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Aluminium and aluminium alloys — Coil coated sheet and strip for general applications — Specifications

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The UK participation in its preparation was entrusted to Technical Committee NFE/35, Light metals and their alloys.

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

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European foreword

This document (EN 1396:2023) has been prepared by Technical Committee CEN/TC 132 “Aluminium and aluminium alloys”, 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of an identical text or by endorsement, at the latest by December 2023, and conflicting national standards shall be withdrawn at the latest by December 2023.

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

This document supersedes EN 1396:2015.

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Introduction

Organic coated aluminium and aluminium alloy strip and sheet products can be used to advantage in cases where corrosion resistance and decorative appearance are of primary importance. They have applications throughout the flat products processing industry e.g. in the building, automotive, caravans, appliances, fabricating and packaging industries.

Organic coated aluminium and aluminium alloy flat products can be delivered in numerous types and grades, depending on the base material used (various grades of aluminium), on the coating material and types of coating and on the requirements for the surface appearance and the formability.

The properties of the products can vary within greater or smaller limits depending on the choice and combination of properties required. It is therefore not practicable to specify in detail minimum requirements for all properties for all types of products.

As a general rule, material specifications are agreed between manufacturer and user/purchaser using, when appropriate, the guidelines from Annex C.

Guidelines for proper storage and subsequent processing of organic coated aluminium and aluminium alloy flat products are given in Annex D.

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1 Scope

This document specifies the particular requirements for wrought aluminium and wrought aluminium alloys in the form of coil coated sheet and strip for general applications. This product is generally supplied in thicknesses up to 3,0 mm.

It is applicable to cold-rolled aluminium and aluminium alloy strip coated by the coil coating process both with liquid as well as with powder paints, either in the final width or slit afterwards, and to sheet obtained from such strip.

It does not apply to coil coated sheet and strip used for special applications such as cans, closures and lids which are dealt with in separate EN 541.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

EN 515, *Aluminium and aluminium alloys - Wrought products - Temper designations*

EN 573-3, *Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3: Chemical composition and form of products*

EN 12258-1, *Aluminium and aluminium alloys - Terms and definitions - Part 1: General terms*

EN 13523-1, *Coil coated metals - Test methods - Part 1: Film thickness*

EN 13523-2, *Coil coated metals - Test methods - Part 2: Gloss*

EN 13523-3, *Coil coated metals - Test methods - Part 3: Colour difference and metamerism - Instrumental comparison*

EN 13523-22, *Coil coated metals - Test methods - Part 22: Colour difference - Visual comparison*

EN ISO 6892-1, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12258-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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3.1
aluminium
unalloyed aluminium or aluminium alloy

Note 1 to entry: In the USA the term "Aluminum" is used.

3.2
aluminium alloy
aluminium which contains alloying elements, where aluminium predominates by mass over each of the other elements and where the aluminium content is not greater than 99,00 %

3.3
metal substrate
base material from cold rolled aluminium or aluminium alloy strip

3.4
coating material
material comprising organic polymers e.g. synthetic resins or plastics, to which pigments, additives and sol- vents (if required) have generally been added, suitable for coil coating

Note 1 to entry: These can be paints (liquid or powder) or plastic films.

3.5
coil coating
method in which a coating material is applied in a continuous process on a cold rolled metal strip

Note 1 to entry: This process includes cleaning and chemical pre-treatment of the surface and either:

— one-side or two-side, single or multiple application of liquid or powder coating materials which are subsequently cured; or

— laminating with plastic films.

3.6
organic coating
paint or lacquer film on a coated product produced from wet paint or from powder coating, or the laminated organic film

3.7
top side
side of the strip with the highest decorative demand and which, in normal production, is uppermost

Note 1 to entry: For strip supplied in coil form, the top side is normally the outside of the coil. For sheet supplied in stacks or bundles the top side is normally uppermost.

3.8
reverse side
underside of the strip, generally coated with a backing coat (see 3.12), but possibly pre-treated only or coated with one of the other systems described in 3.10, 3.11 and 3.13, to fulfil special requirements such as foam or glue adhesion, specially specified friction, etc.

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3.9
coating system
combination of coatings either on the top side or on the reverse side of the metal substrate

Note 1 to entry: The name of the coating system derives from the topcoat coating material (see examples in Annex B).

3.10
single layer coating
single coating either with requirements on appearance, formability, corrosion protection, subsequent painting etc., or as a primer with special properties regarding adhesion and corrosion protection for post-painting applications

3.11
multilayer coating
system comprising a primer or a base coat, possibly intermediate coat(s), and a top coat with particular requirements on appearance, formability, corrosion protection, etc.

3.12
backing coat
single coating of any type with no particular requirements for appearance, formability, corrosion protection etc., usually on the reverse side of the coated product

3.13
film coating
organic film applied to a substrate to which an adhesive and, if appropriate, a primer has been applied before- hand

3.14
master coil
parent coil
coil from which products (coil or sheet) are obtained

3.15
order document
document or set of documents agreed between supplier and purchaser at the time of ordering

Note 1 to entry: An order document can be an order of the purchaser confirmed by the supplier or a quotation of the supplier confirmed by the purchaser.

4 Technical conditions for inspection and delivery

4.1 Ordering information

The order document shall specify the product required and shall contain the following information:

a) the form and type of product:

   1) the form of the product (organic coated coil, sheet or strip);

   2) the designation of the aluminium or aluminium alloy, in accordance with EN 573-3;

b) the temper of the material for delivery (degree of hardness or heat treatment condition) in accordance with EN 515 and EN ISO 6892-1;

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c) the dimensions and shape of the product:

1) thickness (of the metal substrate);

2) width;

3) length of sheet (in the rolling direction);

4) internal and external diameters of the coil;

5) core size and type.

NOTE Unless otherwise agreed, the length is the largest dimension.

d) the quantity:

1) mass or number of pieces;

e) the coating system (see examples in Annex B):

1) for the top side:

i. colour designation (international and/or company code);

ii. nominal gloss value;

iii. protective strippable film when required;

If the surface is likely to be damaged during transportation, storage, processing or erection, the coil coated material may, on agreement, be supplied with the additional protection of a temporary strippable film. Type, thickness, adhesion properties, formability, tear strength and light fastness should be taken into consideration when choosing protective films. Only certain protective films can be exposed to outdoor weathering, and these only for a limited period.

2) for the reverse side:

i. whether it is a backing coat or not;

ii. colour designation (international and/or company code);

iii. nominal gloss value;

f) the type and the design of embossing, when required;

g) any requirements for inspection documents;

h) any special requirements for packing:

1) mass per coil and per packing unit;

2) number of sheets per stack;

3) position of coil axis (vertical or horizontal);

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4) design of pallet;

5) direction of winding;

Optional information to be mentioned in the order:

i) the form and type of product:

1) the purchaser application;

j) the number of this document, i.e. EN 1396, or a specification number, or, where none exists, the properties agreed between manufacturer and purchaser;

k) the quantity:

1) quantity tolerances if required;

l) the coating system:

1) for the top side:

i. special requirements when required such as coat system (single, multiple); type of organic coating (see Table B.1); coating thickness in micrometers, if different from normal (see Table B.1); coating system code; etc.;

2) for the reverse side:

i. special requirements when required such as coat system (single, multiple); type of organic coating (see Table B.1); coating thickness in micrometers, if different from normal (see Table B.1); surface finish if not coated (degreased only, pre-treated etc.); printing of markings; foam adhesion; adhesive bonding, etc.;

m) any special requirements agreed between manufacturer and purchaser:

1) marking of products;

2) flagging of defects;

3) instruction on the position of the top side if other than the normal one (see 3.7);

4) other characteristics of the products (see Annex B).

4.2 Requirements

4.2.1 Production and manufacturing processes

Unless otherwise specified in the order, the production and manufacturing processes shall be left to the discretion of the manufacturer. Unless it is explicitly stated in the order no obligation shall be placed on the manufacturer to use the same processes for subsequent and similar orders.

4.2.2 Quality control

The manufacturer shall be responsible for the performance of all inspection and tests required by the relevant European Standard and/or the particular specification, prior to shipment of the product.

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