

Roofing products from metal sheet — Specification for fully supported roofing products of aluminium sheet

The European Standard EN 507:1999 has the status of a
British Standard

ICS 91.060.20

National foreword

This British Standard is the English language version of EN 507:1999.

The UK participation in its preparation was entrusted by Technical Committee B/542, Roofing and cladding products for discontinuous laying, to Subcommittee B/542/5, Sheet roof and wall coverings, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 12, an inside back cover and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments

This British Standard, having been prepared under the direction of the Sector Committee Building and Civil Engineering, was published under the authority of the Standards Committee and comes into effect on 15 January 2000

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ISBN 0 580 35381 8

ICS 91.060.20

English version

Roofing products from metal sheet - Specification for fully supported roofing products of aluminium sheet

Produits de couverture en tôle métallique - Spécification
pour les produits de couverture en tôle d'aluminium
totalement supportés

Dachdeckungsprodukte aus Metallblech – Festlegungen für
vollflächig unterstützte Bedachungselemente aus
Aluminiumblech

This European Standard was approved by CEN on 16 September 1999.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Foreword	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Definitions, symbols and abbreviations	5
3.1 Definitions.....	5
3.2 Symbols and abbreviations	6
4 Requirements	6
4.1 General.....	6
4.2 Materials.....	7
4.3 Products	8
5 Sampling and test methods	8
5.1 Flat products.....	8
5.2 Formed (prefabricated) products.....	9
6 Designation	9
7 Marking, labelling and packaging	10
7.1 Marking and labelling	10
7.2 Packaging and any special ordering conditions	10
7.3 Transport, storage and handling	10
Annex A (informative) National A-deviations	11
Bibliography	12

Foreword

This European Standard 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 IBN.

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 May 2000, and conflicting national standards shall be withdrawn at the latest by May 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Annex A is informative.

Introduction

Figure 1 indicates the position of this standard in the CEN framework of standards concerning roofing product of metal.

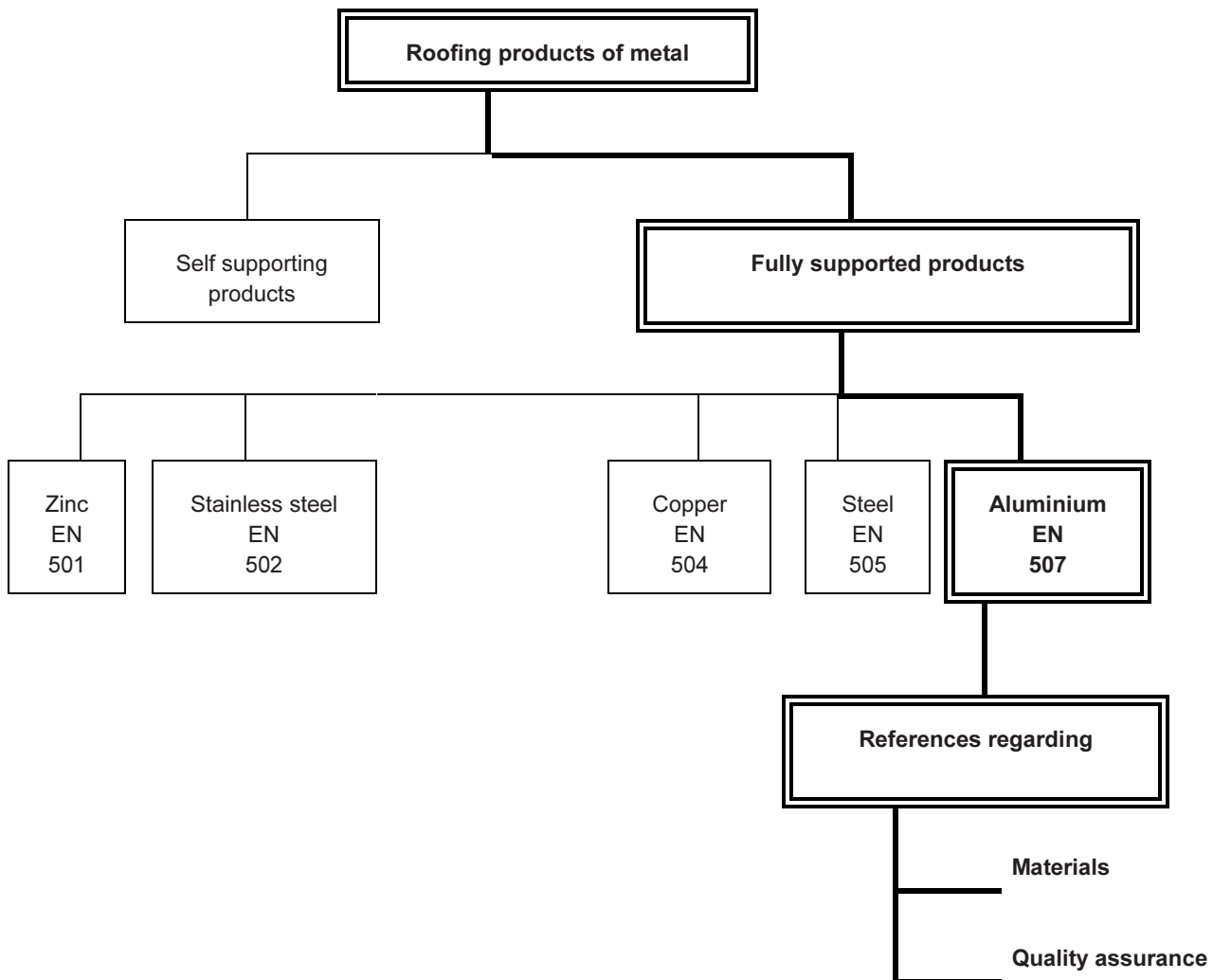


Figure 1 - Framework of standards

In this standard the performance of the product has been defined in terms of a number of type tests.

The performance of a roof constructed with these products depends not only on the properties of the product as it is required by this standard, but also on the design, construction and performance of the roof as a whole in relation to the environment and conditions of use.

1 Scope

This European Standard specifies requirements for roofing products used for assembly into coverings for pitched roofs, made from aluminium sheet with or without additional organic coatings.

The standard establishes general characteristics, definitions and labelling of the products, together with requirements for the materials from which the products can be manufactured. It is intended to be used either by manufacturers to ensure that their products comply with the requirements or by purchasers to verify that the products comply before they are despatched from the factory. It specifies the requirements for products which enable them to meet all normal service conditions. Products can be prefabricated or semifinished products as well as strip, coil and sheet for on-site-formed applications (e.g. standing seam roofs).

The standard applies to all discontinuously laid and fully supported roofing products made of aluminium sheets. No requirements for supporting construction, design of roof system and execution of connections and flashings are included.

NOTE The standard deals partly with flat products, partly with preformed (prefabricated) products. Requirements for preformed self-supporting products are given in prEN 508-2.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 485-1, *Aluminium and aluminium alloys - Sheet, strip and plate - Part 1: Technical conditions for inspection and delivery.*

EN 485-2, *Aluminium and aluminium alloys - Sheet, strip and plate - Part 2: Mechanical properties.*

EN 485-4, *Aluminium and aluminium alloys - Sheet, strip and plate - Part 4: Tolerances on space and dimensions for cold rolled products.*

EN 1396, *Aluminium and aluminium alloys - Coil coated sheet and strip for general applications - Specifications.*

EN 10204, *Metallic products - Types of inspection documents.*

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of this standard, the following definitions apply in addition to the definitions in EN 485-1.

3.1.1

fully supported

installation conditions such that the bottom flat portions of the products are supported by a continuous construction

3.1.2

aluminium

an alloy, consisting of the metal aluminium and other alloying metals

NOTE The alloys are defined by the content of the alloying element.

3.1.3

temper

material conditions after a production stage, for example mechanical treatment and/or heat treatment, intended to give the material physical and/or metallurgical properties

3.1.4

organic coated aluminium

painted, post coated, laminated or coil coated aluminium on one or on both sides

3.2 Symbols and abbreviations

EN AW	Symbols for aluminium sheets identical to the alloy symbols given in table 1
H	The aluminium temper symbol
AY	Indicating acrylic paint coating
SP	Indicating polyester paint coating
SP-SI	Indicating silicone-modified polyester paint coating
PVDF	Indicating polyvinylidene fluoride paint coating
PVF(F)	Indicating polyvinyl fluoride film coating
PMD	Indicating polyamid coated
AK	Indicating alkyd paint coating

4 Requirements

4.1 General

The product shall be manufactured from materials complying with 4.2.

NOTE 1 The supplier of the materials is responsible for carrying out the tests necessary to verify that the materials supplied to the manufacturer comply with the requirements and should provide appropriate inspection documents (according to EN 10204) on request.

NOTE 2 The symbols and abbreviations to be used to designate the aluminium alloys, the type and thickness of the organic coating are those of the standards referred to in clause 2.

A permanent quality control system shall be adopted by the manufacturer¹⁾

¹⁾ e.g. quality management system based on the relevant standard of the EN ISO 9000 series (see EN ISO 9000-1), or otherwise.

4.2 Materials

4.2.1 Aluminium

Table 1 lists aluminium alloys that are suitable without further proof provided their properties conform to the values given in the respective material standards (EN 485 or EN 1396).

Table 1 - Alloys of aluminium

Numerical designation	Designation based on chemical symbol
EN AW-1050 A	EN AW-Al 99,5
EN AW-1200	EN AW-Al 99,0 ¹⁾
EN AW-3003	EN AW-Al Mn1Cu
EN AW-3004	EN AW-Al Mn1Mg1
EN AW-3005	EN AW-Al Mn1Mg0,5
EN AW-3103	EN AW-Al Mn1
EN AW-3105	EN AW-Al Mn0,5Mg0,5
EN AW-4015	EN AW-Al Si2Mn ²⁾
EN AW-4016	EN AW-Al Si2MnZn ^{2, 3)}
EN AW-4017	EN AW-Al Si1MnCu ^{2, 3)}
EN AW-8011 A	EN AW-Al FeSi(A) ¹⁾
1) Only with organic coatings.	
2) Alloys not included in EN 1396.	
3) Alloys not included in EN 485-2.	

Alloy and temper shall be chosen to give corrosion resistance, strength and formability. Specification of alloy and temper shall be agreed at the time of ordering.

4.2.2 Organic coatings

The main organic coatings suitable for application to aluminium substrates within the scope of this standard are given in Table 2.

Table 2 - Factory applied organic coatings

Type of coating		Designation	Remarks
Factory applied coatings	Acrylic	AY	With proper primers
	Polyester	SP	
	Silicone-modified polyester	SP-SI	
	Polyvinylidene fluoride	PVDF	Only for post-coating
	Polyamide	PMD	
	Alkyd	AK	
Factory applied laminated film	Polyvinyl fluoride	PVF(F)	

NOTE 1 Aluminium sheets are used either without organic coatings or with organic coatings mainly for aesthetic reasons.

NOTE 2 Different coating systems behave in different ways under various climatic conditions. The primer and/or adhesive should be chosen taking into account which type of substrate, pretreatment and top coat are used.

Reverse side painting or coating should be chosen as appropriate it being required for handling, storage and for corrosion protection in some installation conditions.

Performance requirements and test methods for coil coated aluminium shall be in accordance with EN 1396.

4.3 Products

4.3.1 Flat products

4.3.1.1 Mechanical properties

The mechanical properties shall be in accordance with:

- EN 485-2 for products with an organic coating;
- EN 1396 for products without any organic coating.

4.3.1.2 Dimensions and tolerances

Dimensions and tolerances shall be in accordance with in EN 485-4.

The minimum nominal thickness (excluding organic coatings) shall be as follows:

- for fully supported coverings : 0,6 mm;
- for clips (fixing clips, sliding clips) : 0,7 mm;
- for line-fixing strips : 0,7 mm.

4.3.2 Formed (prefabricated) products

The recommended minimum nominal thickness (excluding thickness of organic coatings), if not calculated or tested under service conditions, such as wind, snow and maintenance loads, and the product processing conditions, for trays, panels, or tiles for fully supported applications shall be 0,6 mm.

Depending on dimensional requirements for fixing and fabrication, manufacturing tolerances for the formed product shall be agreed at the time of ordering.

NOTE Some of the preformed products are fully defined and designed by a "code of practice". Other products need a verification of the capacity to take wind load. This can be done by either testing or calculation, see prEN 508-2.

4.3.3 Safety in case of fire

Until appropriate European Standards are published, products coated with organic coatings shall comply with national building regulations regarding fire properties.

NOTE 1 All products referred to in this standard are resistant against sparks and heat radiation.

NOTE 2 All products referred to in this standard without organic coating are incombustible. The melting point of the aluminium alloys is approximatively 630 °C, so the metal can melt in an intense fire. It is essential that the effect of a fire is evaluated after studying the whole structure.

5 Sampling and test methods

5.1 Flat products

The sampling and test methods shall be in accordance with:

- EN 485-1 for products with an organic coating;
- EN 1396 for products without any organic coating.

5.2 Formed (prefabricated) products

5.2.1 Sampling

From each delivery of samples the number required for the tests shall be selected.

5.2.2 Testing

5.2.2.1 General

The products shall be supplied with inspection documents to comply with the requirements of this European Standard.

The following information shall be given at the time of ordering:

- type of test (specific or non-specific test, see EN 10204);
- type of inspection document, see EN 10204.

5.2.2.2 Test unit

For dimensional tolerances, the test unit shall consist of at least one complete piece of the amount delivered.

If specially agreed at the time of ordering, the test unit may consist of more than one piece.

5.2.2.3 Number of tests

One series of tests shall be carried out per test unit to determine the geometrical characteristics.

6 Designation

Products covered by this standard shall be designated as follows:

- type of product (e.g. sheet, coil, slit coil, cut length, roof panel, clip, tile);
- short designation of material (see 3.2) if applicable, or full designation of material according to material standard specification;
- number of this standard (EN 507).

7 Marking, labelling and packaging

7.1 Marking and labelling

At least the following information shall be attached to every pack, coil or bundle.

- name or registered identification of the manufacturer;
- product designation (see clause 6);
- order number;
- ordered dimension and quantity;
- gross mass (kg).

7.2 Packaging and any special ordering conditions

The packaging requirements and any special ordering conditions requirements to take account of particular conditions shall be agreed between manufacturer and purchaser at the time of ordering.

7.3 Transport, storage and handling

Any instructions regarding transport, handling or storage shall be clearly visible on the package.

NOTE 1 The packages should be fully supported by means of battens or pallets providing sufficient space to permit good ventilation while avoiding any permanent deformations of the products. The packages should be inclined in order to promote drainage.

The packages should be stored under a covered warehouse or under a cover made from tarpaulin over a frame. The frame should allow sufficient space between tarpaulin and packages to allow air to circulate.

NOTE 2 Moisture, in particular condensation inside packages, can lead to the formation of stains (e.g. black marks), and if there is prolonged contact with moisture, can cause aesthetic damage.

During transportation, dark spots can appear on light surfaces as a result of friction in contact with uncoated aluminium when packing allows movement between neighbouring surfaces.

NOTE 3 If severe service conditions are expected during transportation, storage or processing, the product can be supplied with an additional protection of a temporary, strippable film, wax or oil, by agreement.

Type, thickness, adhesion properties, formability, tear strength and light fastness should be taken into consideration when choosing protective films.

All protective films can only be exposed to outdoor weathering for a limited period without deterioration.

Annex A (informative)

National A-deviations

A-Deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC member.

This European Standard falls under Directive 89/106/EEC.

NOTE (from CEN/CENELEC RI Part 2, 3.1.9): Where standards fall under EC Directives, it is the view of the Commission of the European Communities (OJ N°G.59, 9.3.1982) that the effect of the decision of the Court of Justice in case 815/79 Cremonini/Vrankovich (European Court Reports 1980, p3583) is that compliance with A-deviations is no longer mandatory and that the free movement of products complying with such a standard should not be restricted except under the safeguard procedure provided for in the relevant Directive.

A-deviations in an EFTA country are valid instead of the relevant provisions of the European Standard in that country until they have been removed.

Sweden: The following national regulations shall be complied with:

- ordinance AFS 1983 :12 : Work on roofs (§ 17);
- building code BFS 1993 :57,8 :22.

Bibliography

prEN 508-2, *Roofing products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 2: Aluminium.*

EN ISO 9000-1, *Quality management and quality assurance standards - Part 1: Guidelines for selection and use.* (ISO 9000-1:1994)

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