BS EN 13950:2014

BSI Standards Publication

Gypsum board thermal/ acoustic insulation composite panels — Definitions, requirements and test methods

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National foreword

This British Standard is the UK implementation of EN 13950:2014. It supersedes BS EN 13950:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/544, Plastering, rendering, dry lining.

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.

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

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Gypsum board thermal/acoustic insulation composite panels - Definitions, requirements and test methods

Complexes d'isolation thermique/acoustique en plaques de plâtre et isolant - Définitions, spécifications et méthodes d'essai

Gips-Verbundplatten zur Wärme- und Schalldämmung - Begriffe, Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 22 May 2014.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 13950:2014) has been prepared by Technical Committee CEN/TC 241 “Gypsum and gypsum based products”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by January 2015 and conflicting national standards shall be withdrawn at the latest by April 2016.

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 13950:2005.

The main technical changes that have been made in this new edition of EN 13950 are the following:

a) Normative references have been updated;

b) Scope has been enlarged to include boards according to EN 520, EN 15283-1 and EN 15283-2;

c) new clause symbols, abbreviations and classification has been introduced;

d) Annex ZA and Clause 6 have been revised to be in line with the Construction Products Regulation (CPR);

e) document has been editorially revised.

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.

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 characteristics and performance of thermal/acoustic insulation composite panels made of an insulating material laminated to gypsum boards for which the main intended use is the internal insulation (thermal and/or acoustic) of walls. They are attached with adhesives or by mechanical fixings to vertical solid backgrounds and by mechanical fixings to wood or metal framing with the gypsum board face exposed. The method of fixing and jointing should ensure that the insulating material is not exposed in its normal application.

This European Standard covers the following performance characteristics: reaction to fire, fire resistance, water vapour permeability, flexural strength, impact resistance, direct airborne sound insulation and thermal resistance to be measured according to the corresponding European test methods.

It provides for the assessment and verification of constancy of performance of the products to this European Standard.

This European Standard covers also additional technical characteristics that are of importance for the use and acceptance of the product by the construction industry.

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 520, *Gypsum plasterboards — Definitions, requirements and test methods*

EN 825:2013, *Thermal insulating products for building applications — Determination of flatness*

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

EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

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

EN 13963, *Jointing materials for gypsum plasterboards — Definitions, requirements and test methods*

EN 14496, *Gypsum based adhesives for thermal/acoustic insulation composite panels and plasterboards — Definitions, requirements and test methods*

EN 15283-1, *Gypsum boards with fibrous reinforcement — Definitions, requirements and test methods — Part 1: Gypsum boards with mat reinforcement*

EN 15283-2, *Gypsum boards with fibrous reinforcement — Definitions, requirements and test methods — Part 2: Gypsum fibre boards*

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

EN ISO 10140 (all parts), *Acoustics — Laboratory measurement of sound insulation of building elements*

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 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 12572, *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties (ISO 12572)*

ISO 7892, *Vertical building elements — Impact resistance tests — Impact bodies and general test procedures*

3 Terms, definitions, symbols, abbreviations and classification

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

3.1 Terms and definitions of the product

3.1.1
gypsum board thermal/acoustic insulation composite panel
panel made from an insulating material laminated to gypsum board, with or without a water vapour retarder

3.1.2
gypsum board thermal/acoustic insulation sandwich panel
gypsum board thermal/acoustic insulation composite panel with board on both faces

3.2 General terms

3.2.1
water vapour retarder
material which reduces water vapour diffusion, provided separately or in conjunction with the gypsum board

EXAMPLE See EN 14190.

3.2.2
panel facing
exposed surface of gypsum board to receive either direct decoration or gypsum plaster

3.2.3
length
dimension of the laminate measured by convention on the gypsum board, parallel to the longitudinal edges

3.2.4
width
dimension of the laminate measured by convention on the gypsum board, parallel to the cut edges

3.2.5
thickness
distance between the outer surfaces of the composite or of the sandwich panel

3.2.6
offset
position of the insulating material relative to the gypsum board and between the two gypsum boards in the case of the sandwich panel

Note 1 to entry: When the insulating material projects over the edge or the end of the gypsum board, the offset is taken to be positive.

3.3 Symbols and abbreviations

Table 1 — Symbols and abbreviations

Requirement	Sub-clause	Symbol or abbreviation
Reaction to fire	4.2.1	R2F
Water vapour resistance factor	4.3	μ
Flexural strength	4.4	F
Thermal resistance	4.8	TR
Impact resistance	4.5	→I
Airborne sound insulation	4.6	R
Acoustic absorption	4.7	α
Dangerous substances	4.13	DS
See manufacturer's literature		www.manufacturers_internet_address.com

3.4 Classification

Gypsum board thermal/acoustic insulation composite panels shall be classified depending on the kind of insulating materials as follows

a) class 1 composites:

— expanded polystyrene foam (EPS) (see EN 13163);

— extruded polystyrene foam (XPS) (see EN 13164);

— rigid polyurethane foam (polyisocyanate, polyisocyanurate) (PUR and PIR) (see EN 13165);

— phenolic foam (PF) (see EN 13166);

b) class 2 composites:

— mineral wool (MW) (see EN 13162).

Gypsum board thermal/acoustic insulation composite panels are for convenience referred to elsewhere in this European Standard as "composites"

4 Requirements

4.1 General

The gypsum board and the insulating material shall comply with their respective European Standards. Further requirements of the insulating material are given below.

Acoustic and thermal insulation performance vary according to the type of the insulating material, its thickness, its application and system.

4.2 Fire behaviour

4.2.1 Reaction to fire

When the intended use of gypsum board thermal/acoustic composite panels is for exposed situations in building construction works, composites shall be tested with their edges protected and classified in accordance with EN 13501-1.

Composites tested according to EN 13823 (SBI test) shall be mounted and fixed (see Annex B).

Composites tested according to EN ISO 11925-2 (small flame test) shall be tested on the face only as the edges are never exposed in use.

4.2.2 Fire resistance

NOTE Resistance to fire is a characteristic dependent on an assembled system and not of the product in isolation.

When the manufacturer wishes to determine the fire resistance performance of a system including composites, the system shall be tested and classified according to EN 13501-2.

4.3 Water vapour permeability (expressed as water vapour resistance factor)

Water vapour permeability is not a characteristic of heterogeneous products like composites.

When the intended use of composites is for moisture diffusion control, the water vapour resistance of the composites shall be determined in accordance with the test method described in EN ISO 12572.

NOTE The generic values of water vapour resistance given in EN ISO 10456 can be used for calculation.

4.4 Flexural strength

Composites shall have a minimum transverse breaking load of 160 N and longitudinal breaking load of 400 N when determined in accordance with EN 520 or EN 15283-1 and EN 15283-2. This shall be ensured by using gypsum boards having those mechanical performances.

4.5 Impact resistance

NOTE Impact resistance is a characteristic dependent on an assembled system and not of the product in isolation.

When the manufacturer wishes to determine the impact resistance performance of a system including composite panels, the system shall be tested and classified according to ISO 7892.

4.6 Direct airborne sound insulation

NOTE Direct airborne sound insulation is a characteristic dependent on an assembled system and not of the product in isolation.

When the manufacturer wishes to determine the direct airborne sound insulation of a system including composites, the system shall be tested and classified according to EN ISO 10140 (all parts) as appropriate.

4.7 Acoustic absorption

NOTE Acoustic absorption is a characteristic dependent on an assembled system and not of the product in isolation.

When the manufacturer wishes to determine the acoustic absorption of a system including composites, the system shall be tested and classified according to EN ISO 354.

4.8 Thermal resistance of the panel

The thermal resistance of the composite panel shall be obtained by the addition of the thermal resistances of the components and expressed in $m^2 \times K/W$.

When a manufacturer wishes to declare thermal resistance, the thermal resistance may be calculated on the basis of tabulated data, testing or combination of them both.

Design thermal resistance values of gypsum boards are given in EN ISO 10456.

EN 12939 and EN 12667 give test methods for the thermal resistance of insulating products.

4.9 Dimensions and tolerances

Width and length of the composite panels are determined by the boards used in accordance with the relevant standards

The nominal thickness of the composite panels shall be given by the manufacturer.

— Gypsum boards with a minimum nominal thickness as given in the relevant standards;

— insulating material with a minimum nominal thickness as given in the relevant standards.

The thickness shall be measured as described in 5.2.1. The tolerance for each individual measurement for the thickness of the composite panels shall be ± 3 mm.

4.10 Offset

The offset range when determined as described in 5.3 shall not exceed:

— width direction: − 5 mm to + 5 mm;

— length direction: − 5 mm to + 8 mm.

The two measurements on the same side shall not differ by more than 5 mm. Within this range, different offset arrangements are possible to satisfy different applications.

Composite panels can be classified N when the offset is negative (insulating material back from the board) and P when positive (insulating material out of the board).

4.11 Flatness of the composite

The deviation from flatness of the composite, determined according to 5.5, shall not exceed 5 mm.

4.12 Adhesion/cohesion of the insulating material

When the tensile strength is measured in accordance with 5.4, no value shall be less than 0,017 MPa for class 1 composites or less than 0,003 MPa for class 2 composites.

If the manufacturer wishes to declare a higher value for class 1 no value shall be less than 0,04 MPa.

4.13 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/

5 Test methods

5.1 Sampling

Tests shall be carried out on three composite panels of each type and thickness. For testing core adhesion/cohesion specimens shall be cut out from one single panel.

5.2 Dimensional measurements

5.2.1 Thickness

5.2.1.1 Principle

The distance between the two faces of the composite panel shall be measured.

5.2.1.2 Apparatus

A caliper permitting readings to the nearest 0,5 mm.

5.2.1.3 Procedure

Take three measurements on each end to the nearest 0,5 mm at equal intervals across the width and at least 25 mm from the end and 100 mm from the edges (see Figure 1).

5.2.1.4 Expression of results

Each measured value expressed in millimetres shall be recorded and compared to the nominal thickness of the composite.

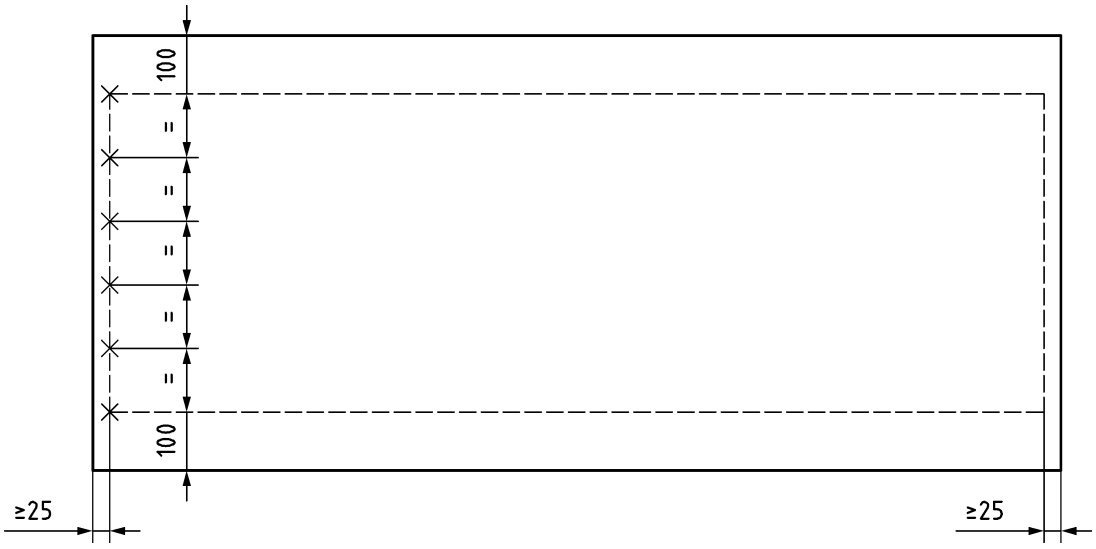


Figure 1 — Measurement of thickness

5.3 Determination of the offset

5.3.1 Principle

The offset between the edges of the insulation and the gypsum board shall be measured.

When the insulating material projects over the edge or end of the board, the offset is taken to be positive.

In the case of sandwich panels:

— offset between the edges of the insulation and each gypsum board is measured;

and

— offset between the edges of the two boards is measured.

5.3.2 Apparatus

a) flat surface;

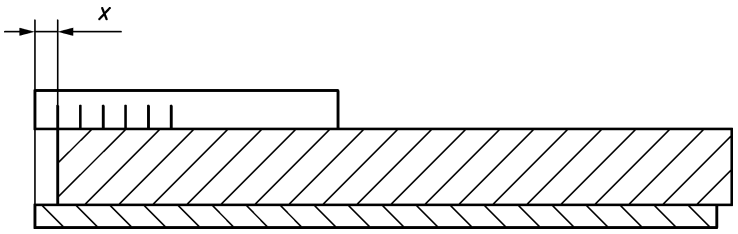
b) metal rule or a metal tape permitting readings to the nearest 1 mm.

5.3.3 Procedure

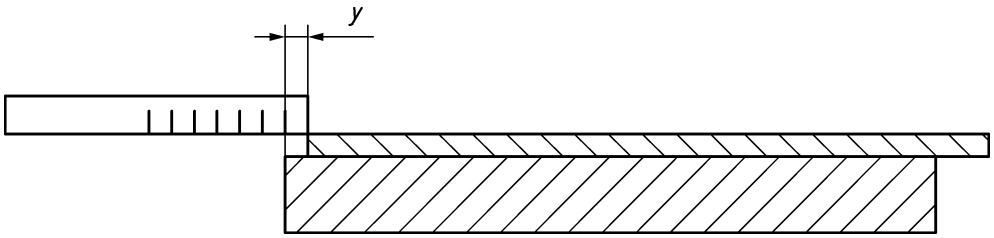
Lay the composite panel on a flat surface. Measure the offset between the edges of the insulation and the gypsum board as shown in Figure 2 and between the two boards in the case of sandwich panels. Turn over the composite panel when necessary.

The offset is measured to the nearest 1 mm on each edge and at a position 100 mm from the adjacent edge. Make 8 measurements as shown on Figure 2.

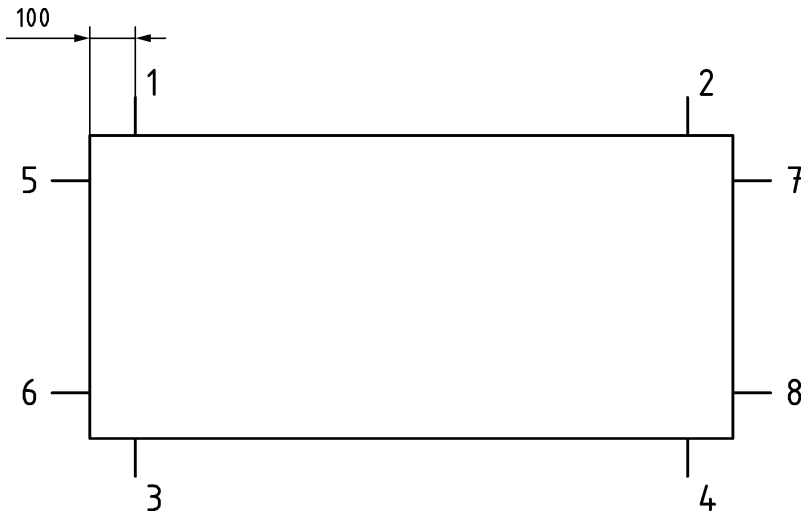
Dimensions in millimetres



a) (type Negative offset)



b) (type Positive offset)



c)

Key

1 to 8 measurement positions each at 100 mm from edge

Figure 2 — Measurement of offset

5.3.4 Expression of results

Compare the difference between each of the two measurements on the same side to the specification stated in 4.10.

Calculate the average of the 2 measurements for each side expressed in millimetres. Compare each average to the tolerances given in 4.10.

For sandwich panels there are three pairs of measurements on each side (top board/insulation – insulation/bottom board and top board/bottom board). Each pair shall be treated individually as above.

5.4 Determination of the adhesion/cohesion of the insulating material

5.4.1 Principle

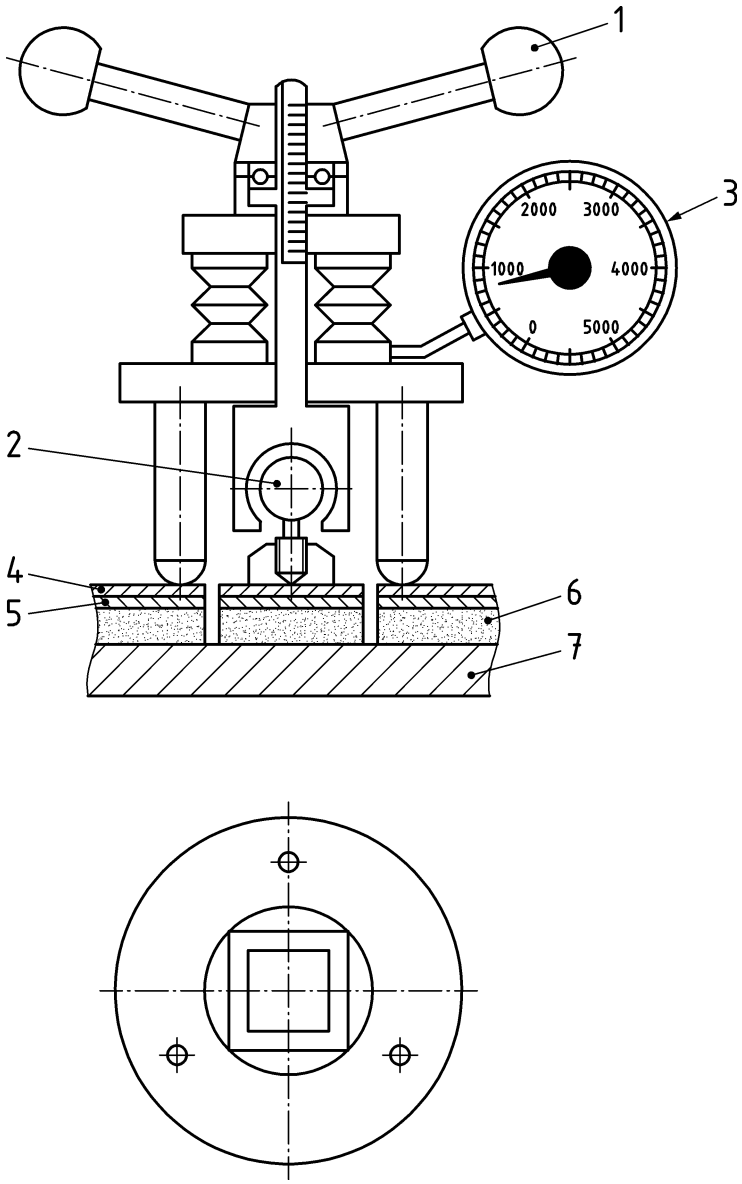
Adhesion/cohesion shall be determined by the tensile strength measured perpendicularly on 3 specimens.

5.4.2 Apparatus

a) Metal or hardwood pieces with dimensions as that of the specimens: 200 mm × 200 mm or 300 mm × 300 mm for class 2 composites and 100 mm × 100 mm for class 1 composites;

b) suitable double side adhesive tape or adhesive. The adhesion shall be greater than the threshold value defined in 4.12;

c) tensile testing device allowing a loading rate of 0,3 kN/min. Figure 3 shows an example, any suitable device may be used.



Key

1 operating device
2 spherical head screw
3 dynamometer
4 hardwood piece or metal piece
5 adhesive
6 insulating material
7 gypsum board

Figure 3 — Example of adhesion test apparatus

5.4.3 Procedure

Specimens shall be cut out from the composite panel through the insulation board without damaging the board as shown in Figure 4, at least 100 mm from the edges of the composite panel.

The dimensions of the specimens shall be:

— class 1 composites: 100 mm × 100 mm;

— class 2 composites: 200 mm × 200 mm or 300 mm × 300 mm.

In case of other tensile testing devices, specimen of suitable dimension shall be cut out from the composite panel.

On each pre-cut specimen, stick a sheet of metal or hardwood with dimensions the same as those of the specimen.

Position the specimen into the testing device such that the tensile load acts perpendicular to the plane of the board as an evenly distributed tensile stress. Apply the load at a rate of (0,3 ± 0,1) kN/min until the specimen fails.

Dimensions in millimetres

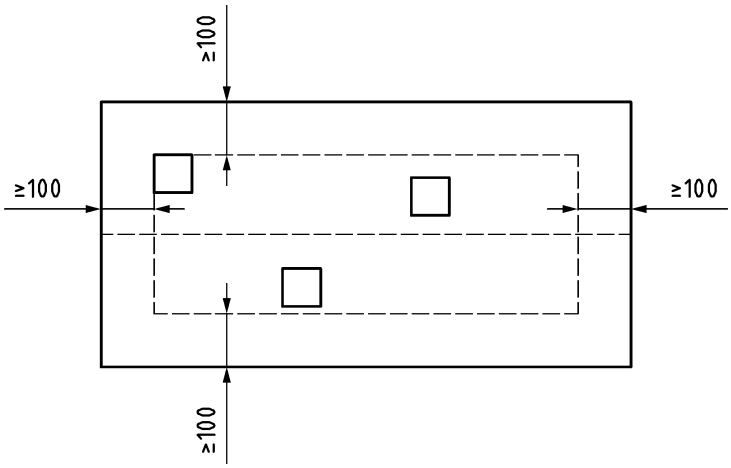


Figure 4 — Adhesion test – Position of the specimens

5.4.4 Expression of results

Note the failure load and the nature and place of failure.

Divide the failure load by the specimen surface area to get the tensile strength in MPa and compare it to the requirements in 4.12.

5.5 Determination of the flatness of the composite

5.5.1 Principle

The maximum distance between the gypsum board face of the composite placed on a flat surface and the flat surface shall be measured.

5.5.2 Apparatus and specimens

Apparatus and specimens shall be in accordance with EN 825:2013, Clause 5 and Clause 6.

5.5.3 Procedure

The procedure shall be in accordance with EN 825:2013, Clause 7.

5.5.4 Expression of results

The result shall be defined as the deviation, expressed in millimetres and compared to the requirements given in 4.11.

6 Assessment and verification of constancy of performance - AVCP

6.1 General

The compliance of gypsum board thermal/acoustic insulation composite panels with the requirements of this standard and with the performances declared by the manufacturer in the DoP shall be demonstrated by:

— determination of the product type;

— factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).

For the purposes of testing, gypsum board composite panels may be grouped into families, where it is considered that the selected property is common to all panels within that family.

The decision on those products or properties which fall within a family shall be made by the manufacturer.

6.2 Type testing

6.2.1 General

Sampling and testing shall be in accordance with Clause 5.

The results of all type tests shall be recorded and held by the manufacturer for at least 10 years.

6.2.2 Determination of the product type

Determination of the product type shall be performed to show conformity with this document.

Determination of the product type shall be performed at the beginning of the production of a new composite type (unless it is a member of a family previously tested) or at the beginning of a new method of production (where this may affect the stated properties).

Tests previously performed in accordance with the provisions of this document (same product, same characteristic(s), test method, sampling procedure, system of AVCP, etc.) may be taken into account.

All product characteristics in Clause 4 applicable to the intended uses shall be subject to determination of the product type, with the following exceptions:

— release of dangerous substances may be assessed indirectly by controlling the content of the substance concerned;

— when design values or declared values are used.

6.2.3 Further type testing

Whenever a change occurs in the composite panel design, the raw material or supplier of the components, or the production process (subject to the definition of a family), which would change significantly one or more of the characteristics, the type tests shall be repeated for the appropriate characteristic(s).

Sampling shall be in accordance with 5.1.

The results of all type tests shall be recorded and held by the manufacturer for at least 10 years.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market conform with the stated performance characteristics. The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

FPC system conforming with the requirements of EN ISO 9001, and made specific to the requirements of this European Standard, should be considered to satisfy the above requirements.

The results of inspections, tests or assessments requiring action shall be recorded, as shall any action taken. The action to be taken when control values or criteria are not met shall be recorded and retained for the period specified in the manufacturer’s FPC procedures.

6.3.2 Personnel

The responsibility, authority and the relationship between personnel that manage, perform or verify work affecting product conformity, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-conformities from occurring, actions in case of non-conformities and to identify and register product conformity problems. Personnel performing work affecting product conformity shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

6.3.3 Equipment

6.3.3.1 Testing

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

6.3.3.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer’s written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.4 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their conformity.

6.3.5 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of all of the characteristics are maintained.

Compliance with EN ISO 9001:2008, 7.5.1 and 7.5.2 should be deemed to satisfy the requirements of this clause.

6.3.6 Traceability and marking

Individual products, product batches or packages shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

Compliance with EN ISO 9001:2008, 7.5.3 should be deemed to satisfy the requirements of this clause.

6.3.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

6.3.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-compliances in order to prevent recurrence.

Compliance with EN ISO 9001:2008, 8.5.2 should be deemed to satisfy the requirements of this clause.

6.3.9 Other test methods

For factory production control, test methods other than those specified for the determination of the product type may be used provided they provide sufficient confidence in the compliance of the product with this document.

7 Designation of composite panels

The designation of composite panels shall include in the following order:

a) wording: ”gypsum board composite panel”;

b) reference to this European Standard;

c) dimensions of the composite panel: nominal thickness, length, width in millimetres and offset class (Negative offset or Positive offset) if used;

d) reference to the European Standard for gypsum board, type, edge profile (abbreviations as defined in the relevant standards may be used) and nominal thickness in millimetres according to the relevant standards;

e) reference to the European Standard for insulation material and abbreviations.

EXAMPLE OF DESIGNATION:

Gypsum board composite panel EN 13950– 2 — 62,5 – 1 200 – N – EN 520 — Type A – Tapered edge – 12,5 – EN 13163 — EPS – 50

8 Marking, labelling and packaging

Composite panels complying with this European Standard shall be clearly marked on the composite panel or accompanying label or on the packaging or on the accompanying commercial document (e.g. delivery note) with the following items:

a) reference to this European Standard;

b) name, trademark or other means of identification of the manufacturer of the composite panel;

c) date of production;

d) means of identifying the composite panels and relating them to their designation as defined in Clause 7.

NOTE Where the CE marking also requires the above items, compliance with CE marking would be deemed to satisfy the requirement of this clause.

Annex A
(informative)

Sampling procedure for testing

A.1 General

The required number of samples to determine the compliance with specification should be sampled from a delivery consignment of composites.

The appropriate consignment size shall be agreed between representatives of any involved parties who should have the opportunity to be present at the time of sampling.

A.2 Sampling procedure

A.2.1 General

The choice of the method of sampling should be as defined in A.2.2 and A.2.3 as appropriate.

A.2.2 Random sampling[1)]

Whenever practically possible, the random sampling method should be used, in which every composite in the consignment has an equal chance of being selected for the sample.

Three composites of each type should be selected from positions throughout the consignment without any consideration given to the condition or quality of the selected composites.

A.2.3 Representative sampling

A.2.3.1 General

When random sampling is impracticable or not convenient, e.g. when the composites form a large stack or stacks with ready access to only a limited number of composites, a representative sampling procedure should be used.

A.2.3.2 Sampling from a stack

The consignment should be divided into at least three real or imaginary sections, each of a similar size. One composite should be selected at random from within each section in order to give the required number of samples as indicated in 5.1.

NOTE It will be necessary to remove some sections of the stack or stacks in order to gain access to composites within the body of such stacks when taking samples

1) In practice, random sampling is normally only convenient either when the composites forming the consignment are being moved in a loose (unpacked) form from one place to another or when they have been split into a large number of small stacks awaiting installation.

A.2.3.3 Sampling from a consignment formed of banded or wrapped packs

At least three packs should be selected at random from the consignment. The packaging around each of the selected packs should be removed and one composite should be sampled at random from within each pack in order to give the required number of samples without any consideration given to the condition or quality of the selected composites.

Annex B
(normative)

Mounting and fixing in the test according to EN 13823 (SBI test)

B.1 Mounting and fixing of the composite panels

The gypsum board composite panels shall be mounted and fixed using the following method, which is considered to provide the most onerous conditions so enabling the resultant classification to be applied to all end use applications for composites with the same type of insulating material. Results obtained for a given thickness of board shall apply for sandwiches and for all composites or sandwiches with thicker gypsum boards. In addition, results obtained for gypsum board composites with an insulating material of a given thickness shall apply for all composites with thinner insulating material. Additionally, results obtained for composite panels with an insulating material of a given density shall apply for all composites with lower densities.

The composites shall be fixed directly to a solid substrate with a reaction to fire classification of at least Class A2-s1, d0.

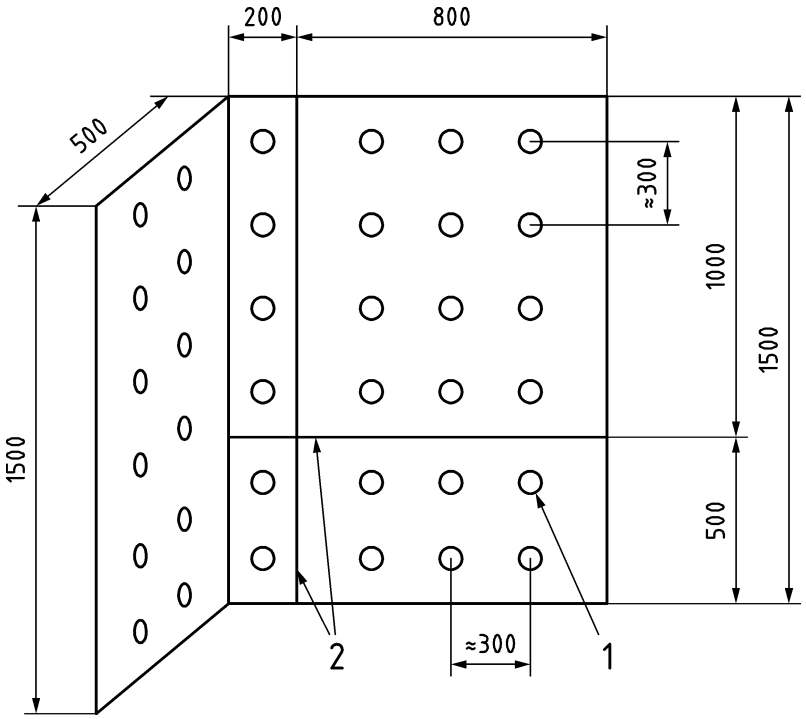
The substrate shall be fixed to a rigid frame so as to enable the specimen to be transported and mounted in the apparatus without damage prior to the commencement of the test.

The composites shall be bonded to the substrate using dabs of gypsum based adhesive compound as specified in EN 14496 according to Figure B.1. Figure B.1 shows the position of both vertical and horizontal joints of composites.

All joints between adjoining composites shall be fully filled with jointing material as specified in EN 13963.

The test results obtained in this way are also applicable to composite panels mechanically fixed directly to a substrate or to a wood or metal framework.

Dimensions in millimetre

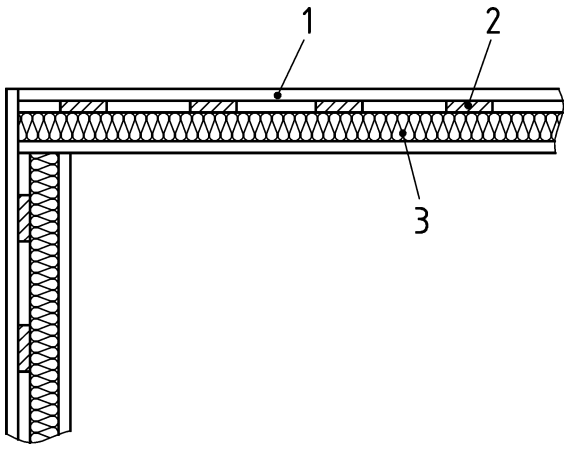


Key

1 position of dabs of gypsum based adhesive compound of 100 mm diameter

2 position of joints of composites

Figure B.1 — Mounting of the composites and fixing them to the substrate – Distribution of the dabs



Key

1 substrate

2 dab

3 composite

Figure B.2 — Mounting of the composites and fixing them to the substrate – Section

Annex ZA
(informative)

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

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under a Mandate M/106 “Gypsum products” as amended and 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 gypsum board thermal/acoustic insulation composite panels intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as in 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 gypsum board thermal/acoustic insulation composite panels and intended use

Product:	Gypsum board thermal/acoustic insulation composite panels		
Intended use:	Internal insulation (thermal and/or acoustic) of walls		
Essential Characteristics	**Clauses in this and other European Standard(s) related to essential characteristics**	**Regulatory classes**	**Notes**
Reaction to fire	4.2.1	A1 to F	Declared class
Water vapour permeability (for moisture diffusion control)	4.3	–	Declared water vapour resistance factor
Flexural strength	4.4	–	pass/fail
Impact resistance*	4.5	–	pass/fail
Direct airborne sound insulation (in end use conditions)*	4.6	–	declared value dB
Acoustic absorption (in end use conditions)*	4.7	–	declared index
Thermal resistance	4.8	–	declared value $m^2 \cdot K/W$
Dangerous substances	4.13	–	

* These characteristics are system dependent and will be provided in manufacturer's literature based upon intended use. Performance declared is for the system of which the product is a part.

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 Procedure for AVCP of gypsum board thermal/acoustic composite panels

ZA.2.1 Systems of AVCP

The AVCP systems of gypsum board thermal/acoustic composite panels indicated in Table ZA.1, established by EC Decisions 95/467/EC (OJ L 268, 10.11.1995, p.29) amended by 2001/596/EC of 8 January 2001 (L209 page 33, 2.8.2001) and 2002/592/EC of 15 July 2002(L192, page 57, 20.7.2002) is shown in Table ZA.2 for the indicated intended uses and relevant levels or classes of performance.

Table ZA.2 — Systems of AVCP

Products	Intended uses	Levels or classes of performance	AVCP systems
Plasterboards and ceiling elements with thin laminations, fibrous gypsum boards, fibrous gypsum plaster casts and composite panels (laminates)in which the incorporated material is placed on a face susceptible to be exposed to fire, including relevant ancillary products	In walls, partitions or ceilings (or lining thereof) subject to reaction to fire requirements	A1([1]), A2 ([1]), B ([1]),C ([1])	1
		A1([2]), A2([2]), B ([2]), C([2]), D, E	3
		(A1 to E) ([3]), F	4
Plasterboards, blocks, ceiling elements and plasters, fibrous gypsum plaster casts, including relevant ancillary products	In walls, partitions or ceilings, as relevant, for situations and uses not mentioned above	–	4
([1]) Products/materials for which a clearly identifiable stage in the production process results in any improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material) ([2]) Products/materials not covered by footnote ([1]) ([3]) 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). 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 [10]			

NOTE The Table ZA.2 lists the relevant systems of AVCP as defined in the Commission Decisions. The gypsum board thermal/acoustic insulation composite panels and their intended use defined in Table ZA.1 belong to the products defined in

Table ZA.2. Experience has shown that the majority of gypsum board thermal/acoustic composite panels are subject to system 3 for reaction to fire.

The AVCP of the gypsum board thermal/acoustic composite panels 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 gypsum board thermal/acoustic insulation composite panels under system 1 (for reaction to fire classes A1([1]), A2 ([1]), B ([1]),C ([1]))

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	6.3
	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	6.2.3, 6.3
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	Reaction to fire	6.2.2
	Initial inspection of manufacturing plant and of FPC	Reaction to fire. Documentation of the FPC.	6.3
	Continuous surveillance, assessment and evaluation of FPC	Reaction to fire. Documentation of FPC	6.3

Table ZA.3.2 — Assignment of AVCP tasks for gypsum board thermal/acoustic insulation composite panels under system 3 (for reaction to fire classes A1([2]), A2([2]), B ([2]), C([2]), D, E)

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	6.3
	Determination of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1 relevant for the intended use which are declared except 'reaction to fire'	6.2
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), type calculation, tabulated values or descriptive documentation of the product	Reaction to fire	6.2

Table ZA.3.3 — Assignment of AVCP tasks for gypsum board thermal/acoustic insulation composite panels under system 4 (for reaction to fire classes (A1 to E) ([3]), F)

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	6.3
	Determination of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1 relevant for the intended use which are declared	6.2

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 product, carried out by the notified testing laboratory.

In case of products under system 4

— the factory production control carried out by the manufacturer

— 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 harmonised 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 harmonised technical specification;

b) the list of essential characteristics, as determined in the harmonised 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 gypsum board thermal/acoustic insulation composite panels

DECLARATION OF PERFORMANCE

No. 001DoP2013-07-14

1) Unique identification code of the product-type:

type A 12,5-EPS-50

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

GPS 12,5-50 – brand name

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

Internal insulation (thermal and/or acoustic) of walls.

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

AnyCo SA,

PO Box 21

B-1050 Brussels, Belgium

Tel. +32987654321

Fax: +32123456789

Email: anyco.sa@provider.be

5) Where applicable, name and contact address of the authorised 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:

System 3

7) In case of the declaration of performance concerning a construction product covered by a harmonised standard:

Notified testing laboratory No. 5678 performed 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 product under system 3 and issued the test/calculation reports.

8) Declared performance

Essential characteristics	Performance	Harmonised technical specification
Reaction to fire – R2F	B-s1,d0	EN 13950:2014
Flexural strength – F	pass	
Water vapour resistance factor - μ	100	
Thermal resistance – TR	2 m^2 K/W	
Impact Resistance* - →I	see manufacturer's literature	
Airborne sound insulation* - R	see manufacturer's literature	
Acoustic absorption* - α	see manufacturer's literature	
Dangerous substances – DS	NPD	
* These characteristics are system dependent and will be provided in manufacturer's literature based upon intended use. Performance declared is for the system of which the product is a part.		

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)

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 composite panel

or

— to a label attached to the product.

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 harmonised 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 harmonised 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 under the system 3 to be given on the accompanying label, or on the packaging or on the accompanying commercial documents. The information comes in addition to the information given on the product.

CE 5678	*CE marking, consisting of the "CE"-symbol* *Identification number of the notified test laboratory*
AnyCo Ltd, PO Box 21, B-1050 Brussels, Belgium **14** **001DoP2013-07-14**	*Name and the registered address of the manufacturer, or identifying mark* *Last two digits of the year in which the marking was first affixed* *Reference number of the DoP*
EN 13950:2014 **Type A 12,5-EPS-50** Internal insulation of walls **–** IN	*No. of European standard applied, as referenced in OJEU* *Unique identification code of the product type*
Reaction to fire – R2F: B-s1, d0 **Flexural strength - F**: pass **Water vapour resistance - μ**: 100 **Thermal resistance - TR**: 2 m^2 K/W **Dangerous substances - DS**: NPD	*Intended use of the product as laid down in the European standard applied* *Level or class of the performance declared*
Impact Resistance - →I: **Airborne sound insulation - R:** **Acoustic absorption - α:**	see manufacturer's literature

Figure ZA.1 — Example CE marking information of products under AVCP system 3 on the accompanying label, or on the packaging or on the accompanying commercial documents

Figure ZA.2 gives an example of the information related to products subject to AVCP under the system 3 to be given on the product.

CE _5678_AnyCo_13_001DoP2013-07-14_EN 13950:2014_Type A 12,5-EPS-50_IN_B-s1, d0_pass_100_2_NPD_lit
*CE marking, consisting of the "CE"-symbol_ Identification number of the notified test laboratory (5678)_Name and the registered address of the manufacturer, or identifying mark (AnyCo)_Last two digits of the year in which the marking was first affixed (13)_Reference number of the DoP (001-DoP-2013/07/14)_No of European standard applied, as referenced in OJEU (*EN 13950:2014*)_Unique identification code of the product type (A 12,5 EPS 50)_Intended use of the product as laid down in the European standard applied (IN = internal)_Reaction to fire(B-s1, d0)_Flexural strength (pass)_Water vapour resistance factor (100)_Thermal resistance (2)_Dangerous substances (NPD)_Impact resistance + airborne sound insulation + acoustic absorption (lit = manufacturer's literature)*

Figure ZA.2 — Example CE marking information of products under AVCP system 3 on the product

Bibliography

[1] EN 13163, *Thermal insulation products for buildings - Factory made expanded polystyrene (EPS) products - Specification*

[2] EN 13164, *Thermal insulation products for buildings - Factory made extruded polystyrene foam (XPS) products - Specification*

[3] EN 13165, *Thermal insulation products for buildings - Factory made rigid polyurethane foam (PU) products - Specification*

[4] EN 13166, *Thermal insulation products for buildings - Factory made phenolic foam (PF) products - Specification*

[5] EN 14190, *Gypsum plasterboard products from reprocessing - Definitions, requirements and test methods*

[6] EN ISO 9001:2008, *Quality management systems - Requirements (ISO 9001:2008)*

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