 14064-1:2010) 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of an identical text or by endorsement, at the latest by August 2010, and conflicting national standards shall be withdrawn at the latest by November 2011.

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 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.

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 harmonised part satisfying the mandate, the CPD and is the basis for the CE marking, covers 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 product in the end-use applications covered by EN 14064. (standards.iteh.ai)

This European Standard contains thirteen 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 standardised 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) Verification of performance chart according to Annex H (normative)
- Annex J (normative) Specimen preparation method for coverage measurement
- Annex K (normative) Thermal insulating products for lofts – Determination of settlement for blown loose fill insulation
- Annex L (informative) Masonry cavity walls – Method for determining suitable spacing for blowing holes

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- Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive

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

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1 Scope

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

This European standard 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 m²·K/W or a declared thermal conductivity greater than 0,060 W/(m·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 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 823, *Thermal insulating products for building applications — Determination of thickness*

EN 1609:1996, *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 13172:2008, *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 15715:2009, *Thermal insulation products — Instructions for mounting and fixing for reaction to fire testing — Factory made products*

EN 29053:1993, *Acoustics — Materials for acoustical applications — Determination of air flow resistance (ISO 9053:1991)*

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

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

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)*

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

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

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

Symbols used in this document:

$\lambda_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity	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/m ³
ρ_l	is one test result of density	kg/m ³
ρ_{mean}	is the mean value of density	kg/m ³
ρ_D	is the declared density	kg/m ³
A	is the area of the test specimen	m ²
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	m ² ·K/W
R_D	is the declared thermal resistance	m ² ·K/W
R_i	is one test result of thermal resistance	m ² ·K/W
s_λ	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/m ³
W_p	is the short-term water absorption	kg/m ²
B_{nom}	is the nominal weight of the bag	kg
AF	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	
WS	is the symbol of the declared level for short-term water absorption	

Abbreviations used in this document:

MW	Mineral Wool
ITT	Initial Type Test

4 Requirements

4.1 General

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

This document gives performance charts for three different applications:

- loft insulation;
- masonry cavity wall insulation;
- frame insulation.

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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;
- if the calculation of the declared thermal conductivity value is based on the curve $\lambda(\rho)$, this curve shall be determined by the mean of the equation: $a + b\rho + c/\rho$, where a, b and c are constants determined by a non-linear regression analysis;
- 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 m²·K/W and declared in levels with steps of 0,05 m²·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 results from either:

— documented field studies with continuous monitoring of settlement until equilibrium;

or

— documented field studies with continuous monitoring of settlement for at least three years. If the settlement has not reached equilibrium after three years, the three year value is deemed to represent 80 % of the final settlement;

or

— when tested according to the method given Annex K.

If the settlement after the completion of any of the above tests is not measurable ($\leq 1\%$), 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.

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Table 1 — Classes for settlement for lofts application

Class	Requirement
S1	No measurable settlement ($\leq 1\%$)
S2	$> 1\%$ and $\leq 5\%$
S3	$> 5\%$ and $\leq 10\%$

4.2.3.3 Walls, masonry walls and frame constructions

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

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

Alternatively, the minimum densities in Table 2 shall apply.

Table 2 – Minimum densities for masonry walls and frame constructions

Product	Masonry Wall	Frame construction	
		Vertical and inclined	Horizontal
Glass Wool	25 kg/m ³	30 kg/m ³	30 kg/m ³
Stone Wool	60 kg/m ³	70 kg/m ³	65 kg/m ³

NOTE Test methods to determine the settlements in masonry walls and frame constructions are currently under investigation and therefore when a test method is available this European Standard will be amended.

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, Annex F and the basic Mounting and Fixing rules given in EN 15715.

NOTE 1 This classification is compulsory and always included in the CE Marking label.

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.

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 2 The Commission Decision 96/603/EC of 4 October 1996 amended by the Commission Decision 00/605/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.

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/m². 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.

4.3.3 Water absorption

Short-term water absorption by partial immersion, W_p , shall be determined in accordance with EN 1609:1996, method A, with specimen preparation in accordance with Annex D. No test result of the water absorption W_p , shall exceed 1,0 kg/m².

4.3.4 Water vapour diffusion resistance

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

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.

Alternatively, values cited in EN 12524:2000, Table 2, may be used.

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, 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 (Table 5 of EN 15715:2009) 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

Materials used in products shall not release any dangerous substances in excess of the maximum permitted levels specified in a relevant European Standard for the material or permitted in the national regulations of the member state of destination.

NOTE See Annex ZA.