BS EN 14303:2015

BSI Standards Publication

Thermal insulation products for building equipment and industrial installations — Factory made mineral wool (MW) products — Specification

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National foreword

This British Standard is the UK implementation of EN 14303:2015. It supersedes BS EN 14303:2009+A1:2013 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/540, Energy performance of materials components and buildings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Published by BSI Standards Limited 2015

ISBN 978 0 580 88445 0

ICS 91.100.60

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2015.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14303

December 2015

ICS 91.100.60

Supersedes EN 14303:2009+A1:2013

English Version

Thermal insulation products for building equipment and industrial installations - Factory made mineral wool (MW) products - Specification

Produits isolants thermiques pour l'équipement du bâtiment et les installations industrielles - Produits manufacturés à base de laines minérales (MW) - Spécification

Wärmedämmstoffe für die technische Gebäudeausrüstung und für betriebstechnische Anlagen in der Industrie - Werkmäßig hergestellte Produkte aus Mineralwolle (MW) - Spezifikation

This European Standard was approved by CEN on 24 October 2015.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 14303:2015) 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 June 2016, and conflicting national standards shall be withdrawn at the latest by September 2017.

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 supersedes EN 14303:2009+A1:2013.

This document is identifying those clauses of the standard which are needed for the compliance of the European Standard with the Construction Products Regulation (CPR).

The main technical changes that have been made in this new edition of EN 14303 are the following:

a) an addition to the foreword;

b) modification to 3.2.1;

c) an addition in 3.2.2;

d) a new 4.3.9;

e) modification of 5.3.2;

f) modification of Clause 7;

g) modification of Clause 8;

h) modification of Annex A;

i) a new Annex ZA.

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 Regulation (EU) No. 305/2011.

For relationship with Regulation (EU) No. 305/2011, see informative Annex ZA, which is an integral part of this document.

Locally responsible authorities and contracting entities, who are bound by EU Directives to specify their requirements using European harmonized product standards, are allowed to demand additional properties outside the provisions of this standard if this is technically necessary because of prevailing operational conditions of the building equipment or the industrial installation projected or because of safety regulations.

This European Standard contains three annexes:

— Annex A (normative), Factory production control;

— Annex B (informative), Additional properties;

— Annex ZA (informative), Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation.

This document includes a bibliography.

This European Standard is one of a series of standards for insulation products used in building equipment and industrial installations, but this standard can be used in other areas, where appropriate.

In pursuance of Resolution BT 20/1993 revised, CEN/TC 88 have proposed defining the standards listed below as a European package of standards, setting 21 months after availability as the date of withdrawal (dow) of national standards which conflict with the European Standards of this package.

The package of standards comprises the following group of interrelated standards for the specifications of factory made thermal insulation products, all of which come within the scope of CEN/TC 88:

EN 14303, *Thermal insulation products for building equipment and industrial installations — Factory made mineral wool (MW) products — Specification*

EN 14304, *Thermal insulation products for building equipment and industrial installations — Factory made flexible elastomeric foam (FEF) products — Specification*

EN 14305, *Thermal insulation products for building equipment and industrial installations — Factory made cellular glass (CG) products — Specification*

EN 14306, *Thermal insulation products for building equipment and industrial installations — Factory made calcium silicate (CS) products — Specification*

EN 14307, *Thermal insulation products for building equipment and industrial installations — Factory made extruded polystyrene foam (XPS) products — Specification*

EN 14308, *Thermal insulation products for building equipment and industrial installations — Factory made rigid polyurethane foam (PUR) and polyisocyanurate foam (PIR) products — Specification*

EN 14309, *Thermal insulation products for building equipment and industrial installations — Factory made products of expanded polystyrene (EPS) — Specification*

EN 14313, *Thermal insulation products for building equipment and industrial installations — Factory made polyethylene foam (PEF) products — Specification*

EN 14314, *Thermal insulation products for building equipment and industrial installations — Factory made phenolic foam (PF) products — Specification*

EN 15501, *Thermal insulation products for building equipment and industrial installations — Factory made expanded perlite (EP) and exfoliated vermiculite (EV) products — Specification*

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.

1 Scope

This European Standard specifies the requirements for factory made mineral wool products, which are used for the thermal insulation of building equipment and industrial installations with an operating temperature range of approximately 0 °C to + 800 °C.

Below an operating temperature of ambient, special means against water vapour diffusion and water accumulation by air flow might be required. Below an operating temperature of - 50 °C, special tests regarding the suitability of the products in the intended application are advised (e.g. liquefaction of oxygen). Manufacturer's advice should be heeded in all cases.

The products are manufactured with or without facings or coatings, in the form of rolls, boards, slabs, mats, felts, quilts, wired mats, lamella mats, bevelled lags and pipe sections.

This European Standard describes product characteristics and includes procedures for testing, evaluation of conformity, marking and labelling.

Products covered by this standard are also used in prefabricated thermal insulation systems and composite panels; the performance of systems incorporating these products is not covered.

This European Standard does not specify the required level of a given property that should 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 and invitations to tender.

Products with a declared thermal conductivity greater than 0,065 W/(m·K) at 10 °C are not covered by this standard.

This European Standard does not cover products for *in situ* insulation (blowing or pouring) or products for the insulation of the building structure.

This European Standard does not cover the following acoustical aspects: direct airborne sound insulation and impact noise transmission index.

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 822, *Thermal insulating products for building applications - Determination of length and width*

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

EN 824, *Thermal insulating products for building applications - Determination of squareness*

EN 826, *Thermal insulating products for building applications - Determination of compression behaviour*

EN 1604, *Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions*

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

EN 12086:2013, *Thermal insulating products for building applications - Determination of water vapour transmission properties*

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 12939, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Thick products of high and medium thermal resistance*

EN 13162, *Thermal insulation products for buildings - Factory made mineral wool (MW) products - Specification*

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

EN 13467, *Thermal insulating products for building equipment and industrial installations - Determination of dimensions, squareness and linearity of preformed pipe insulation*

EN 13468, *Thermal insulating products for building equipment and industrial installations - Determination of trace quantities of water soluble chloride, fluoride, silicate, sodium ions and pH*

EN 13469, *Thermal insulating products for building equipment and industrial installations - Determination of water vapour transmission properties of preformed pipe insulation*

EN 13472, *Thermal insulating products for building equipment and industrial installations - Determination of short term water absorption by partial immersion of preformed pipe insulation*

EN 13501-1:2007+A1:2009, *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 14706, *Thermal insulating products for building equipment and industrial installations - Determination of maximum service temperature*

EN 14707, *Thermal insulating products for building equipment and industrial installations - Determination of maximum service temperature for preformed pipe insulation*

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

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

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 8497, *Thermal insulation - Determination of steady-state thermal transmission properties of thermal insulation for circular pipes (ISO 8497)*

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

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

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

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)*

EN ISO 13787, *Thermal insulation products for building equipment and industrial installations - Determination of declared thermal conductivity (ISO 13787)*

3 Terms, definitions, symbols, units and abbreviated terms

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

3.1 Terms and definitions

3.1.1 Terms and definitions as given in EN ISO 9229:2007

3.1.1.1
batt
portion of a mat in the form of a rectangular piece generally between 1 m and 3 m in length and usually supplied flat or folded

3.1.1.2
bevelled lag
rigid or semi-rigid insulation product with one or more edges bevelled for application to large diameter cylindrical or spherical equipment

3.1.1.3
felt
thin, loosely bonded mat

3.1.1.4
lamella mat
mat made from fibrous materials in which the general orientation of the fibres is perpendicular to the major surfaces

3.1.1.5
mineral wool
generic term for insulation wool manufactured from molten rock, slag or glass

3.1.1.6
pipe section
(insulation) product in the shape of a cylindrical annulus that may be split to facilitate application

3.1.1.7
mattress
quilt
flexible insulation product, normally faced on one or both sides, or totally enclosed with fabric, wire netting, expanded metal or a similar covering attached mechanically to the insulation material

3.1.1.8
roll
(insulation) product supplied in the form of a wound cylinder

3.1.1.9
board
slab
(insulation) rigid or semi-rigid product of rectangular shape and cross-section in which the thickness is uniform and substantially smaller than the other dimensions

Note 1 to entry: Boards are usually thinner than slabs. They can also be supplied in tapered form.

3.1.2 Additional terms and definitions

3.1.2.1
mat
flexible fibrous insulation product supplied rolled or flat, which may be faced or enclosed

3.1.2.2
wired mat
insulation mat covered by flexible metal mesh facing or other types of high temperature resistant threads or wires, suitable for mounting the mats, attached on one or both sides

Note 1 to entry: Metallic foils (reinforced aluminium foil, etc.) may be sewn on the mats as facings on one or more sides of the mat.

3.1.2.3
level
given value, which is the upper or lower limit of a requirement

Note 1 to entry: The level is given by the declared value of the characteristic concerned.

3.1.2.4
class
combination of two levels of the same property between which the performance shall fall

3.1.2.5
production line
assemblage of equipment that produces products using a continuous process

3.1.2.6
production unit
assemblage of equipment that produces products using a discontinuous process

3.2 Symbols, units and abbreviated terms

3.2.1 Symbols and units used in this standard

α_p	is the practical sound absorption coefficient	–
α_w	is the weighted sound absorption coefficient	–
B	is the width	mm
D_i	is the inside diameter	mm
D_o	is the outside diameter	mm
d	is the thickness	mm
d_D	is the declared thickness of the product	mm
$\Delta\varepsilon_b$	is the relative change in width	%
$\Delta\varepsilon_d$	is the relative change in thickness	%
$\Delta\varepsilon_l$	is the relative change in length	%
l	is the length	m or mm
λ	is the thermal conductivity	W/(m·K)
λ_D	is the declared thermal conductivity	W/(m·K)
μ	is the water vapour diffusion resistance factor	–
S_b	is the deviation from squareness on length and width	mm/m
s_d	is the water vapour diffusion equivalent air layer thickness	m
σ_{10}	is the compressive stress at 10 % deformation	kPa
σ_m	is the compressive strength	kPa
v	is the deviation from squareness for pipe sections	mm
W_p	is the short-term water absorption	kg/m^2
AP	is the symbol of the declared level of practical sound absorption coefficient	
AW	is the symbol of the declared level of weighted sound absorption coefficient	
CL	is the symbol of the declared level of soluble chloride ions	
CS(10\Y)	is the symbol of the declared level for compressive stress or strength	
DS(TH)	is the symbol of the declared value for dimensional stability under specified temperature and relative humidity conditions	
F	is the symbol of the declared level of soluble fluoride ions	
MV	is the symbol of the declared level for water vapour diffusion equivalent air-layer thickness	
NA	is the symbol of the declared level of soluble sodium ions	
pH	is the symbol of the declared level of the pH-value	
SI	is the symbol of the declared level of soluble silicate ions	
ST(+)	is the symbol of the declared level for maximum service temperature with a test load of 500 Pa	

ST(+/250)	is the symbol of the declared level for maximum service temperature with a test load of 250 Pa
ST(+/100)	is the symbol of the declared level for maximum service temperature with a test load of 100 Pa
T	is the symbol of the declared class for thickness tolerances
WS	is the symbol of the declared level for short-term water absorption

3.2.2 Abbreviations used in this standard

AVCP	is **A**ssessment and **V**erification of **C**onstancy of **P**erformance (previously named attestation of conformity)
DoP	is **D**eclaration of **P**erformance
FPC	is **F**actory **P**roduction **C**ontrol
MW	is **M**ineral **W**ool
PTD	is **P**roduct **T**ype **D**etermination (previously named ITT for Initial Type Test)
RtF	is **R**eaction to **F**ire
ThIBEII	is **T**hermal **I**nsulation for **B**uilding **E**quipment and **I**ndustrial **I**nstallations
VCP	is **V**erification of **C**onstancy of **P**erformance (previously named evaluation of conformity)

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.

NOTE Information on additional properties is given in Annex B.

One test result for a product property is the average of the measured values on the numbers of test specimens given in Table 5.

4.2 For all applications

4.2.1 Thermal conductivity

For flat specimens thermal conductivity shall be based upon measurements carried out in accordance with EN 12667 or EN 12939 for thick products. For cylindrical specimens EN ISO 8497 shall be used as specified in 5.3.2.

In both cases the thermal conductivity values shall be determined by the manufacturer and verified in accordance with EN ISO 13787. They shall be declared by the manufacturer according to the measuring standards mentioned above covering the product service temperature range. The following conditions apply:

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

— the declared thermal conductivity curve shall be given as a limit curve, defined in EN ISO 13787;

— the value of the declared thermal conductivity, λ_D, shall be rounded upwards to the nearest 0,001 W/(m·K).

The declared equation/limit curve is the "declared reference" with three significant figures, that is to 0,000 1 W/(m·K) for λ values below 0,1 W/(m·K) and in 0,001 W/(m·K) for λ values above 0,1 W/(m·K). This shall be used as a reference for the verification of the declaration.

When thermal conductivity is declared as a table derived from the equation, rounding upwards to the next 0,001 W/(m·K) has to be done for the full range of the thermal conductivity.

NOTE Determinations of the declared thermal conductivity of pipe sections, following EN ISO 8497, having joints in the metering area, include the effects of these joints as defined in EN ISO 23993.

4.2.2 Dimensions and tolerances

4.2.2.1 Linear dimensions

The length, *l*, width, *b*, and thickness, *d*, for flat products shall be determined in accordance with EN 822 and EN 823. Length, thickness and inside diameter, D_i for pipe sections shall be determined in accordance with EN 13467.

Thickness, *d*, of slabs/boards, lamella products, mats, mattresses, quilts, rolls, and wired mats shall be determined in accordance with EN 823. The load shall be as shown in Table 3. The measurements shall be done excluding the preparation of test specimens of compressed products expressed in EN 823:2013, Annex A. This preparation may be used upon request by the manufacturer.

For wired mats the manufacturer may declare the thickness under loads of 50 Pa or 1 000 Pa. The thickness declaration shall be accompanied by the relevant thickness measurement load.

NOTE The choice of load for thickness measurement for wired mats is not related to the compression behaviour.

No test result shall deviate from the declared values by more than the tolerances given in Table 1 or Table 2 for the labelled level or class.

Table 1 — Levels and classes for thickness tolerances

Level or class	Tolerances	
T1	– 5 % or – 5 mm [a]	Excess permitted
T2	– 5 % or – 5 mm [a]	+ 15 % or + 15 mm [b]
T3	– 3 % or – 3 mm [a]	+ 10 % or + 10 mm [b]
T4	– 3 % or – 3 mm [a]	+ 5 % or + 5 mm [b]
T5	– 1 % or – 1 mm [a]	+ 3 mm
T8	– 5 % or – 3 mm [a]	+ 5 % or + 3 mm [a]
T9	– 6 % or – 5 mm [a]	+ 6 % or + 5 mm [a]

[a] Whichever gives the greatest numerical tolerance.

[b] Whichever gives the smallest numerical tolerance.

Table 2 — Levels and classes for dimensional tolerances

Form of delivery	Width	Length	Thickness class	Inside diameter	Thickness uniformity	Square-ness
Slabs/boards	±1,5 %	±2 %	T3 to T5			±5 mm/m
Lamella mats	±5 mm	+ excess – 0 mm	T4 and T5			
Wired mats	±10 mm	+ excess – 0 mm	T2 and T3			
Batts, mats, rolls, quilts, mattress, felts[b]	±10 mm	+ excess – 0 mm	T1 to T5			
Pipe sections D_o < 150 mm		±5 mm	T8	+ 4 mm – 0 mm	Difference less than 6 mm or 10 % [a]	±4 mm or ± 2 % of the external nominal diameter [a]
Pipe sections D_o ≥ 150 mm		±5 mm	T9	+ 5 mm or + 2 % [a] – 0 mm	Difference less than 10 mm or 12 % [a]	±4 mm or ± 2 % of the external nominal diameter [a]

[a] Whichever gives the greatest numerical tolerance.

[b] T2 only.

Table 3 — Load for thickness measurements

Product form	Load Pa
Boards Mats, Mattresses, Rolls, Slabs, Quilts - with compressive stress or strength less than 10 kPa	50
Lamella Mats	250
Boards Mats, Mattresses, Rolls, Slabs, Quilts - with compressive stress or strength equal to or greater than 10 kPa	250
Wired mats$_{50}$	50
Wired mats$_{1\,000}$	1 000

4.2.2.2 Squareness

Deviation from squareness, S_b, of boards and slabs shall be determined in accordance with EN 824. Deviation from squareness, *v*, of pipe sections shall be determined in accordance with EN 13467. No test result shall exceed the corresponding tolerance given in Table 2.

4.2.3 Dimensional stability

Dimensional stability under specified temperature and humidity conditions shall be determined in accordance with EN 1604. The test shall be carried out after storage for 48 h exposure at (23 ± 2) °C and (90 ± 5) % relative humidity. The relative change in thickness $\Delta\varepsilon_d$ shall not result in a relative thickness reduction exceeding 1,0 %. The relative changes in length, $\Delta\varepsilon_l$ and width $\Delta\varepsilon_b$ shall not exceed 1,0 %. The relative change in flatness, $\Delta\varepsilon_S$ shall not exceed 1 mm/m.

This test shall not be performed when the more severe test, described in 4.3.2 is used.

4.2.4 Reaction to fire of the product as placed on the market

Reaction to fire classification of the product, as placed on the market, shall be determined in accordance with EN 13501-1 and the basic Mounting and Fixing rules given in EN 15715:2009.

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

EN 13501-1:2007+A1:2009, Table 1, is applicable to products applied to flat surfaces or to curved surfaces with a diameter greater than 300 mm.

If a flat product which has a classification according to EN 13501-1:2007+A1:2009, Table 1, is used in a linear application it does not require further classification.

EN 13501-1:2007+A1:2009, Table 3, is applicable for products applied on linear objects or with a diameter below or equal to 300 mm.

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 and high temperature

The reaction to fire performance of MW products does not change with time or when subjected to the declared maximum service temperature.

4.2.5.3 Durability of thermal resistance against ageing/degradation

The thermal conductivity of MW products does not change with time. This is covered by 4.2.1 thermal conductivity, 4.2.2 dimensions and tolerances and 4.2.3 dimensional stability or 4.3.2 maximum service temperature (dimensional stability).

4.2.5.4 Durability of thermal resistance against high temperature

The thermal conductivity of MW products does not change with time at a high temperature. This is covered by 4.3.2 maximum service temperature (dimensional stability).

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 that property does not need to be determined and declared by the manufacturer.

4.3.2 Maximum service temperature

The maximum service temperature ST(+) shall be determined in accordance with EN 14706 for flat specimens and EN 14707 for cylindrical specimens. The maximum service temperature test needs not to be done for declaration of thermal conductivity ≤ 150 °C under the condition that the binder used is cured at temperatures > 200 °C.

At the maximum service temperature, ST(+) no test result shall:

— exceed a deformation under the defined load by more than 5 %;

— exhibit evidence of self-heating causing sintering or collapse of the fibrous structure.

The maximum service, temperature ST(+), shall be declared below 100 °C in steps of not less than 5 °C and above 100 °C in steps of not less than 10 °C.

4.3.3 Minimum service temperature

Minimum service temperatures within the scope of this standard but above 0 °C need not be tested.

For minimum service temperatures within the scope of this standard, but below 0 °C, a test is necessary that should be agreed between the parties.

4.3.4 Compressive stress or compressive strength

Compressive stress at 10 % deformation, σ_{10}, or the compressive strength, σ_{m}, shall be determined in accordance with EN 826. No test result for either the compressive stress at 10 % deformation or the compressive strength, whichever is the smaller, shall be less than the declared level, CS(10\Y), chosen from the following values: 0,5 kPa; 5 kPa; 10 kPa; 15 kPa; 20 kPa; 25 kPa; 30 kPa; 40 kPa; 50 kPa; 60 kPa; 70 kPa; 80 kPa; 90 kPa; 100 kPa; 110 kPa; 120 kPa; 130 kPa; 140 kPa; 150 kPa; 175 kPa; 200 kPa; 225 kPa; 250 kPa; 300 kPa; 350 kPa; 400 kPa; 500 kPa.

The labelled level shall indicate the level for compressive stress at 10 % deformation, CS(10), or the level for compressive strength, CS(Y), whichever is the smaller.

NOTE EN 826 is not applicable to pipe sections, and compression behaviour is not determined.

4.3.5 Water absorption

Short-term water absorption by partial immersion, W_{p} shall be determined in accordance with EN 1609 for flat product or by EN 13472 for preformed insulation. No test result of the water absorption W_{p}, shall exceed 1,0 kg/m^2 (WS1).

4.3.6 Water vapour diffusion resistance

Mineral wool products on their own do not significantly impede the movement of water vapour. Facings provide the water vapour diffusion resistance.

Water vapour diffusion equivalent air layer thickness of faced products, s_d, shall be determined in accordance with EN 12086 for flat specimens and in accordance with EN 13469 for cylindrical specimens. No test result shall be less than the value given in Table 4 for the declared level.

In the absence of measurements, the water vapour diffusion resistance factor, μ, of mineral wool products, either unfaced or faced with a fabric with an open structure, may be assumed to be equal to 1.

Table 4 — Water vapour diffusion equivalent air layer thickness

Level	Requirement m
MV 1	100
MV 2	200

Alternatively, for the declaration of water vapour transmission properties, the values quoted in EN ISO 10456 may be used.

NOTE Water accumulation in the insulation is not only caused by diffusion, but also by air movements through holes and gaps in the water vapour retarder.

4.3.7 Trace quantities of water soluble ions and the pH-value

Trace quantities of water-soluble chloride, fluoride, silicate and sodium ions and the pH-value shall be determined in accordance with EN 13468. The manufacturer shall declare one or more as appropriate as levels in mg per kg of product and the pH-value as levels in steps of 0,5. For chloride and fluoride, no test result shall exceed the declared value. For silicate and sodium, no test result shall be below the declared value. For the pH-value, no test result shall deviate from the declared value by more than 1,0.

4.3.8 Sound absorption

The sound absorption coefficient shall be determined in accordance with EN ISO 354 but always without a plenum. The sound absorption characteristics shall be calculated in accordance with EN ISO 11654 using the values for the practical sound absorption coefficient, α_p, at the frequencies: 125 Hz, 250 Hz, 500 Hz, 1 000 Hz, 2 000 Hz and 4 000 Hz and the single number value for α_w (weighted sound absorption coefficient).

α_p and α_w shall be rounded to the nearest 0,05 ($\alpha_p > 1$ shall be expressed as $\alpha_p = 1$) and declared in levels with steps of 0,05. No test result (α_p and α_w) shall be lower than the declared level.

4.3.9 Release of dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.

In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

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/enterprise/construction/cpd-ds/*.

4.3.10 Continuous glowing combustion

Where subject to regulation, a manufacturer shall declare the continuous glowing combustion according to national test method where available.

NOTE A European test method is under development and the standard will be amended when this is available.

5 Test methods

5.1 Sampling

Flat test specimens shall be taken from the same sample with a total area not less than 1 m^2 and sufficient to cover the needed tests. The shorter side of the sample shall not be less than 300 mm or full size of the product whichever is the smaller.

Pipe section specimens shall be taken from a sample consisting of at least three full size sections.

5.2 Conditioning

No special conditioning of the test specimens is needed unless otherwise specified in the test standard. In case of dispute, the test specimens shall be stored at (23 ± 2) °C and (50 ± 5) % relative humidity for at least 6 h prior to testing.

5.3 Testing

5.3.1 General

Table 5 gives the dimensions of the test specimens, the minimum number of measurements required to get one test result and any specific conditions which are necessary.

The test may be performed on the unfaced/uncoated product if the facing/coating is known to have no influence on the property.

5.3.2 Thermal conductivity

For flat test specimen thermal conductivity shall be determined in accordance with EN 12667 or EN 12939 for thick products. For cylindrical test specimens thermal conductivity shall be determined in accordance with EN ISO 8497.

The tests in accordance with EN ISO 8497 may be replaced by tests in accordance with EN 12667 or EN 12939 provided it has been demonstrated that the results give safe (higher) values.

The thermal conductivity shall be determined for the full temperature range of the product. For factory production control see Annex A.

For PTD, measurements of thermal conductivity made on two internal diameters of pipe sections at the greatest and smallest insulation thickness for each set of the diameters are deemed to be representative of the total product range.

For FPC, one dimension only is used.

NOTE Suitable sizes are 48 mm and 194 mm internal diameter.

The guarded hot plate method, EN 12667 or EN 12939 shall be deemed to be a suitable method for measurement of pipe insulation having an internal diameter exceeding 500 mm. Flat slabs shall be prepared having the same thickness and density as the sections. If the guarded hot plate method is used the fact shall be stated in the test report.

The thermal conductivity shall be determined directly at the measured thickness. If this is not possible it shall be determined by measurements on other thicknesses of the product providing that:

— the product is of similar chemical and physical characteristics and produced on the same production line/unit;

— and it can be demonstrated that the thermal conductivity, λ, does not vary more than 2 % over the range of thicknesses where the calculation is applied.

Where a product is manufactured in a range of thicknesses and the manufacturer chooses to characterize the entire range by declaring only one λ, he shall declare the highest λ of the range.

If facings or stitches have been removed, this and the reason for removal shall be stated in the test report.

For products with a compressive stress or compressive strength lower than 10 kPa, the thermal conductivity shall be determined at declared thickness, d_D, or measured thickness whichever is the lower, for wired matts the measurement is always at declared thickness.

Table 5 — Test methods, specimens and conditions

Dimensions in millimetres

Clause		Test method		Test specimen dimensions[a]	Minimum number of measurements to get one test result	Specific conditions
No.	**Title**	**Flat**	**Cylindrical**			
4.2.1	Thermal conductivity	EN 12667 or EN 12939	EN 12667 or EN 12939 for D_i > 500	Equipment dependent	1	—
		—	EN ISO 8497	Full size	1	—
4.2.2	Dimensions and tolerances					
4.2.2.1	Length and width	EN 822	EN 13467	Full size	1	—
4.2.2.1	Thickness	EN 823	EN 13467	Full size	Mat, felt, roll, mattress, quilt: 1 Batt, board, slab: 3	—
	Inside diameter	—	EN 13467	Full size	1	
4.2.2.2	Squareness	EN 824	EN 13467	Full size	1	—
4.2.3	Dimensional stability	EN 1604	—	200 × 200	3	—
4.2.4	Reaction to fire	See EN 13501–1				See EN 15715:2009
4.3.2	Maximum service temperature	EN 14706	EN 14707	100 × 100 150 × 150 200 × 200 300 × 300 for pipe sections see EN 14707	3	—
4.3.4	Compressive strength	EN 826	—	200 × 200 300 × 300	5 3	Grinding
4.3.5	Water absorption	EN 1609	—	200 × 200	4	Method A
	Water absorption	—	EN 13472	See test method	3	—
4.3.6	Water vapour diffusion resistance [b]	EN 12086	EN 13469	See EN 12086 See EN 13469	See EN 12086:2013 5	For products with water vapour retarder onlyb
4.3.7	Trace quantities of water soluble ions and the pH-value	EN 13468	—	—	3	20 g
4.3.8	Sound absorption	EN ISO 354	—	min. 10 m^2	1	To be reported
4.3.9	Release of dangerous substances	c	c	—	—	—
4.3.10	Continuous glowing combustion	c	c	—	—	—

[a] Always full-size product thickness, except for 4.2.3.

[b] When testing products with water vapour retarder, in accordance with EN 12086, the specimen thickness to measure is the water vapour retarder thickness plus 2 mm to 3 mm.

[c] Not yet available.

5.3.3 Reaction to fire

The tests shall be carried out in accordance with the rules given in EN 13501-1.

Rules for mounting and fixing are given in EN 15715:2009.

Annex A of EN 15715:2009 gives tables for product and installation parameters for flat products and pipe insulation products as placed on the market. Installation parameters for standardized assemblies are only given for flat products.

6 Designation code

A designation code for the product shall be given by the manufacturer. The following shall be included except when there is no requirement for a property described in 4.3:

— Thickness tolerances	Ti
— Maximum service temperature	ST(+)i, ST(+/250)i or ST(+/100)i
— Compressive stress or strength	CS(10\Y)i
— Water absorption	WSi
— Water vapour diffusion equivalent air layer thickness	MVi
— Weighted sound absorption coefficient	AWi
— Trace quantities of water soluble chloride ions	CLi
— Trace quantities of water soluble fluoride ions	Fi
— Trace quantities of water soluble silicate ions	SIi
— Trace quantities of water soluble sodium ions	NAi
— Level of the pH	pHi

where “i” shall be used to indicate the relevant class or level.

The designation code for a mineral wool product is illustrated by the following example:

MW –EN 14303–T2–ST(+)650–CS(10)20–WS1–MV1–CL6–pH9,5

7 Assessment and Verification of the Constancy of Performance (AVCP)

7.1 General

The manufacturer or his authorized representative shall be responsible for the conformity of his product with the requirements of this European Standard. The Assessment and Verification of Constancy of Performance (AVCP) shall be carried out in accordance with EN 13172 and shall be based on Product Type Determination (PTD), Factory Production Control (FPC) by the manufacturer, including product assessment and tests on samples taken at the factory.

The compliance of the product with the requirements of this standard and with the stated values (including classes) shall be demonstrated by:

— Product Type Determination (PTD),

— Factory Production Control (FPC) by the manufacturer, including product assessment.

If a manufacturer decides to group his products, it shall be done in accordance with EN 13172.

7.2 Product Type Determination (PTD)

All characteristics defined in 4.2 and those in 4.3 if declared, shall be subject to Product Type Determination (PTD). Product Type Determination (PTD) for the thermal conductivity curve shall be carried out in accordance with EN ISO 13787.

For Product Type Determination (PTD) only one test result is required for the thermal conductivity curve and the maximum service temperature.

For the relevant characteristics, PTD on products corresponding also to EN 13162 may be used for the purpose of PTD and Declaration of Performance (DoP) according to this standard.

7.3 Factory Production Control (FPC)

The minimum frequencies of tests in the factory production control (FPC) shall be in accordance with Annex A of this standard. When indirect testing is used, the correlation to direct testing shall be established in accordance with EN 13172.

For the relevant characteristics, FPC on products corresponding also to EN 13162 may be used for the purpose of FPC and DoP according to this standard.

8 Marking and labelling

Products conforming with this standard shall be clearly marked, either on the product or on the label on the packaging, with the following information:

— product name or other identifying characteristic;

— name or identifying mark and address of the manufacturer or his authorized representative in the European Economic Area;

— shift or time of production and manufacturing plant or traceability code;

— reaction to fire class; specific test conditions shall be indicated with the marking by reference to manufacturer's literature, where relevant;

— the intended use of the insulation material for Thermal Insulation of Building Equipment and Industrial Installations is given by the abbreviation ThlBEII;

— declared thermal conductivity: reference to Declaration of Performance (DoP), showing thermal conductivity as a function of temperature, given as a table, curve and/or equation;

— declared thickness; for wire net mats the associated load for thickness measurement shall also be given,

— designation code as given in Clause 6;

— type of facing, if any;

— declared length, declared width; or inside diameter as appropriate;

— number of pieces and area in the package, as appropriate.

NOTE For CE marking and labelling see ZA.3.

Annex A
(normative)

Factory production control

Table A.1 — Minimum product testing frequencies

Clause		Minimum testing frequency[a]						
No.	Title	Direct testing					Indirect testing	
		Lamella mats	Wired mats	Mats, batts, rolls, mattress, felts, quilts	Slabs, boards	Pipe sections	Test method	Frequency
4.2.1	Thermal conductivity	1 per 2 years and indirect testing	1 per 2 years and indirect testing	1 per 2 years and indirect testing	1 per 2 years and indirect testing	1 per 2 years and indirect testing	Density and manufacturer's methods	1 per 24 h[b]
4.2.2	Dimensions and tolerances							
4.2.2.1	Length	1 per 24 h	1 per 24 h	1 per 24 h	1 per 24 h	1 per 24h		
	Width	1 per 24 h	1 per 24 h	1 per 24 h	1 per 24 h			
	Thickness	1 per 24 h	1 per 24 h	1 per 24 h	1 per 24 h	1 per 24 h		
	Inside diameter					1 per 24 h		
	Thickness uniformity					1 per 24 h		
4.2.2.2	Squareness				1 per 24 h	1 per 24 h		
4.2.3	Dimensional stability under specified temperature and humidity conditions	1 per 5 years	1 per 5 years	1 per 5 years	1 per 5 years			
4.2.4	Reaction to fire	See Table A.2						

4.3.2	Maximum service temperature	1 per 5 years and indirect testing	1 per 5 years and indirect testing	1 per 5 years and indirect testing	1 per 5 years and indirect testing	1 per 5 years and indirect testing	Manufacturer's method	1 per 24 h
4.3.4	Compressive stress or compressive strength				1 per 24 h			
4.3.5	Water absorption	1 per 5 years and indirect testing		1 per year and indirect testing	1 per year and indirect testing	1 per year and indirect testing	Manufacturer's method	1 per day
4.3.6	Water vapour diffusion resistance	1 per 2 years and indirect testing		1 per 2 years and indirect testing	1 per 2 years and indirect testing	1 per 2 years and indirect testing	Manufacturer's method	1 per 24 h
4.3.7	Trace quantities of water soluble chloride, fluoride, silicate and sodium ions and the pH-value	1 per 5 years	1 per 5 years	1 per 5 years	1 per 5 years	1 per 5 years		
4.3.8	Sound absorption	1 per 5 years	1 per 5 years	1 per 5 years	1 per 5 years	1 per 5 years		
4.3.9	Release of dangerous substances	[c]	[c]	[c]	[c]	[c]		
4.3.10	Continuous glowing combustion	[c]	[c]	[c]	[c]	[c]		

[a] The minimum testing frequencies, expressed in number of test results required per period, shall be understood as the minimum for each production unit/line under stable conditions. In addition to the testing frequencies given above, testing of relevant properties of the product shall be repeated when changes or modifications are made that are likely to affect the conformity of the product. For PTD and FPC, units using the same process in one factory are considered together (as one production line).

For mechanical properties, the testing frequencies given are independent of the change of product. In addition the manufacturer shall establish internal rules for process adjustments related to these properties when changing the product.

[b] Once in every 24 h where there has been production.

[c] Frequencies are not given.

Table A.2 — Minimum product testing frequencies for the reaction to fire characteristics

Clause		Minimum testing frequency [a]							
No.	Title	Direct testing [b]		Indirect testing [c]					
	Reaction to fire class			Product		Components [d]			
						Substantial		Non-substantial	
		Test method	Frequency	Test method	Frequency	Test method	Frequency	Test method	Frequency
4.2.4	A1 without further fire testing [e]	EN 13820	1 per 3 months [f] or	—	—	—	—	—	—
			1 per 2 years and indirect testing	—	—	Loss on ignition	1 per 4 h	Weight per unit area	1 per 1 h
	A1	EN ISO 1182 and EN ISO 1716 and EN 13823 where applicable	1 per 2 years and indirect testing	—	—	Loss on ignition	1 per 4 h	Either loss on ignition or calorific potential	1 per 4 h
						Apparent density	1 per 1 h	weight per unit area	1 per 1 h
	A2	EN ISO 1182 or EN ISO 1716 and EN 13823	1 per 2 years and indirect testing	—	—	Loss on ignition	1 per 24 h	Either loss on ignition or calorific potential	1 per 24 h
						Apparent density	1 per 24 h	Weight per unit area	1 per 24 h
	B C D	EN 13823 and EN ISO 11925-2	1 per 2 years and indirect testing	Manufacturer's method	1 per 24 h	Loss on ignition	1 per 24 h	Either loss on ignition or calorific potential	1 per 24 h
						Apparent density	1 per 24 h	weight per unit area	1 per 24 h
			1 per 2 years and indirect testing	Manufacturer's method	1 per 24 h	—	—	—	—

4.2.4	E	EN ISO 11925-2	1 per 2 years and indirect testing	Manufacturer's method	1 per 24 h	–	–	–	–

NOTE Not all Euroclasses may apply for the products conforming to this standard.

[a] The minimum testing frequencies, expressed in number of test results required per period, shall be understood as the minimum for each production unit/line under stable conditions. In addition to the testing frequencies given above, testing of relevant properties of the product shall be repeated when changes or modifications are made that are likely to affect the conformity of the product. For PTD and FPC, units using the same process in one factory are considered together (as one production line).

[b] Direct testing may be conducted either by a third party or by the manufacturer.

[c] Indirect testing may be conducted by a third party or by the manufacturer on the product or on its components.

[d] Definition as given in the Euroclasses Decision 2000/147/EC:

- Substantial component: A material that constitutes a significant part of a non-homogeneous product. A layer with a mass per unit area ≥ 1,0 kg/m² or a thickness ≥ 1,0 mm is considered to be a substantial component.
- Non-substantial component: A material that does not constitute a significant part of a non-homogeneous product. A layer with a mass per unit area < 1,0 kg/m² and a thickness < 1,0 mm is considered to be a non-substantial component.
- In case of a certified component, the frequency is once per delivery of the component.

[e] European Decision 96/603/EC: Materials to be considered as reaction to fire class A provided for in Decision 94/611/EC without the need for testing (of reaction to fire characteristics).

[f] Only for unfaced products.

Annex B
(informative)

Additional Properties

B.1 General

The manufacturer can choose to give information on the following additional properties (see Table B.1).

This information, where appropriate for the product and the application, should be given as limit values for each test result obtained from the referred test method and conditions as given in Table B.1.

B.2 Density

Apparent density is a useful parameter, among others, for identification but it should not be used as a basis for the quality assessment of mineral wool products.

Apparent density of batts, bevelled lags, felts, lamella mats, mats, mattresses, quilts, rolls, slabs, boards, wired mats, if voluntary declared, will be determined in accordance with EN 1602.

Apparent density of pipe sections, if voluntary declared, will be determined in accordance with EN 13470.

Products manufactured from mineral wool can have the same thermal or mechanical properties at different densities. For this reason product densities are not quoted as requirement in this standard.

B.3 Flatness

Deviation from flatness, P(x), if voluntarily declared, will be determined in accordance with EN 825. The deviation from flatness, x, of boards and slabs, if voluntary declared, will be expressed in mm.

B.4 Airflow resistivity

Airflow resistivity, AF, is a useful parameter for estimating sound absorption and estimating the possibility of internal convection in the insulation.

Airflow resistivity, if voluntary declared, will be determined in accordance with EN 29053.

B.5 Dynamic stiffness

Dynamic stiffness, SD, is necessary for calculations of sound and vibration calculations. Dynamic stiffness, if voluntary declared, will be determined in accordance with EN 29052-1.

Table B.1 — Test methods, specimens and conditions

Dimensions in millimetres

Clause		Test methods	Test specimens Dimensions[a]	Minimum number of measure-ments to get one test result	Specific conditions	Factory production control
No.	Title					Minimum product testing frequency[b] Direct testing
B.2	Density	EN 1602 EN 13470	Full size Full size	Minimum 5 Minimum 3		1 per 1h 1 per 1h
B.3	Flatness	EN 825	Full size	1		1 per 4h
B.4	Airflow resistivity	EN 29053	Apparatus dependent	9	Method A	1 per year and indirect testing
B.5	Dynamic stiffness — Part 1: Materials used under floating floors in dwellings	EN 29052–1	200 × 200	3		1 per 24h

[a] Full-size product thickness.

[b] Only relevant in the case of declaring the property.

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/103[1)] "Thermal insulation products" given to CEN by the European Commission and the European Free Trade Association.

If this European standard is cited in the Official Journal of the European Union (OJEU), the clauses of this standard, shown in this annex, are considered to meet the provisions of the relevant mandate, under the Regulation (EU) No. 305/2011.

This annex deals with the CE marking of the factory made mineral wool intended for the use indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as Clause 1 of this standard related to the aspects covered by the mandate and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for factory made mineral wool and intended use

Product:	Factory made mineral wool (MW) products
Intended use:	Thermal insulation for Building Equipment and Industrial Installations (ThIBEII)

Essential Characteristics	**Clauses in this and other European standard(s) related to essential characteristics**[e]	**Regulatory classes**	**Notes**
Thermal resistance	4.2.1 Thermal conductivity	—	Declared λ_D curve or table vs. temperature
	4.2.2 Dimensions and tolerances	—	Flat products: Declared thickness d_D and tolerance class Linear products: Inner diameter D_i, thickness d_D and tolerance class
Reaction to fire	4.2.4 Reaction to fire	Euroclasses	—
Durability of thermal resistance against high temperature	4.2.1 Thermal conductivity	—	Declared λ_D curve or table vs. temperature
	4.3.2 Maximum service temperature	—	Declared ST(+)

1) As amended by mandates M126, M130 and M367.

Product:	Factory made mineral wool (MW) products		
Intended use:	Thermal insulation for Building Equipment and Industrial Installations (ThIBEII)		
Essential Characteristics	**Clauses in this and other European standard(s) related to essential characteristics**[e]	**Regulatory classes**	**Notes**
Durability of thermal resistance against ageing/degradation	4.2.1 Thermal conductivity	—	Declared λ_D curve or table vs. temperature[b]
	4.2.3 Dimensional stability or	—	—
	4.3.2 Maximum service temperature	—	Declared ST(+)
Durability of reaction to fire against high temperature	4.2.5 Durability characteristics	Euroclasses	c
Durability of reaction to fire against ageing/degradation	4.2.5 Durability characteristics	Euroclasses	a
Compressive strength	4.3.4 Compressive stress or compressive strength for flat products	—	Declared CS
Water permeability	4.3.5 Water absorption	—	Declared WS
Water vapour permeability	4.3.6 Water vapour diffusion resistance	—	Levels of equivalent air layer thickness s_d
Rate of release of corrosive substances	4.3.7 Trace quantities of water-soluble ions and the pH-value	—	Levels of ion content and level of the pH-value
Acoustic absorption index	4.3.8 Sound absorption	—	Declared AW
Release of dangerous substances to the indoor environment	4.3.9 Release of dangerous substances	—	d
Continuous glowing combustion	4.3.10 Continuous glowing combustion	—	d

a No change in reaction to fire properties for MW products.

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

b Thermal conductivity of MW products does not change with time, experience has shown the fibre structure to be stable and the porosity contains no other gases than atmospheric air.

c The fire performance of mineral wool does not deteriorate with high temperature. The Euroclass classification of the product is related to the organic content, which remains constant or decreases with high temperature.

d European test methods are under development.

e Also valid and applicable for multilayers

The declaration of the product performance related to certain essential characteristics is not required in those Member States (MS) where there are no regulatory requirements on these essential characteristics for the intended use of the product. In this case, manufacturers placing their products on the market of these MS are not obliged to determine nor declare the performance of their products with regard to these essential characteristics and the option “No performance determined” (NPD) in the information accompanying the CE marking and in the declaration of performance (see ZA.3) may be used for those essential characteristics.

ZA.2 Procedures for AVCP of factory made mineral wool products

ZA.2.1 Systems of AVCP

The AVCP systems of factory made mineral wool products indicated in Table ZA.1, established by EC Decision 95/204/EC of 31.05.95 (OJ L 129) revised by decision 99/91/EC of 25.01.99 (OJ L 29) amended by the decision 01/596/EC of 08.01.01 (OJ L 209) is shown in Table ZA.2 for the indicated intended use and relevant level(s) or class(es) of performance.

Table ZA.2 — Systems of AVCP

Product(s)	Intended use(s)	Level(s) or class(es) (reaction to fire)	AVCP system(s)
Thermal insulation products (Factory made products)	For uses subject to regulations on reaction to fire	(A1, A2, B, C)[a]	1
		(A1, A2, B, C)[b], D, E	3
		(A1 to E)[c], F	4
	Any	—	3
System 1: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.2 System 3: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.4 System 4: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.5			

[a] Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).

[b] Products/materials not covered by footnote ([a]).

[c] Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of classes A1 according to Commission Decision 96/603/EC, as amended).

The AVCP of the factory made mineral wool products in Table ZA.1 shall be according to the AVCP procedures indicated in Tables ZA.3.1 to ZA.3.3 resulting from application of the clauses of this or other European Standard indicated therein. The content of tasks of the notified body shall be limited to those essential characteristics as provided for, if any, in Annex III of the relevant mandate and to those that the manufacturer intends to declare.

Table ZA.3.1 — Assignment of AVCP tasks for factory made mineral wool products under system 1 for reaction to fire and system 3 (see Table ZA.2)

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory Production Control (FPC)	Parameters related to essential characteristics of Table ZA.1 relevant for the intended use which are declared.	Clause 5, Annexes B and C of EN 13172:2012 and 7.3 of this standard
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics of Table ZA.1 relevant for the intended use which are declared	Annex A of this standard
	Determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1 relevant for the intended use which are declared and not tested by the notified testing laboratory and by the product certification body involved with reaction to fire	Clause 6 of EN 13172:2012 and 7.2 of this standard
Tasks for notified testing laboratory	Determination of the product-type on the basis of type testing (including sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product	— Thermal resistance; — Release of dangerous substances[a]; — Compressive strength (for load bearing applications); — Water permeability*;* — Release of corrosive substances *(if relevant).*	Clause 6 of EN 13172:2012 and 7.2 of this standard
Tasks for the notified product certification body	Determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product [b]	— Reaction to fire	Clause 6 of EN 13172:2012 and 7.2 of this standard
	Initial inspection of manufacturing plant and of FPC	Parameters related to essential characteristics of Table ZA.1, relevant for the intended use which are declared, namely reaction to fire. Documentation of the FPC.	Annex B and C of EN 13172:2012 and 7.3 of this standard
	Continuous surveillance, assessment and evaluation of FPC	Parameters related to essential characteristics of Table ZA.1, relevant for the intended use which are declared, namely reaction to fire. Documentation of the FPC.	Annex B and C of EN 13172:2012 and 7.3 of this standard

[a] No test method available yet.

[b] Sampling shall be carried out as defined in 5.1

Table ZA.3.2 — Assignment of AVCP tasks for factory made mineral wool products under system 3 (see Table ZA.2)

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory Production Control (FPC)	Parameters related to essential characteristics of Table ZA.1 relevant for the intended use which are declared	Clause 5, Annexes C and D of EN 13172:2012 and 7.3 of this standard
	Determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1 relevant for the intended use which are declared and not tested by the notified testing laboratory	Clause 6 of EN 13172:2012 and 7.2 of this standard
Tasks for a notified testing laboratory	Determination of the product type on the basis of type testing (based on sampling carried out by the manufacturer) or tabulated values	— Reaction to fire; — Thermal resistance; — Release of dangerous substances[a]; — Compressive strength (for load bearing applications); — Water permeability; — Release of corrosive substances *(if relevant).*	Clause 6 of EN 13172:2012 and 7.2 of this standard

[a] No test method available yet.

Table ZA.3.3 — Assignment of AVCP tasks for factory made mineral wool products under combined system 4 for reaction to fire and system 3 (see Table ZA.2)

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory Production Control (FPC)	Parameters related to essential characteristics of Table ZA.1 relevant for the intended use which is declared	Clause 5, Annexes C and D of EN 13172:2012 and 7.3 of this standard
	Determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1 relevant for the intended use which are declared and not tested by the notified testing laboratory	Clause 6 of EN 13172:2012 and 7.2 of this standard
Tasks for a notified testing laboratory	Determination of the product type on the basis of type testing (based on sampling carried out by the manufacturer) or tabulated values	— Thermal resistance; — Release of dangerous substances[a]; — Compressive strength (for load bearing applications); — Water permeability; — Release of corrosive substances *(if relevant).*	Clause 6 of EN 13172:2012 and 7.2 of this standard
[a] No test method available yet.			

ZA.2.2 Declaration of Performance (DoP)

ZA.2.2.1 General

The manufacturer draws up the DoP and affixes the CE marking on the basis of the different AVCP systems set out in Annex V of the Regulation (EU) No 305/2011:

In case of products under system 1

— the factory production control and further testing of samples taken at the factory according to the prescribed test plan, carried out by the manufacturer; and

— the certificate of constancy of performance issued by the notified product certification body on the basis of determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; initial inspection of the manufacturing plant and of factory production control and continuous surveillance, assessment and evaluation of factory production control.

In case of products under system 3

— the factory production control carried out by the manufacturer; and

— the determination of the product-type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the carried out by the notified testing laboratory.

In case of products under system 4

— the factory production control carried out by the manufacturer; and

— the determination by the manufacturer of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product.

ZA.2.2.2 Content

The model of the DoP is provided in Annex III of the Regulation (EU) No 305/2011.

According to this Regulation, the DoP shall contain, in particular, the following information:

— the reference of the product-type for which the declaration of performance has been drawn up;

— the AVCP system or systems of the construction product, as set out in Annex V of the CPR;

— the reference number and date of issue of the harmonized standard which has been used for the assessment of each essential characteristic;

— where applicable, the reference number of the Specific Technical Documentation used and the requirements with which the manufacturer claims the product complies.

The DoP shall in addition contain:

a) the intended use or uses for the construction product, in accordance with the applicable harmonized technical specification;

b) the list of essential characteristics, as determined in the harmonized technical specification for the declared intended use or uses;

c) the performance of at least one of the essential characteristics of the construction product, relevant for the declared intended use or uses;

d) where applicable, the performance of the construction product, by levels or classes, or in a description, if necessary based on a calculation in relation to its essential characteristics determined in accordance with the Commission determination regarding those essential characteristics for which the manufacturer shall declare the performance of the product when it is placed on the market or the Commission determination regarding threshold levels for the performance in relation to the essential characteristics to be declared;

e) the performance of those essential characteristics of the construction product which are related to the intended use or uses, taking into consideration the provisions in relation to the intended use or uses where the manufacturer intends the product to be made available on the market;

f) for the listed essential characteristics for which no performance is declared, the letters “NPD” (No Performance Determined).

Regarding the supply of the DoP, article 7 of the Regulation (EU) No 305/2011 applies.

The information referred to in Article 31 or, as the case may be, in Article 33 of Regulation (EC) No 1907/2006, (REACH) shall be provided together with the DOP.

ZA.2.2.3 Example of DoP

The following gives an example of a filled-in DoP for factory made mineral wool for EN 14303

DECLARATION OF PERFORMANCE

No 0123-DoP-2013/10/07

1. Unique identification code of the product-type:

ABCD High Temperature Board

2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4) of the CPR:

see product label

3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

Thermal Insulation for Building Equipment and Industrial Installations (ThIBEII)

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11(5):

Any Co Ltd, PO Box 21, B-1050

5. Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12(2):

not relevant

6. System or systems of assessment and verification of constancy of performance of the construction product as set out in CPR, Annex V:

Systems 1 and 3

7. In case of the declaration of performance concerning a construction product covered by a harmonized standard:

Notified certification body No. 4567 performed, carried out the determination of the product type, the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment and evaluation of factory production control and issued the certificate of constancy of performance for reaction to fire. Notified testing laboratory No. 7456 performed the test reports for the other relevant declared characteristics

8. Declared performance

<table>
<tr><th colspan="2">Essential characteristics</th><th colspan="8">Performance</th><th>Harmonized technical specification</th></tr>
<tr><td rowspan="3">Thermal resistance</td><td rowspan="2">Thermal conductivity</td><td>ϑ °C</td><td>50</td><td>100</td><td>200</td><td>300</td><td>400</td><td>500</td><td>600</td><td rowspan="14">EN 14303:2015</td></tr>
<tr><td>λ_D W/(m·K)</td><td>0,041</td><td>0,047</td><td>0,060</td><td>0,076</td><td>0,094</td><td>0,114</td><td>0,137</td></tr>
<tr><td>Thickness</td><td colspan="8">d_D = 20 mm – 120 mm, Tolerance class T2</td></tr>
<tr><td colspan="2">Reaction to fire</td><td colspan="8">A1</td></tr>
<tr><td colspan="2">Durability of thermal resistance against ageing/degradation</td><td colspan="8">Maximum service temperature ST(+)600 (=600 °C)</td></tr>
<tr><td colspan="2">Durability of thermal resistance against high temperature</td><td colspan="8">Maximum service temperature ST(+)600 (=600 °C)</td></tr>
<tr><td colspan="2">Durability of reaction to fire against ageing/degradation</td><td colspan="8">Durability characteristics A1</td></tr>
<tr><td colspan="2">Durability of reaction to fire against high temperature</td><td colspan="8">Durability characteristics A1</td></tr>
<tr><td colspan="2">Compressive strength</td><td colspan="8">Compressive stress at 10 % deformation CS(10)20 (≥20 kPa)</td></tr>
<tr><td colspan="2">Water permeability</td><td colspan="8">Water absorption WS1 (≤1 kg/m^2)</td></tr>
<tr><td colspan="2">Water vapour permeability</td><td colspan="8">Water vapour diffusion equivalent air layer thickness MV1 (sd = 100 m)</td></tr>
<tr><td colspan="2">Rate of release of corrosive substances</td><td colspan="8">Trace quantities of water-soluble chloride ions CL10 (≤10 ppm)
pH-value pH9.5</td></tr>
<tr><td colspan="2">Acoustic absorption index</td><td colspan="8">Sound absorption AW1 (≥1)</td></tr>
<tr><td colspan="2">Release of dangerous substances</td><td colspan="8">NPD</td></tr>
<tr><td colspan="2">Continuous glowing combustion</td><td colspan="8">NPD</td></tr>
<tr><td colspan="11">NPD No Performance Determined</td></tr>
</table>

9. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 8. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

   Signed for and on behalf of the manufacturer by:

   ……..

   (Name and function)

   …… ……..

   (Place and date of issue) (Signature)

NOTE For characteristics where e.g. the declaration is different for different thickness a Table is needed instead of a single value in the Table above.

ZA.3 CE Marking and labelling

The CE marking symbol shall be in accordance with the general principles set out in Article 30 of Regulation (EC) No 765/2008 and shall be affixed visibly, legibly and indelibly:

— to the factory made mineral wool (MW) product

or

— to a label attached to it.

Where this is not possible or not warranted on account of the nature of the product, it shall be affixed to the packaging or to the accompanying documents.

The CE marking shall be followed by:

— the last two digits of the year in which it was first affixed;

— the name and the registered address of the manufacturer, or the identifying mark allowing identification of the name and address of the manufacturer easily and without any ambiguity;

— the unique identification code of the product-type;

— the reference number of the declaration of performance;

— the level or class of the performance declared;

— the dated reference to the harmonized technical specification applied;

— the identification number of the notified body [only for products under systems 1 and 3];

— the intended use as laid down in the harmonized technical specification applied.

The CE marking shall be affixed before the construction product is placed on the market. It may be followed by a pictogram or any other mark notably indicating a special risk or use.

Figure ZA.1 gives an example of the information related to products subject to AVCP systems 1 and 3 to be given on the product or to a label attached to it.

CE	*CE marking, consisting of the "CE"-symbol*
4567	*Identification number of the product certification body*
7456	*Identification number of the notified test laboratory/ laboratories*
AnyCo Ltd, PO Box 21, B-1050	*name and the registered address of the manufacturer, or identifying mark*
13	*Last two digits of the year in which the marking was first affixed*
0123 – DoP – 2013/10/07	*reference number of the DoP*
EN 14303:2015	*No. of European standard applied, as referenced in OJEU*
ABCD	*Unique identification code of the product-type*
High Temperature Board ThIBEII	*Intended use of the product as laid down in the European standard applied*
λ_D DoP	*Declared thermal conductivity*
RtF A1	*Reaction to fire – Euroclass*
d_D 100 mm	*Declared Thickness*
MW – EN 14303 – T2 ST(+)600 – CS(10)20 – WS1 – MV1 – CL10 – pH9.5	*Designation code (in accordance with Clause 6 of this standard for the relevant characteristics according to Table ZA.1)* *Level or class of the performance declared*

Figure ZA.1 — Example CE marking information of products under AVCP systems 1 and 3

Bibliography

[1] EN 825, *Thermal insulating products for building applications - Determination of flatness*

[2] EN 1602, *Thermal insulating products for building applications - Determination of the apparent density*

[3] EN 13238, *Reaction to fire tests for building products - Conditioning procedures and general rules for selection of substrates*

[4] EN 13470, *Thermal insulating products for building equipment and industrial installations - Determination of the apparent density of preformed pipe insulation*

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

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

[7] EN ISO 23993, *Thermal insulation products for building equipment and industrial installations - Determination of design thermal conductivity (ISO 23993)*

[8] ISO 65, *Carbon steel tubes suitable for screwing in accordance with ISO 7-1*

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