SLOVENSKI STANDARD
SIST EN 1396:2007

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Nadomeġļ a:
SIST EN 1396:1998

Aluminij in aluminijeve zlitine - Prevleļ ena ali premazana ploļ evina in trakovi za sploġno uporabo - Specifikacije

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

Aluminium und Aluminiumlegierungen - Bandbeschichtete Bleche und Bänder für allgemeine Anwendungen - Spezifikationen

Aluminium et alliages d'aluminium - Tôles revetues en bobine pour applications générales - Spécifications

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

Aluminium et alliages d'aluminium - Tôles revêtues en bobine pour applications générales - Spécifications

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Foreword

This document (EN 1396:2007) 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of an identical text or by endorsement, at the latest by July 2007, and conflicting national standards shall be withdrawn at the latest by July 2007.

This document supersedes EN 1396:1996.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 7 "Sheet, strip and plate" to revise EN 1396:1996.

The following technical changes have been made:

General: Update of normative references in the whole document

Table 1: New coating material added - Fluorpolymer

Table 2: New alloys added - EN AW-3104, EN AW-5006, EN AW-5010 and EN AW-6025

Table 4: Gloss unit range "21 to 40" subdivided in "21 to 30" and "31 to 40"

Annex E: Added

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Introduction

Organic coated aluminium and aluminium alloy flat 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.

Minimum requirements not specified in this European Standard and deemed necessary for a successful use of the product should be agreed between manufacturer and purchaser at the time of ordering, using, as appropriate, the guidelines given in Annex C.

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

1 Scope

This European Standard 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 applies to cold-rolled aluminium and aluminium alloy strip coated by the coil coating process, 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 referenced documents are indispensable for the application 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*

EN 10002-1, *Metallic materials — Tensile testing — Part 1: Method of test at ambient temperature*

EN 12258-1:1998, *Aluminium and aluminium alloys — Terms and definitions — Part 1: General terms*

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

EN 13523-2, *Coil coated metals — Test methods — Part 2: Specular gloss*

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

EN 13523-19, *Coil coated metals — Test methods — Part 19: Panel design and method of atmospheric exposure testing*

EN 13523-21, *Coil coated metals — Test methods — Part 21: Evaluation of outdoor exposed panels*

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

EN ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409:1992)*

ASTM G 85, *Standard Practice for Modified Salt Spray (Fog) Testing*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12258-1:1998 and the following apply.

3.1
aluminium
metal with a minimum content of 99,0 % by mass of aluminium and with content by mass of any other element within the following limits:

— a total content of iron and silicon not greater than 1,0 %;

— a content of any other element not greater than 0,10 % except for copper which can have a content of up to 0,20 % provided that neither the chromium nor the manganese content exceeds 0,05 %

NOTE Aluminium in the liquid state or in the form of ingots for remelting is often called “unalloyed aluminium”.

[EN 12258-1:1998]

3.2
aluminium alloy
alloy in which aluminium predominates by mass over each of the other elements, provided that it does not conform to the definition of aluminium

[EN 12258-1:1998]

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 solvents (if required) have generally been added, suitable for coil coating. 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. 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
dry paint film of the coated product or the organic film of the organic film/metal laminate

[EN 12258-1:1998]

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

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 polyurethane foam adhesion

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

The name of the coating system derives from the uppermost coating material (see examples in Annex B).

3.10
single coat system
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
multiple coat system
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 beforehand

[EN 12258-1:1998]

3.14
master coil
coil-coated in 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 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 define the product required and shall contain the following information:

a) the form and type of product:

— the form of the product (organic coated sheet or strip);

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

— the purchaser application;

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

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

d) the dimensions and shape of the product:

— thickness (of the metal substrate);

— width;

— length of sheet (in the rolling direction);

— internal and external diameters of the coil;

— core size and type.

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

e) the quantity:

— mass or number of pieces;

— quantity tolerances if required;

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

1) for the top side:

— colour designation (international and/or company code);

— nominal gloss value;

— protective strippable film when required[1)];

— special requirements when required such as:

— coat system (single, multiple);

— type of organic coating (see Table 1);

— coating thickness in micrometers, if different from normal (see Table 1);

— stripe code etc.;

2) for the reverse side:

1) 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 are to 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.

- whether it is a backing coat or not;
- colour designation (international and/or company code);
- nominal gloss value;
- special requirements when required such as:
  - coat system (single, multiple);
  - type of organic coating (see Table 1);
  - coating thickness in micrometers, if different from normal (see Table 1);
  - surface finish if not coated (degreased only, pre-treated etc.);
  - printing of markings, foam adhesion, adhesive bonding etc.;

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

h) any requirements for inspection documents;

i) any special requirements for packing:
- mass per coil and per packing unit;
- number of sheets per stack;
- position of coil axis (vertical or horizontal);
- design of pallet;
- direction of winding;

j) any special requirements agreed between manufacturer and purchaser:
- marking of products;
- flagging of defects;
- instruction on the position of the top side if other than the normal one (see 3.7);
- other characteristics of the products (see Annex C).

Table 1 — Symbol and typical thickness or thickness ranges of the more common coating materials (for information only)

Dimensions in micrometers

Coating material	Symbol [a]	Typical thickness or thickness ranges [b]
Liquid coatings		
Acrylic	AY	20
Alkyd	AK	15
Epoxy	EP	5
Fluorpolymer	FEVE	10 to 40
Polyamide (PA) modified systems	PUR-PA and SP-PA	20 to 30
Polyesters	SP	20
Polyurethane	PUR	20
Polyurethane adhesives	PUR(A)	6
Polyvinylidene fluoride	PVDF	20 to 40
Silicone modified polyester	SP-SI	20
Laminates [c]		
Polyvinyl chloride	PVC(F)	> 100
Polyvinyl fluoride	PVF(F)	38

[a] The symbols correspond broadly to those in EN ISO 1043-1 or were chosen by analogy.

[b] The typical thickness values relate to the individual coats (excluding primer and adhesive coatings).

[c] Excluding adhesive film thickness of approximately 10 µm.

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.

If the purchaser wishes to inspect the product at the manufacturer's works, he shall notify the manufacturer at the time of placing the order.

4.2.3 Freedom from defects

The product shall be free from defects prejudicial to its suitable and proper use. Its surface shall be of a uniform appearance, colour and texture and be essentially free of blemishes such as flow lines, streaks, blisters or other imperfections.