BS EN 14783:2013

BSI Standards Publication

Fully supported metal sheet and strip for roofing, external cladding and internal lining — Product specification and requirements

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National foreword

This British Standard is the UK implementation of EN 14783:2013. It supersedes BS EN 14783:2006 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/542/6, Corrugated sheeting materials.

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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English Version

Fully supported metal sheet and strip for roofing, external cladding and internal lining - Product specification and requirements

Tôles et bandes métalliques totalement supportées pour couverture, bardages extérieur et intérieur - Spécification de produit et exigences

Vollflächig unterstützte Dachdeckungs- und Wandbekleidungselemente für die Innen- und Außenanwendung aus Metallblech - Produktspezifikation und Anforderungen

This European Standard was approved by CEN on 24 February 2013.

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

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 14783:2013) has been prepared by Technical Committee CEN/TC 128 “Roof covering products for discontinuous laying and products for wall cladding”, the secretariat of which is held by NBN.

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 November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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

This document supersedes EN 14783:2006.

In comparison to the previous edition, the following sections have been modified: Clause 3, subclause 5.3 and Annex ZA.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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 terminology, requirements and test methods for metal coil, strip, and flat sheets and factory made pieces intended for fully supported applications in roofing and wall cladding or lining. It does not apply to products manufactured on site.

This European Standard covers fully-supported aluminium, copper, lead, steel, stainless steel and zinc products with or without coatings, e.g. metallic, organic, inorganic or multi-layer (see Annex A).

This European Standard also includes rules for marking, labelling and evaluation of conformity.

Requirements concerning acoustical and insulation properties are not considered in this European Standard.

This European Standard does not include calculation or design requirements with regards to the works, installation techniques or the performance of the installed products.

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.

CEN/TS 1187, *Test methods for external fire exposure to roofs*

EN 501:1994, *Roofing products from metal sheet — Specification for fully supported roofing products of zinc sheet*

EN 502:2013, *Roofing products from metal sheet — Specification for fully supported roofing products of stainless steel sheet*

EN 504:1999, *Roofing products from metal sheet — Specification for fully supported roofing products of copper sheet*

EN 505:2013, *Roofing products from metal sheet — Specification for fully supported roofing products of steel sheet*

EN 507:1999, *Roofing products from metal sheet — Specification for fully supported roofing products of aluminium sheet*

EN 1427, *Bitumen and bituminous binders — Determination of the softening point — Ring and Ball method*

EN 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN 12588:2006, *Lead and lead alloys — Rolled lead sheet for building purposes*

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

EN 13501-5, *Fire classification of construction products and building elements — Part 5: Classification using data from external fire exposure to roofs tests*

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

EN ISO 6270-1, *Paints and varnishes — Determination of resistance to humidity — Part 1: Continuous condensation (ISO 6270-1)*

EN ISO 6988, *Metallic and other non-organic coatings — Sulphur dioxide test with general condensation of moisture (ISO 6988)*

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227)*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 501:1994, EN 502:2013, EN 504:1999, EN 505:2013, EN 507:1999, EN 12588:2006 and the following apply.

3.1
base material
coated or non-coated coil, strip or flat sheet of metal used for the production of a roofing, cladding or lining product according to this European Standard

4 Requirements

4.1 Materials

The materials for the fully supported metal products specified in this European Standard shall be in accordance with the relevant material standards listed in EN 501, EN 502, EN 504, EN 505, EN 507 and EN 12588. For multilayer coated steel sheet, the requirements as given in Annex A shall apply.

4.2 Nominal thickness

The nominal thickness of the fully supported metal products (excluding any organic, inorganic or multilayer coating) shall be equal to or greater than the values given in Table 1 as specified in EN 501, EN 502, EN 504, EN 505, EN 507 and EN 12588.

Table 1 — Minimum nominal values of thickness

Type of metal	Reference of the European Standard	Specified minimum nominal thickness in mm[a]
Aluminium	EN 507	0,6
Copper	EN 504	0,5
Lead	EN 12588	1,25
Stainless steel	EN 502	0,4
Steel	EN 505	0,5
Zinc	EN 501	0,6
[a] Member States of use may require greater thickness than the value shown.		

4.3 Water permeability

As long as the products covered by this European Standard have no holes (as defects), they are water impermeable.

Where required, the absence of holes shall be checked by visual inspection of the finished product.

4.4 Dimensional change

The thermal expansion shall be taken into account in the change of dimensions of the product, where this change may have an effect on the performance of the product, by stating the appropriate thermal expansion coefficient.

In the absence of experimental data, the following thermal expansion coefficient shall be used:

— aluminium: $24 \times 10^{-6}\ K^{-1}$,

— copper: $16{,}8 \times 10^{-6}\ K^{-1}$,

— lead: $29{,}3 \times 10^{-6}\ K^{-1}$,

— stainless steel: $10{,}0 \times 10^{-6}\ K^{-1}$ to $17{,}0 \times 10^{-6}\ K^{-1}$, depending on the grade, according to EN 10088-1,

— steel: $12 \times 10^{-6}\ K^{-1}$,

— zinc: $22 \times 10^{-6}\ K^{-1}$,

unless the manufacturer demonstrates by appropriate means that more accurate values are applicable.

4.5 Dimensional tolerances

The dimensional tolerances specified for roof covering products in the applicable standard from the following: EN 501, EN 502, EN 504, EN 505, EN 507 and EN 12588, shall not be exceeded.

For other products, the tolerances declared shall be appropriate, due account being taken of any national provisions of the country of use.

4.6 Vapour and air permeability

As long as the products covered by this European Standard have no holes (as defects), they are air and vapour impermeable.

Where required, the absence of holes shall be checked by visual inspection of the finished product.

4.7 Release of dangerous substances

Where the manufacturer wishes to make a declaration (e.g. when subject to regulatory requirements), the release of dangerous substances of the products specified in this European Standard shall be declared according to the provisions of 5.3.

4.8 Durability

The manufacturer shall state the type, thickness and grade of metal and, if appropriate, type and thickness (or mass) and/or category of any coating(s) to enable users to select products which may be expected to provide the required durability of the product having regard to the expected environment and/or exposure conditions and feasibility of maintenance.

Where this is not appropriate, the durability of the product shall be determined in accordance with the technical specifications valid in the country of use.

4.9 External fire performance

The manufacturer shall declare the external fire performance of the products specified in this European Standard when subject to regulatory requirements, and may declare the external fire performance of the products when not subject to such requirements, according to the provisions of 5.1 or declared as Class F_{ROOF}.

4.10 Reaction to fire

The manufacturer shall declare the reaction to fire performance of the products specified in this European Standard when subject to regulatory requirements, and may declare the external fire performance of the products when not subject to such requirements, according to the provisions of 5.2 or declared as Class F.

5 Testing, assessment and sampling methods

5.1 External fire performance for roof covering products

5.1.1 Products deemed to satisfy the requirements for external fire performance

Products covered by this European Standard are considered ”deemed to satisfy without the need for testing" in relation to the requirements for external fire performance provided that they meet the definitions given in Commission Decision 2000/553/EC as amended [1], i.e. coated or non-coated flat or profiled metal sheets of nominal thickness $\geq$ 0,4 mm provided that any external coating is inorganic or has a gross calorific value, PCS $\leq$ 4,0 MJ/m^2 or a mass $\leq$ 200 g/m^2.

NOTE Individual Member States may have "deemed to satisfy" lists which go beyond the list given in the Commission Decision 2000/553/EC.

5.1.2 Products classified without the need for further testing

The following products are considered to be classified in classes $B_{ROOF(t1)}$, $B_{ROOF(t2)}$, $B_{ROOF(t3)}$ and $B_{ROOF(t4)}$ without further testing in accordance with Commission Decision 2005/403/EC: profiled steel sheets, flat steel sheets or panels of coil coated galvanised or zinc-aluminium alloy coated steel of metal thickness $\geq$ 0,40 mm with an organic external (weather side) coating and, optionally, a reverse (internal) side organic coating. The external coating is of a liquid-applied Plastisol paint of maximum nominal dry film thickness 0,2 mm, a PCS of not greater than 8,0 MJ/m^2 and a maximum dry mass of 330 g/m^2. The reverse side organic coating (if any) shall have a PCS of not greater than 4,0 MJ/m^2 and a maximum dry mass of 200 g/m^2.

NOTE Reference will be made to Commission Decision 2005/403/EC for full details of the product and constructions.

5.1.3 Other products

Products not meeting the definitions as given in 5.1.1 or 5.1.2 shall be tested in accordance with the relevant method(s) in CEN/TS 1187 and classified in accordance with EN 13501-5.

The products to be tested shall be installed, in addition to the general provisions given in CEN/TS 1187, in a manner representative of their intended use.

5.2 Reaction to fire

5.2.1 Products satisfying the requirements for reaction to fire Class A1 without the need for testing

Non-organically coated products are considered to satisfy the requirements for performance Class A1 of the characteristic reaction to fire in accordance with the provisions of EC Decision 96/603, as amended, without the need for testing.

5.2.2 Other products

Products not complying with the provisions of 5.2.1 shall be tested and classified in accordance with EN 13501-1.

When testing in accordance with EN 13823 and/or EN ISO 11925-2, the test conditions shall be as given in Annex B.

5.3 Release of dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.
In the absence of European harmonised 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 web site on EUROPA accessed through: *http://ec.europa.eu/enterprise/construction/cpd-ds/*

6 Evaluation of conformity

6.1 General

The conformity of the products covered by this European Standard with the requirements of this European Standard and with the declared values (including classes) shall be demonstrated by:

— initial type testing comprising tests or other means of assessment;

— factory production control by the manufacturer.

If the base material is supplied with information about some or all characteristics required by this European Standard, the re-evaluation of these characteristics is not required for compliance with this European Standard as long as the production process does not change these characteristics.

For the purposes of testing, the products may be grouped into families where it is considered the results for a given characteristic from any one product in the family are representative of all other products within that same family.

A family may be formed for only one characteristic or more than one characteristic. Products within one family for one characteristic may or may not be within the same family in respect of other characteristics.

6.2 Initial type testing (ITT)

6.2.1 General

Initial type testing shall be performed to show conformity with this European Standard.

Tests or assessments previously performed in accordance with the provisions of this European Standard (same product, same characteristic(s), test method, sampling procedure, system of attestation of conformity, etc.) may be taken into account to reduce the number of checks. In addition, initial type testing shall be performed at the beginning of the production of a new sheet or coil type (unless a member of the same family) or at the beginning of a new method of production where this may affect the stated properties on the profile machine and/or the product itself.

Where the roofing, cladding or lining product manufacturer buys a base material whose characteristics have already been determined in accordance with the provisions of this European Standard and are declared by the base material supplier (e.g. following an inspection document conforming to EN 10204), these characteristics need not be reassessed in order to demonstrate conformity with this European Standard, provided that the production process for the roofing, cladding or lining product does not change these characteristics in an unfavourable way. ITT for the characteristics of the roofing, cladding or lining products related to the characteristics of the base material itself are given in Table 2 and may be assessed either by the base material supplier or the roofing, cladding or lining product manufacturer. If those characteristics in Table 3 have not been declared for the base material in accordance with Table 2 or are changed during the production process, the manufacturer claiming compliance with this European Standard shall assess and declare the characteristics of Table 3 that have not been declared.

The base material may be presumed to have the performances stated of them by their supplier, although this does not replace the responsibility on the roofing, cladding or lining product manufacturer to ensure that only a base material having the correct values of characteristics to allow the finished roofing, cladding or lining product to meet the requirements of this European Standard is used.

All characteristics in Clause 4 shall be subject to initial type testing, with the following exceptions:

— external fire performance when using the CWFT option, in accordance with 5.1.2 or when deemed to satisfy in accordance with 5.1.1 (although measurement may be required to ensure that the product meets the definition required for CWFT and deemed to satisfy);

— reaction to fire when deemed to satisfy Class A1, in accordance with 5.2.1;

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

Whenever a change occurs in the base material, the finished product or the production process (subject to the definition of a family), which could change significantly one or more of the characteristics, the type tests shall be repeated for the appropriate characteristic(s).

The results of the initial type testing shall be recorded and held by the manufacturer for at least ten years after the end of production of the product to which they apply.

Table 2 — Test methods, number of specimens and conformity criteria for initial type testing of base material [a]

Characteristic	Requirement clause	Test method	Minimum number of specimens		Compliance criteria and specific conditions
			Without base material manufacturer's certificate and/or traceability system (see 6.3.2)[c]	With base material manufacturer's certificate and traceability system (see 6.3.2)[d]	
Quality of the metal	4.1	Visual inspection	1	0[b]	Manufacturer's declaration
Type and grade[e] of metal		–	1	0[b]	
Nominal thickness	4.2	See 4.2	3	1[b]	Within the manufacturer's stated tolerance
Water permeability	4.3	Visual inspection	1	0[b]	Manufacturer's declaration
Dimensional change	4.4	–	–	–	Manufacturer's declaration
Durability	4.8	See 4.8	As appropriate	0[b]	Declaration or compliance with appropriate national technical specification
External fire performance[f]	4.9[g]	CEN/TS 1187	See EN 13501-5	See EN 13501-5	Classification in accordance with EN 13501-5
Reaction to fire	4.10[g]	See test methods in EN 13501-1 and Annex B	See EN 13501-1	See EN 13501-1	Classification in accordance with EN 13501-1
Release of dangerous substances	4.7	As appropriate	As appropriate	0[b]	As appropriate when national provisions exist

[a] This concerns the good quality of the base material (no pin-holes, micro holes, pits, craters etc.).

[b] In this case, the manufacturer claiming compliance with this European Standard shall verify that the certificate indicates that the base material has the characteristics that he needs to produce the finished product.

[c] These tests shall be done by the manufacturer claiming compliance with this European Standard.

[d] These additional tests shall be done by the manufacturer claiming compliance with this European Standard.

[e] Not applicable to zinc and lead.

[f] Only applies to roofing products.

[g] For products requiring testing.

Table 3 — Test methods, number of specimens and conformity criteria for initial type testing of the finished product

Characteristic	Requirement clause	Test method	Minimum number of specimens	Compliance criteria and specific conditions
Water permeability	4.3	Visual assessment	Random	Pass
Dimensional tolerances	4.5	EN 501[a], EN 502[a], EN 504[a], EN 505[a], EN 507[a] and EN 12588	3	Less than or equal to defined maxima
Vapour and air permeability	4.6	Visual assessment	Random	Pass
External fire performanc[b]	4.9[c]	CEN/TS 1187	See EN 13501-5	Classification in accordance with EN 13501-5
Reaction to fire	4.10[c]	See test methods in EN 13501-1 and Annex B	See EN 13501-1	Classification in accordance with EN 13501-1

[a] These standards only apply to roofing products. For other products, see 4.5.

[b] Only applies to roofing products.

[c] For products requiring testing.

6.2.2 Sampling for ITT

The choice of the method of sampling shall be as defined in a) or b) below, as appropriate.

a) Random sampling

Whenever practicable, the random sampling method shall be used, in which every base material or finished product of the same type in a delivery batch has an equal chance of being selected for the sample. The required numbers of specimens shall be selected from a batch at random, without any consideration given to the condition or quality of the selected specimens.

b) Representative sampling

When random sampling is impracticable, e.g. when the products form a large stack or stacks with ready access to only a limited number of products, a representative sampling procedure shall be used.

6.3 Factory production control (FPC)

6.3.1 General

The base material manufacturer shall establish, document and maintain a factory production control (FPC) system to ensure that the products placed on the market conform to the stated performance characteristics. The factory production control system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control incoming materials, equipment, the production process and the product.

If the roofing, cladding or lining product manufacturer buys base materials whose characteristics have already been determined in accordance with the provisions of this European Standard, and are declared by the base material supplier (e.g. following an inspection document conforming to EN 10204), the roofing, cladding or lining manufacturer's system requires only a document check to ensure that the characteristics meet the product manufacturer's specifications, provided that the production process for the roofing, cladding or lining product does not change in an unfavourable way these characteristics. Products whose characteristics have not already been determined shall be evaluated in accordance with Table 4.

Table 4 — Test methods, number of specimens and conformity criteria for FPC of base material

Characteristic	Requirement clause	Test method	Minimum number of specimens per batch[c]		Compliance criteria and specific conditions
			Without base material manufacturer's certificate and/or traceability system (see 6.3.2)	With base material manufacturer's certificate and traceability system (see 6.3.2)	
Quality of the metal[a]	4.1	Visual assessment	1	0[b]	Manufacturer's declaration
Type and grade[d] of metal		–	1	0[b]	
Nominal thickness	4.2	See 4.2	2	1[b]	All tests within the manufacturer's stated tolerance
Dimensional change	4.4	–	–	–	No FPC
Durability	4.8	See 4.8	As appropriate	0[b]	Manufacturer's declaration or compliance with appropriate national technical specification
Release of dangerous substances	4.7	As appropriate	As appropriate	0[b]	As appropriate when national provisions exist

[a] This concerns the good quality of the base material (no pin-holes micro holes, pits etc.).

[b] In this case, the manufacturer claiming compliance with this European Standard shall verify that the certificate indicates that the base material has the characteristics that he needs to produce the finished product.

[c] A batch is a production of base material that has the same specified characteristics.

[d] Not applicable to zinc and lead.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. This production control system documentation shall ensure a common understanding of conformity evaluation and enable the achievement of the required product characteristics and the effective operation of the production control system to be checked.

6.3.2 General requirements

The FPC system should fulfil the requirements as described in the following clauses of EN ISO 9001:2008:

— 4.2 (except 4.2.1 a));

— 5.1 e), 5.5.1, 5.5.2;

— Clause 6;

— 7.1 (except 7.1 a)), 7.2.3 c), 7.4, 7.5, 7.6;

— 8.2.3, 8.2.4, 8.3, 8.5.2.

The FPC system may be part of a Quality Management system, e.g. in accordance with EN ISO 9001.

The FPC system shall:

— address this European Standard;

— ensure that the products placed on the market conform with the stated performance characteristics;

— comply with the requirements for the characteristics of the roofing, cladding or lining products related to the characteristics of the base material itself, as given in Table 4 (also applies to the FPC system of the base material supplier);

— comply with the requirements for the other product characteristics as given in Table 5.

Table 5 — Test methods, number of specimens and conformity criteria for FPC of the finished product

Characteristic	Requirement clause	Test method	Minimum number of specimens	Compliance criteria and specific conditions
Dimensional tolerances[a]	4.5	See 4.5	At each change of tool, profile or base material or each shift	All test results within the manufacturer's tolerances
Water permeability	4.3	Visual inspection	Continuous	Pass
Vapour and air permeability	4.6	Visual inspection	Continuous	Pass
External fire performance	4.9	–	–[b]	To ensure production remains representative of ITT samples
Reaction to fire	4.10	–	–[b]	To ensure production remains representative of ITT samples

[a] Depending on the product and the product characteristics, the check of the dimensional tolerances may be made either on the factory manufacturing machines or on the product itself.

[b] No direct testing of these characteristics is needed. However, the manufacturer shall check, with a frequency, to be defined in the FPC manual, sufficient to ensure that ITT results remain applicable to all products. When using CWFT or deemed-to-satisfy, indirect checks of product parameters may be needed.

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

7 Designation

All products shall be designated according to the requirements of EN 501, EN 502, EN 504, EN 505, EN 507 and EN 12588 as relevant, with the replacement of the number of those standards by the number of this European Standard, i.e. EN 14783, for products other than roof covering products.

8 Product marking

All products shall be marked according to the requirements of EN 501, EN 502, EN 504, EN 505, EN 507 and EN 12588 as relevant, with the replacement of the number of those standards by the number of this European Standard, i.e. EN 14783, for products other than roof covering products.

Where ZA.3 covers the same information as this clause, the requirements of this clause are met.

Annex A
(normative)

Multilayer coated steel sheet

A.1 General

Multilayer coated steel sheet shall be obtained by continuously coating on both sides hot-dip metal-coated structural steel with one or multiple applications of thermoplastic bituminous compounds and subsequent lamination of a metal foil or plastic film, with or without further coatings.

NOTE The common coating materials used for multilayer coated steel sheet are:

— bitumen to which additives and fillers have generally been added;

— embossed aluminium foil with or without paint or plastic film;

— embossed copper foil with or without plastic film;

— embossed stainless steel with or without plastic film;

— plastic film with or without paint or metal foil.

External coatings should overlap with each other to wrap the lateral edges.

A.2 Substrate material

The base material for multilayer coated steel products shall be a continuously hot-dip metal-coated steel of structural or cold forming quality conforming to EN 505.

A.3 Specific requirements

A.3.1 Minimum nominal values of thickness

The minimum nominal values of thickness shall be as follows:

— finished product total thickness: (2,4 ± 0,2) mm;

— aluminium foil: (50 ± 5) μm;

— aluminium foil with plastic film: (50 ± 10) μm;

— copper and stainless steel foils: (40 ± 5) μm;

— plastic film: (8 ± 2) μm.

A.3.2 Bituminous coating specification

The softening point of the top side bituminous compound, determined according to EN 1427, shall be at least 110 °C.

A.3.3 Durability

The multilayer coated steel sheet shall be tested in accordance with EN ISO 6270-1 (resistance to humidity), EN ISO 6988 (resistance to sulphur dioxide) and EN ISO 9227 (salt spray test).

A.4 Freedom from defects

The multilayer coated steel sheet shall be manufactured such that all layers adhere without blistering or peeling.

When subjected to visual inspection without magnification, the top-side coating shall be free from visible cracks.

Annex B
(normative)

Test conditions for the reaction to fire tests

B.1 General

The test conditions for the reaction to fire tests shall be as specified in B.2 and as illustrated by Figure B.1 for the mounting and fixing conditions of test specimens in the SBI test (see EN 13823) and in B.3 for the test arrangement for reaction to fire tests in accordance with EN ISO 11925-2.

B.2 Mounting and fixing conditions of test specimens in the SBI test

B.2.1 General

All metal sheet products, including roofing, ceiling, cladding and lining products (see Clause 1) that do not conform to the provisions of 5.2.1 or 5.2.2, shall be tested vertically in the test rig with a vertical overlap joint on the long wing.

The tests shall be carried out on a flat sheet without ribs on the side exposed to the fire.

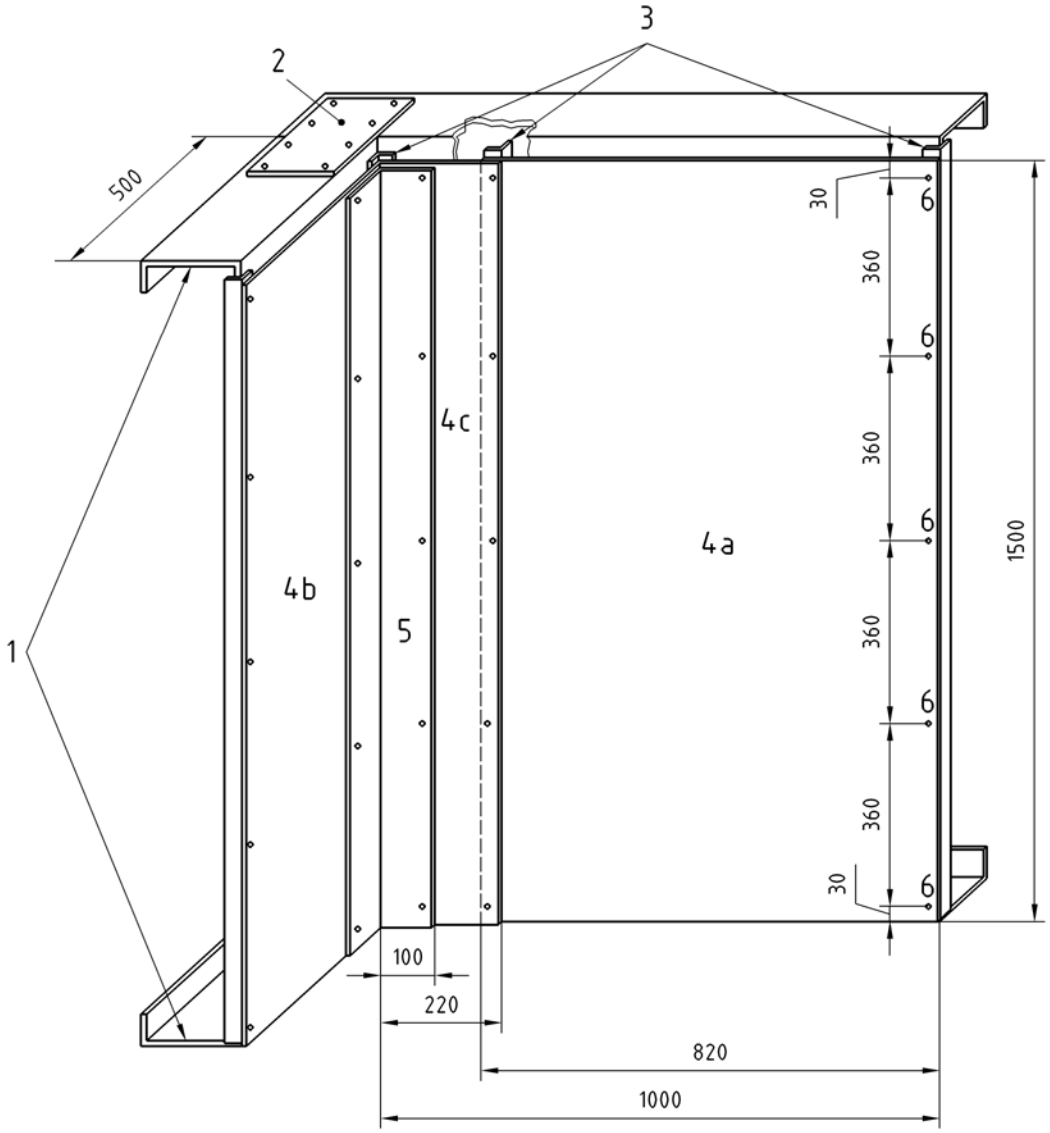
The dimensions of the specimens shall be as follows:

—	Short wing	Panel size:	(500 ± 5) mm	x 1,5 m ± 5 mm (height)
—	Long wing	Panel sizes:	a) (220 ± 5) mm	x 1,5 m ± 5 mm (height)
			b) (820 ± 5) mm	x 1,5 m ± 5 mm (height)

B.2.2 General configuration

Metal sheets shall be installed and fixed according to EN 13823 in the configuration shown in Figure B.1 and according to B.2.3 to B.2.5.

Dimensions in millimetres



Key

1 metal channel support 160 mm × 50 mm *t* = 2 mm on the bottom and on the top
2 metal flat sheet to maintain the two channels (minimum thickness 2 mm)
3 steel corner 30 mm × 30 mm × 1,5 mm to maintain the flat sheet along the side and the vertical joint
4 *t* flat metal sheet thickness: (4a 1 500 mm × 820 mm; 4b 1 500 mm × 500 mm; 4c 1 500 mm × 220 mm)
5 corner metal flashing inside 100 mm × 100 mm × *t*
Screw or pop rivet, every 360 mm vertically (beginning with 30 mm)

A supporting substrate (see EN 13238) may be added behind the sheet in accordance with the end use conditions.

Figure B.1 — Illustration of the test arrangement for reaction to fire test according to EN 13823 (SBI) on metal sheet products – Assembly and corner detail

B.2.3 Securing the overlap vertical joint

The following principles shall apply when securing the sheets on the long wing:

— the overlap between the two sheets along the vertical joint shall be 40 mm;

— the sheets are in end use conditions, i.e. fixed by using rivets or screw fixings to hold the joint in place;

— the distance between two fixings shall not exceed 360 mm;

— fixings shall be placed 30 mm from the top and bottom of the specimen, on the flange of the U profile and along the steel corner.

B.2.4 Standard assembly-steel corner flashings

The two sheets forming the long wing shall be assembled with the joint secured according to B.2.3.

The cut edge of the short wing panel shall be placed against the long wing assembly to form an internal corner so that the vertical joint on the long wing is 200 mm from the internal corner.

The two wings shall then be secured at 90° to each other using internal corner flashings and screws or pop type rivets with a spacing of 360 mm (see Figure B.1).

The steel corner flashings shall have the following dimensions: internal flashing 100 mm x 100 mm with a thickness equal to the thickness, *t*, of the tested sheet.

The internal corner flashing shall have the same coating as the tested sheet specimen.

The cut panel edges at the top and bottom of the specimen shall be maintained by a cold formed steel U, which has a section of 50 mm x 160 mm x 50 mm and a thickness of 2 mm.

The distance of the fixing from the edge shall not exceed 30 mm.

The air gap between backing board and specimen shall be open.

The assembly may be prepared and fixed together away from the test chamber. The complete assembly can then be placed on the trolley.

B.2.5 Alternative assembly-corner flashings and seals

Where required for specific end use applications, alternative corner flashings, e.g. aluminium, plastic, may be used in the test according to EN 13823. Seals, i.e. cold store vapour seals which can be applied on site, may also be incorporated into the assembly. The materials used in the tests shall be representative of those used in the end use application.

B.3 Test arrangement for reaction to fire test according to EN ISO 11925-2

Where this test is to be carried out, in addition to SBI test, the flame shall be applied either to the end (cut edge) representing all applications or to the surface of the specimen representing the end use application where the cut edge is protected with site applied metal flashings.

Where EN ISO 11925-2 test is carried out on the surface, this shall be stated as part of the product marking and the classification shall be accompanied with the statement "with edges protected by metal flashings".

Annex ZA
(informative)

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

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/121 "Internal and external wall and ceiling finishes" and Mandate M/122 "Roof coverings, rooflights, roof windows and ancillary products" given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard, shown in Tables ZA.1 and ZA.2, meet the requirements of the Mandates M/121 and M/122 given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the construction products covered by this annex for their intended uses indicated herein. Reference shall be made to the information accompanying CE marking.

This annex establishes the conditions for CE marking of fully supported metal cladding slabs and fully supported metal sheets for the uses indicated in Tables ZA.1 and ZA.2 and shows the relevant clauses applicable.

The scope of this annex is defined by Tables ZA.1 and ZA.2 and is the same as Clause 1 of this standard.

Table ZA.1 — Clauses of this European Standard addressing the provisions of the EU Construction Products Directive – Mandate M/121 Internal and external wall and ceiling finishes

Product: Fully supported metal cladding slabs **Intended use:** External wall and ceiling finishes		
Essential characteristics	**Requirement clauses in this European Standard**	**Mandated level(s) or class(es)**
Water permeability	4.3	
Dimensional change	4.4	
Water vapour permeability	4.6	
Release of dangerous substances	4.7	
Reaction to fire	4.10	See EN 13501-1
Durability	4.8	

Table ZA.2 — Clauses of this European Standard addressing the provisions of the EU Construction Products Directive – Mandate M/122 Roof coverings

Product: Fully supported metal sheets **Intended use:** Roof coverings		
Essential characteristics	**Requirement clauses in this European Standard**	**Mandated level(s) or class(es)**
Water permeability	4.3	
Dimensional change	4.4	
Water vapour and air permeability	4.6	
Release of dangerous substances	4.7	
External fire performance	4.9	See EN 13501-5
Reaction to fire	4.10	See EN 13501-1
Durability	4.8	

The requirement on a certain characteristic is not applicable in those Member States where there are no regulatory requirements on that characteristic for the intended end use of the product. In this case, manufacturers placing their products on the market of these Member States are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option "No performance determined" (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may only be used in respect of external fire performance and reaction to fire performance, expressed using classes F_{ROOF} and F respectively.

ZA.2 Procedure(s) for the attestation of conformity of products

ZA.2.1 Systems of attestation of conformity

The systems of attestation of conformity of fully supported metal sheet and strip for roofing, external cladding and internal lining indicated in:

— Tables ZA.1.1 in accordance with the Decision of the Commission 98/436/EC of 1998-06-22 (see OJEU L194 of 1998-07-10), as corrected (see OJEU L278 of 1998-10-15) and amended by 2001/596/EC of 2001-01-08 (see OJEU L209 of 2001-08-02), as given in Annex III of the mandate M122 for "Roof coverings, roof lights, roof windows and ancillary products",

— Tables ZA.1.2, in accordance with the Decision of the Commission 98/437/EC of 1998-06-30 (see OJEU L194 of 1998-07-10), as corrected (see OJEU L278 of 1998-10-15) and amended by 2001/596/EC of 2001-01-08 (see OJEU L209 of 2001-08-02) as given in Annex III of the mandate M121 for "Internal and external wall and ceiling finishes",

are shown in Table ZA.3 for the indicated intended uses and relevant levels or classes.

Table ZA.3 — Attestation of conformity systems

Products	Intended uses	Level(s) or class(es)	Attestation of conformity systems
Flat and profiled sheets	As roofing covering subject to reaction to fire regulations	A1*, A2*, B* and C*	1
		A1**, A2**, B**, C**, D and E	3
		(A1 to E)***, F	4
	As roof coverings subject to external fire performance regulations	See EN 13501-5	3
		F_{ROOF}	4
	As roof coverings subject to regulations on dangerous substances	–	3
	As roof coverings for all other uses	–	4
Flat and profiled sheets	As internal or external finishes in wall or ceilings subject to reaction to fire regulations	A1*, A2*, B* and C*	1
		A1**, A2**, B**, C**, D and E	3
		(A1 to E)***, F	4
	As internal or external finishes in walls or ceilings, as relevant, subject to regulations on dangerous substances	–	3
	As internal or external finishes in walls or ceilings for all other uses mentioned in the mandate	–	4

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

** Products/materials not covered by footnote (*).

*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC).

System 1: See Directive 89/106/EEC (CPD) Annex III.2.(i), without audit testing of samples.

System 3: See Directive 89/106/EEC (CPD) Annex III.2.(ii), Second possibility.

System 4: See Directive 89/106/EEC (CPD) Annex III.2.(ii), Third possibility.

The attestation of conformity of the fully supported metal cladding slabs in Table ZA.1 and the fully supported metal sheets in Table ZA.2 shall be according to the evaluation of conformity procedures indicated in Table ZA.4, Table ZA.5 and Table ZA.6 resulting from the application of the clauses of this European Standard indicated therein.

Table ZA.4 — Assignment of evaluation of conformity tasks for fully supported metal wall cladding slabs , fully supported metal sheets under system 1

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to all characteristics of Table ZA.1and/or ZA.2 relevant for the intended end use	6.3
	Initial type testing by a notified test laboratory	Release of dangerous substance, if relevant	6.2
	Initial type testing by the manufacturer	All characteristics of Table ZA.1 and/or ZA.2 relevant for the intended use except reaction to fire performance and release of dangerous substances, as relevant	6.2
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics of Table ZA.1 and/or ZA.2 relevant for the intended use which are declared	6.3
Tasks under the responsibility of the notified certification body	Initial type testing	Reaction to fire performance (Classes A1*, A2*, B*, C*)[a]	6.2
	Initial inspection of factory and of FPC	Parameters related to all characteristics of Table ZA.1.1 and/or ZA.1.2 relevant for the intended use, namely reaction to fire	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to all characteristics of Table ZA.1.1 and/or ZA.1.2 relevant for the intended use, namely reaction to fire	6.3
[a] See footnote (*) to Table ZA.3.			

Table ZA.5 — Assignment of evaluation of conformity tasks for system 3

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to all characteristics of Table ZA.1 or Table ZA.2 relevant for the intended use	6.3
	Initial type testing by the manufacturer	All characteristics of Table ZA.1 or Table ZA.2 relevant for the intended use other than those shown below	6.2
	Initial type testing by a notified test laboratory	Reaction to fire (Classes A1 to E)[a] External fire performance (only for fully supported metal sheets to be used for external roofs subject to external fire performance regulations, and which require testing)	6.2
[a] Any product tested for reaction to fire.			

Table ZA.6 — Assignment of evaluation of conformity tasks for system 4

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to all characteristics of Table ZA.1 or Table ZA.2 relevant for the intended use	6.3
	Initial type testing	All characteristics of Table ZA.1 or Table ZA.2 relevant for the intended use, namely water permeability, dimensional change, water vapour permeability and durability	6.2

ZA.2.2 EC Certificate and Declaration of Conformity

In case of products with system 1 for reaction to fire classes A1, A2*, B* and C**

When compliance with the conditions of this annex is achieved, the certification body shall draw up the EC Certificate of Conformity, which entitles the manufacturer to affix the CE marking. The EC Certificate of Conformity shall include:

- name, address and identification number of the certification body;
- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;
- description of the product (type, identification, use, etc.);
- provisions to which the product conforms (i.e. Annex ZA of this EN);
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);
- the number of the certificate;
- conditions of validity of the certificate, where applicable;
- name of, and position held by, the person empowered to sign the certificate.

In case of products under systems 3

When compliance with the conditions of this annex is achieved, the manufacturer or his agent established in the EEA shall draw up and retain the EC Declaration of Conformity, which entitles the manufacturer to affix the CE marking. This EC Declaration of Conformity shall include:

- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;
- description of the product (type, identification, use, etc.), and a copy of the information accompanying the CE marking;

NOTE 1 Where some of the information required for the Declaration is already given in the CE marking information, it does not need to be repeated.

- provisions to which the product conforms (i.e. Annex ZA of this EN), and a reference to the ITT report(s) and factory production control records (if appropriate);

- particular conditions applicable to the use of the product, (e.g. provisions for use under certain conditions);

- name and address of the notified laboratory(ies);

- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative;

In case of products under systems 4

When compliance with this annex is achieved, the manufacturer or his agent established in the EEA shall draw up and retain the EC Declaration of Conformity), which entitles the manufacturer to affix the CE marking. This EC Declaration of Conformity shall include:

- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

- description of the product (type, identification, use, etc.), and a copy of the information accompanying the CE marking;

NOTE 2 Where some of the information required for the Declaration is already given in the CE marking information, it does not need to be repeated.

- provisions to which the product conforms (i.e. Annex ZA of this EN), and a reference to the ITT report(s) and factory production control records (if appropriate);

- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);

- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

The above mentioned EC Declaration of Conformity or the EC Certificate of Conformity shall be presented in the language or languages accepted in the Member State in which the product is to be used.

ZA.3 CE marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EEC and shall be shown on the product, packaging or accompanying commercial documentation.

The following information on the product and its essential characteristics (Tables ZA.1 or ZA.2) may accompany the CE marking symbol. When not all of the information is given together on either the product or its packaging, all the information shall be given in the accompanying commercial documentation:

— name or identifying mark of the manufacturer;

— production plant;

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

— reference to this European Standard, i.e. EN 14783:2013;

— description of the product (generic name, material, dimensions,etc … and intended use(s));

— reaction to fire;

NOTE When the classification of the product according to EN 13501-1 corresponds to a classification without further testing in accordance with a Commission Decision, the mention"(CWFT)" is added to the reaction to fire classification.

— external fire performance, if relevant;

— durability.

When products have been tested to evaluate external fire performance, the manufacturer shall specify the end use conditions (type of substrate, type and thickness of insulation, method of fixing, etc.) as given in the test report. The information shall either be provided with the CE marking or by reference to a document, held by the manufacturer, which describes the end use conditions.

When products have been tested to evaluate reaction to fire performance the manufacturer shall specify the mounting and fixing conditions in relation to the SBI test. The information shall either be provided with the CE marking or by reference to a document, held by the manufacturer, which describes the end use conditions.

The NPD option (Class F for reaction to fire or F_{ROOF} for external fire performance) may be used when and where the characteristic for a given intended use is not subject to regulatory requirements.

Figure ZA.1 and Figure ZA.2 give examples of the information to be given with CE marking.

CE	*CE conformity marking, consisting of the "CE"-symbol given in Directive 93/68/EEC*
AnyCo Ltd, PO Box 21, B-1050 **13**	*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed*
EN 14783:2013 Fully supported metal product to be used for roof coverings Steel sheet – 2 000 mm x 3 000 mm x 0,63 mm – DX52D+Z275 – Polyester 25 µm – EN 505 **Reaction to fire:** Class A1 (CWFT) **External fire performance:** Class $B_{ROOF(t1)}$, Class $B_{ROOF(t2)}$, Class $B_{ROOF(t3)}$ and Class $B_{ROOF(t4)}$ **Durability:** Coating Z275-Polyester 25 µm	*No. of European Standard with version date* *Description of product* *and* *information on characteristics*

Figure ZA.1 — Example of the information accompanying the CE marking, for a product classified without further testing (CWFT) for reaction to fire and "deemed to satisfy" for external fire performance, and with no dangerous substances, and therefore under system 4

CE	*CE conformity marking, consisting of the "CE"-symbol given in Directive 93/68/EEC*
AnyCo Ltd, PO Box 21, B-1050 **13**	*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed*
EN 14783:2013 Fully supported metal product to be used for roof coverings and for wall claddings or linings Zinc coil – 500 mm x 0,70 mm x 31 m – EN 501 **Reaction to fire:** Class A1 **External fire performance:** Class $B_{ROOF(t1)}$, Class $B_{ROOF(t2)}$, Class $B_{ROOF(t3)}$ and Class $B_{ROOF(t4)}$ **Durability:** Natural zinc	*No. of European Standard with version date* *Description of product* *and* *information on characteristics*

Figure ZA.2 — Example of the information accompanying the CE marking, for a product "deemed to satisfy" for reaction to fire and external fire performance, and with no dangerous substances, and therefore under system 4

Bibliography

[1] 2000/553/EC: Commission Decision of 6 September 2000 implementing Council Directive 89/106/EEC as regards the external fire performance of roof coverings

[2] 96/603/EC: Commission Decision of 4 October 1996 establishing the list of products belonging to Classes A "No contribution to fire" provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products

[3] 2005/403/EC: Commission Decision of 25 May 2005 establishing the classes of external fire performance of roofs and roof coverings for certain construction products as provided for by Council Directive 89/106/EEC

[4] EN 10346; *Continuously hot-dip coated steel flat products — Technical delivery conditions*

[5] EN 10204, *Metallic products — Types of inspection documents*

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

[7] EN 13162, *Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification*

[8] EN ISO 9001:2008, *Quality management systems — Requirements (ISO 9001:2008)*

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