BS EN 14190:2014

BSI Standards Publication

Gypsum board products from reprocessing — Definitions, requirements and test methods

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National foreword

This British Standard is the UK implementation of EN 14190:2014. It supersedes BS EN 14190:2005 which is withdrawn.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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EUROPÄISCHE NORM

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English Version

Gypsum board products from reprocessing - Definitions, requirements and test methods

Produits de transformation secondaire de plaques de plâtre - Définitions, spécifications et méthodes d'essai

Gipsplatten-Produkte aus der Weiterverarbeitung - Begriffe, Anforderungen und Prüfverfahren

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

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.

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

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Foreword

This document (EN 14190:2014) 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of an identical text or by endorsement, at the latest by January 2015 and conflicting national standards shall be withdrawn at the latest by April 2016.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 14190:2005.

The main technical changes that have been made in this new edition of EN 14190 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) 3.2 “Symbols and abbreviations” has been introduced;

d) Annex C (SBI test) and related information concerning the methods for processing have been supplemented;

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

f) 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 products which have been produced by reprocessing gypsum boards manufactured according to EN 520, EN 15283-1 and EN 15283-2. Reprocessing may include cutting, perforating, edge profiling, decorating and laminating membranes of other materials for functional or decorative purposes, attaching fixings including supports e.g. for partitions. Examples of reprocessing operations are given in Annex B.

The products are intended for use in wall, ceiling and floor applications, where they may be fixed directly to the background, or they are used in systems assembled in conjunction with the structure to form separate or suspended linings. The products can be customized to fit the intended application offering a wide range of aesthetic, functional and decorative solutions of modular or non-modular design.

This European Standard does not cover gypsum board thermal/acoustic insulation composite panels according to EN 13950 and prefabricated gypsum board panels with a cellular paperboard core according to EN 13915.

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 520:2004+A1:2009, *Gypsum plasterboards — Definitions, requirements and test methods*

EN 12664, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Dry and moist products of medium and low 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 15283-1: 2008+A1:2009, *Gypsum boards with fibrous reinforcement — Definitions, requirements and test methods — Part 1: Gypsum boards with mat reinforcement*

EN 15283-2: 2008+A1:2009, *Gypsum boards with fibrous reinforcement — Definitions, requirements and test methods — Part 2: Gypsum fibre boards*

EN 61331-1, *Protective devices against diagnostic medical X-radiation — Part 1: Determination of attenuation properties of materials (IEC 61331-1)*

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

EN ISO 6946, *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method (ISO 6946)*

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

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 and definitions, symbols and abbreviations

3.1 Terms and definitions

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

3.1.1
face
surface intended to be exposed

3.1.2
back
surface intended to be concealed

3.1.3
perforations
holes of constant or varying shape and size

3.1.4
thin laminations
material applied to one or more surfaces to impart decoration or functional properties

3.1.5
floor elements
construction of 2 or more boards stuck together to provide profiled edges. Suitable single boards of adequate thickness and edge configuration may also comply

Note 1 to entry: Floor elements may include thermal and impact sound insulation.

3.1.6
foldable elements
elements formed from boards, that have previously been milled to provide inclined channels through their thickness, to allow them to be folded

3.1.7
arch elements
board preformed into curved elements, having a range of radii, size and shape, in single boards and multi-layer laminates

Note 1 to entry: The edges may be flush or staggered, inside or outside, to requirements.

3.1.8
integral fixing
component attached, usually to the back of the unit, to provide support

Note 1 to entry: Alternatively, the edges of the unit may be profiled.

3.2 Symbols and abbreviations

Table 1 — Symbols and abbreviations

Requirement	Sub-clause	Symbol or abbreviation
Flexural strength	4.1.1	F
Stability of ceiling elements	4.1.2	⤓
Shear strength per fastener	4.1.3	↑↓
Reaction to fire	4.2.1	R2F
Water vapour resistance factor	4.3	μ
Impact resistance	4.1.4	→I
Airborne sound insulation	4.4.1	R
Acoustic absorption	4.4.2	α
Thermal conductivity	4.5	λ
Dangerous substances	4.6	DS
See manufacturer's literature		www.manufacturers_internet_address.com

4 Requirements

4.1 Mechanical characteristics

4.1.1 Flexural strength (expressed as flexural breaking load)

All gypsum boards used to manufacture the products described in this document shall meet the breaking load requirements given in the relevant standards.

4.1.2 Stability of ceiling elements

When the products from reprocessing are self-supported elements, incorporating integral fixings the load supported by the product shall be at least 5 times the dead load of the product.

All three samples shall pass the test in accordance with 5.2.

4.1.3 Shear strength (strength of board/substructure connection)

When the intended use of the products from reprocessing is stiffening timber framed building assemblies (i.e. walls, roof truss structures etc.) the conventional shear strength of the product shall be determined in accordance with the test method described in the relevant standards EN 520, EN 15283-1 and EN 15283-2.

When the secondary processing does not lead to a loss of strength, the shear strength of the gypsum board provided by the manufacturer may be used.

4.1.4 Impact resistance

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

When required, the impact resistance of a system including gypsum board shall be determined in accordance with ISO 7892.

4.2 Fire behaviour

4.2.1 Reaction to fire

When the intended use of products from reprocessing is for fire exposed situations in building construction works, the reaction to fire classification determined in accordance with 4.2 of EN 520:2004+A1:2009, 4.2 of EN 15283-1:2008+A1:2009 and 4.2 of EN 15283-2:2008+A1:2009 may be used providing there is no deterioration in the reaction to fire characteristics as the result of reprocessing (see Annex C for more information).

In those cases where the reprocessing is likely to lead to a change of the reaction to fire, or the mounting and fixing conditions of EN 520, EN 15283-1 and EN 15283-2 do not apply, the product shall be tested and classified according to EN 13501-1.

Products tested according to EN 13823 (SBI test) shall be mounted and fixed in accordance with Annex C or when the manufacturer wishes to claim performance for a specific intended use, the mounting and fixing shall be representative of that intended use.

4.2.2 Resistance to fire

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

When required, the resistance to fire of a system including products from reprocessing shall be classified in accordance with EN 13501-2.

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

Where the intended use of the products from reprocessing is moisture diffusion control, tabulated design values of water vapour resistance factor for gypsum boards given in EN ISO 10456 may be used providing it does not change as the result of secondary manufacturing.

In other cases the water vapour resistance factor shall be determined using the method given in EN ISO 12572.

4.4 Acoustic properties

4.4.1 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 required, the direct airborne sound insulation of a system including products from reprocessing shall be determined in accordance with EN ISO 10140.

4.4.2 Acoustic absorption

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

When required, acoustic absorption shall be measured according to EN ISO 354.

4.4.3 Impact sound insulation

NOTE Impact sound insulation is a property of an assembled system and not of the product itself.

When required, the impact sound insulation of a system including products from reprocessing shall be determined in accordance with EN ISO 10140-3.

4.5 Thermal resistance (expressed as thermal conductivity)

When the intended use of products from reprocessing is to contribute to the thermal resistance in building construction works (walls, partition, ceilings and floors) the design values of thermal conductivity for gypsum boards given in EN ISO 10456 may be used.

Alternatively, thermal conductivity shall be calculated according to EN ISO 6946 for the board and those products which may be combined as a result of the secondary processing operation.

When required, thermal conductivity shall be determined in accordance with EN 12664.

4.6 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/

4.7 Dimensions and tolerances

The dimensions and tolerances for products from reprocessing, including any edge profile where relevant, shall be stated by the manufacturer. Where appropriate, measurements shall be made in accordance with the relevant standards EN 520, EN 15283-1, EN 15283-2. In the case of products intended for use in modular ceiling grids the tolerances shall be stated by the manufacturer to maintain compatibility.

4.8 Thermal emissivity

When required, the emissivity value of the thin material to be laminated to the product shall be determined in accordance with 5.3 and declared by the manufacturer.

4.9 X-ray protection

When the intended use of the products from reprocessing is X-ray protection by the lamination of lead the thickness of the lead sheet (expressed in millimetres) shall be declared.

The gamma-ray protection in mm/kV to its approved attenuation equivalent, shall be tested and/or calculated in accordance with EN 61331-1 and declared by the manufacturer.

5 Test methods

5.1 Sampling

For testing, three units of each type are required.

5.2 Stability determination

5.2.1 Principle

The self-supporting product shall be subjected to uniform incremental loading up to a value of 5 times its weight.

5.2.2 Apparatus

a) a rigid test frame which is sufficiently stiff and will not deflect under the loads to be applied, of a size capable of supporting the product in the same manner as when they are in use;

b) weights capable of being laid on the sample.

5.2.3 Procedure

Condition the sample to a constant mass[1)] in a climate of (23 ± 2) °C and (50 ± 5) % of relative humidity. Start the test as soon as possible after removal from the conditioning climate and complete it within 2 h. Set up the frame square and level. The product to be tested is mounted in the same way as in its intended end use.

Load the sample, as quickly as possible, with the weight distributed uniformly to a total weight, 5 times the dead weight of the sample. The applied load is kept steady and retained for 5 min. Examine the sample and fixings for signs of cracking or deterioration. Repeat with the remaining two samples.

5.2.4 Expression of results

Report the applied load in N/m^2, the type of product, the type and method of attachment of the fixing, its centres in relation to the board dimensions. If no deterioration is observed the sample shall be satisfactory and reported as passing the test.

5.3 Determination of thermal emissivity

5.3.1 Principle

The emissivity of a surface for thermal radiation is defined as the ratio of the radiation from unit area of the surface to the radiation from unit area of a full radiator (i.e. a “black body” for which emissivity = 1).

A sample of the thin material to be laminated shall be taken and heated. Resultant radiation is measured and compared with that from a black body.

5.3.2 Apparatus

a) a cylindrical copper or brass bath about 150 mm in diameter and 380 mm high fitted with a thermostatic heater/stirrer unit;

b) a thermopile and stand;

c) a potentiometer sensitive to 1 µV, connected so as to measure the thermopile output.

1) Constant mass is defined as two successive weighings 24 h apart, differing by less than 0,1 %.

5.3.3 Procedure

Wrap a 300 mm square of test specimen around the outer surface of the bath and hold it taut to ensure good thermal contact and a smooth surface. Take care to avoid excessive handling of the test surface

Coat the lower half of the specimen with a matt black paint of high thermal emissivity. Fill the bath with water and maintain the temperature at (60 ± 1) °C.

Screen the apparatus from draughts and stray radiation (due to radiators, lights, etc.).

Place the thermopile with its open aperture approximately 25 mm away from the test surface and measure the thermopile output on the potentiometer.

Place the thermopile with its open aperture the same distance away from the blackened surface and re-measure the output.

To calculate the thermal emissivity of the test surface E_1, deduct the mean value of the zero correction from the thermopile output voltages measured when viewing first the test surface R_1 and then the blackened surface R_2.

The following relation applies:

$E_1 / E_2 = R_1 / R_2$

where E_2 is the thermal emissivity of the blackened surface.

Since the thermal emissivity of the blackened surface E_2 approximates to a “black body” the percentage thermal emissivity of the test surface E_1 is given by:

$$\frac{100 \cdot R_1}{R_2}$$

5.3.4 Expression of results

The percentage of thermal emissivity shall be reported to the nearest whole number.

6 Assessment and verification of constancy of performance - AVCP

6.1 General

The compliance of gypsum board products from reprocessing 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 (FPC).

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, products may be grouped into families, where it is considered that the selected property is common to all products 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 standard.

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

Tests previously performed in accordance with the provisions of this standard (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 the 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;

— when reaction to fire is class A.1 (no contribution to fire) without further testing as 4.2.

6.2.3 Further type testing

Whenever a change occurs in the products 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 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.

6.3 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 to 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.

A 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 product 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 providing they provide sufficient confidence in the compliance of the product with this document.

7 Designation of gypsum board products from reprocessing

Gypsum board products from reprocessing shall be designated as follows:

a) wording identifying the product;

b) reference to this European Standard;

c) major dimensions of the product (width, length and thickness in millimetres).

EXAMPLE OF DESIGNATION:

— Perforated ceiling tile/EN 14190/600/600/25

— Plastic laminated board/EN 14190/500/2000/15

— Flooring element/EN 14190/600/2000/24

8 Marking, labelling and packaging

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

— reference to this European Standard;

— name, trademark or other means of identification of the manufacturer of the product;

— date of production;

— means of identifying the board and relating them to their designation according to 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 gypsum board products from reprocessing to determine the compliance with specification should be sampled from a delivery consignment of boards.

The appropriate consignment size should 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[2)]

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

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

A.2.3 Representative sampling

A.2.3.1 General

When random sampling is impracticable or not convenient, e.g. when the products form a large stack or stacks with ready access to only a limited number of boards, 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 product 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 products within the body of such stacks when taking samples.

2) In practice, random sampling is normally only convenient either when the products 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 product 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 products.

Annex B
(informative)

Reprocessing operations

An extensive range of products is manufactured by using secondary processing operations on gypsum boards. The following list is intended to demonstrate, by way of example, the operations which may be applied either singularly or in combination. It is not intended to be exhaustive.

Operations:

a) recutting board for the purpose of resizing;

b) reprofiling edges and ends;

c) perforating to provide aesthetic and/or acoustic functions;

d) securing or adhering concealed fixings;

e) sealing of the face and/or back;

f) predecoration of the face by application of paint, plastics, metallic foils or other materials;

g) sticking materials, such as fabric tissue, aluminium foil and lead sheet to the back to provide properties;

h) sticking thermal insulation materials to the back which are not covered by EN 13950;

i) sticking boards together for laminates;

j) combining thermal insulation and laminates as flooring elements;

k) milling board at precise degree angles, at predetermined positions, to produce foldable elements;

l) preforming single or laminated board into curved elements;

m) press forming in order to create decorative relief on the face.

Annex C
(normative)

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

C.1 General

Where products do not fit into the categories as defined in C.2 or C.3, products from reprocessing shall be mounted and fixed according to C.4.

C.2 Products which have only been changed by mechanical processes to alter their shape or dimensions

The operations as follows

a) recutting board for the purpose of resizing;

b) reprofiling edges and ends;

c) milling board at precise degree angles, at predetermined positions, to produce foldable elements;

d) preforming single or laminated board into curved elements;

e) press forming in order to create decorative relief on the face

do not affect the reaction to fire of the product and therefore they shall be given the reaction to fire of the board from which they originate.

C.3 Products which are formed by adhesion of another material (or board) to the surface of the board

The operations as follows

a) securing or adhering concealed fixings;

b) sticking materials, such as fabric tissue, aluminium foil and lead sheet to the back to provide properties;

c) sticking boards together for laminates

do not affect the reaction to fire of the product provide that the material adhered is Class A1 or Class A2 –s1, d0, therefore they shall be given the reaction to fire of the board from which they originate.

C.4 Mounting and fixing for products which are formed by operations other than those listed in C.2 and C.3 above

The gypsum products shall be mounted and fixed using the following method. Results obtained for a given thickness of board apply for all thicker boards.

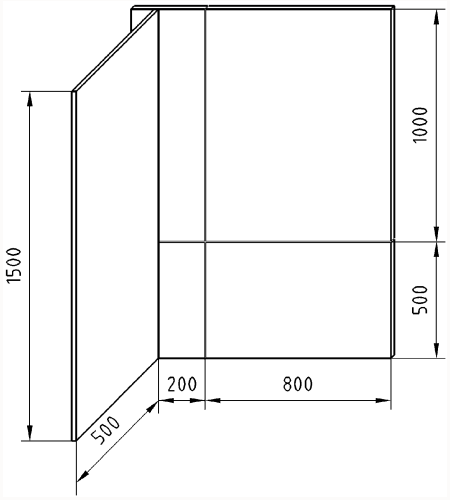
The boards shall be mechanically fixed to a metal sub-structure (made from components detailed in EN 14195) as shown in Figures C.1a to C.1c. The structure shall be steel studs with a web width of 70 mm to 80 mm and a metal thickness of 0,5 mm to 0,6 mm positioned as necessary to support the test specimen. The mechanical fixings shall be screws, which shall be fixed through the thickness of the boards into the sub-structure at (300 ± 30) mm centres measured along the length of each supporting member.

Both vertical and horizontal joints shall be positioned as shown in Figure C.1a. The minimum number of joints and their position is specified in EN 13823. Additional joints may be included if necessary to enable the test specimen to occupy the test frame. These additional joints shall be supported by framework.

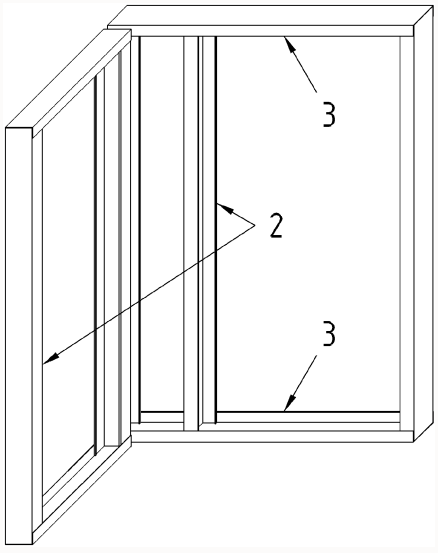
All joints between adjoining boards shall be butted and unfilled.

The cavity formed behind the boards by the sub-structure may be filled with an insulating material. If an insulating material is used then the results may be applied also to the product without insulation.

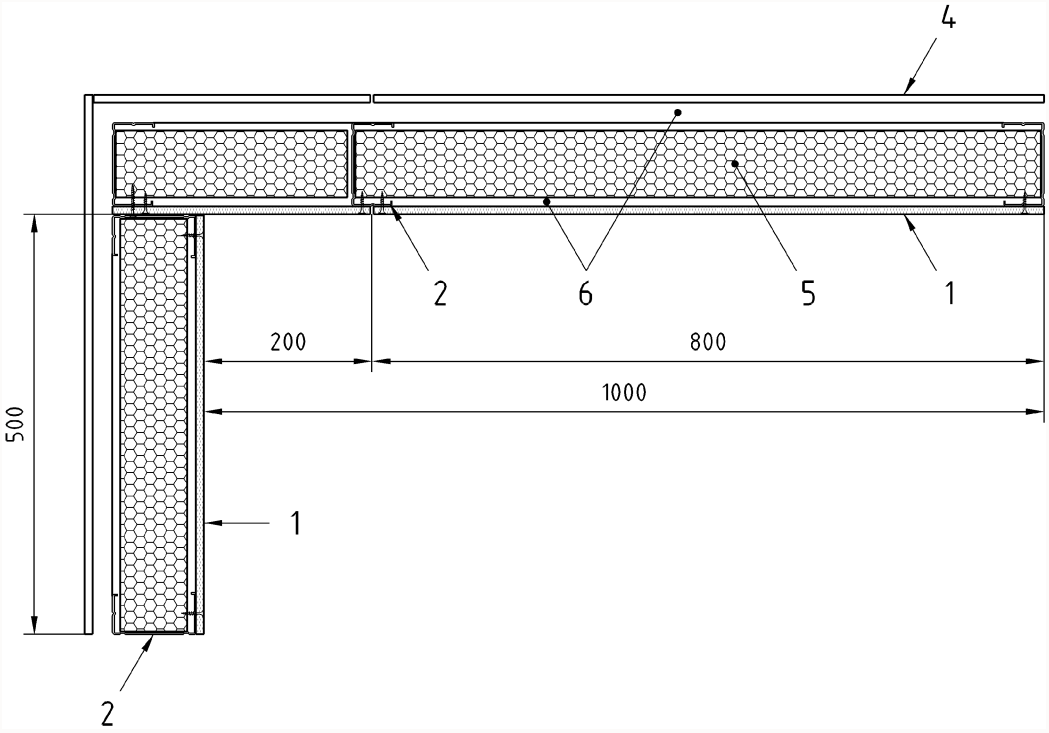
Dimensions in millimetres



a) Joints



b) Sub-structure



c) Mechanical fixings

Key

1 gypsum board
2 metal stud
3 U-channel
4 calcium silicate baseboard
5 insulation panel
6 air gap

Figure C.1 — Mounting and fixing of board to a metal sub-structure

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 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 products from reprocessing 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 products from reprocessing and intended use

Product: Gypsum board products from reprocessing			
Intended use: For use in wall, ceiling and floor applications			
Essential Characteristics	**Clauses in this and other European Standard(s) related to essential characteristics**	**Regulatory classes**	**Notes**
Shear strength (for stiffening timber framed external walls and timber roof truss structures)	4.1.3	–	Declared value in N
Reaction to fire	4.2.1	A1 to F	Declared class and declared testing conditions (Annex C)
Water vapour permeability (for moisture diffusion control)	4.3	–	Declared water vapour resistance factor
Stability of ceiling elements	4.1.2		Pass/fail
Flexural strength	4.1.1		Pass/fail
Impact resistance*	4.1.4		Pass/fail
Direct airborne sound insulation (in end use conditions)*	4.4.1	–	Declared value dB
Acoustic absorption (in end use conditions)*	4.4.2		Declared index
Thermal resistance	4.5	–	Declared value, expressed as thermal conductivity in $W/(m \cdot K)$
Dangerous substances	4.6	–	
* 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 products from reprocessing

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
Boards, blocks, ceiling elements and plasters, fibrous gypsum plaster casts, including relevant ancillary products	For stiffening timber-framed windloadbearing walls or timber roof struss structures	–	3
Boards, 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 Table ZA.2 lists the relevant systems of AVCP as defined in the Commission Decisions. The gypsum board products from reprocessing 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 the gypsum board products from reprocessing are subject to system 3 for reaction to fire.

The AVCP of the gypsum board products from reprocessing 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 products from reprocessing under system 1 (for reaction to fire classes A1 ([1]), A2 ([1]), B ([1]), C ([1])) and system 3 for stiffening and system 4 for other uses

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 and shear strength	6.2
	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
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	Shear strength	6.2

Table ZA.3.2 — Assignment of AVCP tasks for gypsum board products from reprocessing under system 3 (for reaction to fire classes A1 ([2]), A2 ([2]), B ([2]), C ([2]), D, E) and for stiffening and under system 4 for other uses

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' and 'shear strength'	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 Shear strength	6.2

Table ZA.3.3 — Assignment of AVCP tasks for gypsum board products from reprocessing under system 4 (for reaction to fire classes (A1 to E) ([3]), F) and under system 3 for stiffening and under system 4 for other uses

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
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	Shear strength	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 products from reprocessing

DECLARATION OF PERFORMANCE

No. 001DoP2013-07-14

1) Unique identification code of the product-type:

12,5-repro abc

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

12,5-repro abc – brand name

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

for use in wall, ceiling and floor applications

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
Shear strength (for stiffening timber framed external walls and timber roof truss structures) **- ↑↓**	NPD	EN 14190:2014
Reaction to fire – R2F	B-s1,d0 (C.2)	
Water vapour permeability - μ	10	
Stability of ceiling elements - ⊥	Pass	
Flexural strength – F	Pass	
Impact Resistance* - →I	-	
Direct airborne sound insulation* - R	-	
Acoustic absorption* - α	-	
Thermal conductivity - λ	0,25 W/(m · K)	
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 gypsum board products from reprocessing

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 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 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, 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 14190:2014 **12,5 – repro abc** for use in wall, ceiling and floor applications	*No. of European Standard applied, as referenced in OJEU* *Unique identification code of the product-type* *Intended use of the product as laid down in the European Standard applied*
Shear strength - ↑↓: NPD **Reaction to fire – R2F:** B-s1,d0 (C.2) **Water vapour permeability - μ:** 10 **Stability of ceiling elements - ↓:** pass **Flexural strength - F:** pass **Thermal conductivity - λ:** 0,25 W/(m • K) **Dangerous substances - DS:** NPD	*Level or class of the performance declared*
Impact Resistance - →I: see **Airborne sound insulation - R:** manufacturer's literature **Acoustic absorption – α:**	

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 14190:2014_12,5 –repro abc _IN_NPD_B-s1, d0_10_pass_pass_0,25_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 14190:2014*)_Unique identification code of the product type (12,5–repro abc)_Intended use of the product as laid down in the European standard applied (for use in wall, ceiling and floor applications)_Shear strength (NPD)_Reaction to fire (B-s1, d0 (*C.2*))_Water vapour permeability (10)_Stability of ceiling elements (pass)_Flexural strength (pass)_Thermal conductivity (0,25 W/(m · K)_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 13915, *Prefabricated gypsum plasterboard panels with a cellular paperboard core - Definitions, requirements and test methods*

[2] EN 13950, *Gypsum plasterboard thermal/acoustic insulation composite panels - Definitions, requirements and test methods*

[3] EN 14195, *Metal framing components for gypsum plasterboard systems - Definitions, requirements and test methods*

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

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

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