

PIDEVAS KUUMSUUKELPROTSESSIS PINNATUD  
LEHTTERASTOOTED. TEHNILISED TARNETINGIMUSED

Continuously hot-dip coated steel flat products for cold  
forming - Technical delivery conditions

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 10346:2015 sisaldab Euroopa standardi EN 10346:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 10346:2015 consists of the English text of the European standard EN 10346:2015.
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English Version

## Continuously hot-dip coated steel flat products for cold forming - Technical delivery conditions

Produits plats en acier revêtus en continu par immersion à  
chaud pour formage à froid - Conditions techniques de  
livraison

Kontinuierlich schmelztauchveredelte Flacherzeugnisse aus  
Stahl - Technische Lieferbedingungen

This European Standard was approved by CEN on 16 April 2015.

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (EN 10346:2015) has been prepared by Technical Committee ECISS/TC 109 “Coated and uncoated flat products to be used for cold forming”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2016, and conflicting national standards shall be withdrawn at the latest by January 2016.

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

This document supersedes EN 10346:2009.

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 requirements for continuously hot-dip coated products made of low carbon steels for cold forming, of steels for construction and of steels with high proof strength for cold forming coated with zinc (Z), zinc-iron alloy (ZF), zinc-aluminium alloy (ZA), aluminium-zinc alloy (AZ), aluminium-silicon alloy (AS) or zinc-magnesium alloy (ZM) and for continuously hot-dip coated products made of multiphase steels for cold forming coated with zinc (Z), zinc-iron alloy (ZF), zinc-aluminium alloy (ZA) or zinc-magnesium alloy (ZM) in thicknesses of  $0,20 \text{ mm} \leq t < 3,0 \text{ mm}$ .

By agreement at the time of enquiry and order, this European Standard is applicable to continuously hot-dip coated flat products of an expanded validity range defined for thicknesses  $t < 0,20 \text{ mm}$  or in thicknesses  $3,0 \text{ mm} \leq t \leq 6,5 \text{ mm}$  with agreed mechanical properties and test specimens, adhesion of coating and surface condition requirements.

The thickness is the final thickness of the delivered product after coating.

This document applies to strip of all widths and to sheets cut from it ( $\geq 600 \text{ mm}$  width) and cut lengths ( $< 600 \text{ mm}$  width).

NOTE 1 Products coated with (pure) aluminium can also be available, but are not covered by this European standard.

NOTE 2 The products covered by this European Standard are used where cold formability, high strength, a defined minimum yield strength and/or corrosion resistance are the most important factors. Corrosion resistance of the product is proportional to the coating thickness, hence to its mass (see also 7.3.2). The products covered by this European Standard can be used as substrates for organic coated flat products specified in EN 10169 for building and general engineering applications.

NOTE 3 By agreement at the time of enquiry and order, this European Standard is applicable to other continuously hot-dip coated hot rolled steel flat products (e.g. in accordance with EN 10149-2).

## 2 Normative References

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 606, *Bar coding - Transport and handling labels for steel products*

EN 10020:2000, *Definition and classification of grades of steel*

EN 10021:2006, *General technical delivery conditions for steel products*

EN 10027-1, *Designation systems for steels - Part 1: Steel names*

EN 10027-2, *Designation systems for steels - Part 2: Numerical system*

EN 10049, *Measurement of roughness average  $R_a$  and peak count  $RP_c$  on metallic flat products*

EN 10079:2007, *Definition of steel products*

EN 10143, *Continuously hot-dip coated steel sheet and strip - Tolerances on dimensions and shape*

EN 10204:2004, *Metallic products - Types of inspection documents*

EN 10325, *Steel - Determination of yield strength increase by the effect of heat treatment [Bake-Hardening-Index]*

EN ISO 6892-1:2009, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2009)*

ISO 10113, *Metallic materials — Sheet and strip — Determination of plastic strain ratio*

ISO 10275, *Metallic materials — Sheet and strip — Determination of tensile strain hardening exponent*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020:2000, EN 10021:2006, EN 10079:2007, EN 10204:2004 and the following apply.

NOTE General definitions and guidelines for the protection of iron and steel can be found in EN ISO 14713.

#### 3.1

##### **hot-dip zinc coating (Z)**

application of a zinc coating by immersing the prepared strip in a molten bath of zinc

Note 1 to entry: The zinc content is at least 99%.

Note 2 to entry: See also 7.4.2.

#### 3.2

##### **hot-dip zinc-iron alloy coating (ZF)**

application of a zinc-iron coating by immersing the prepared strip in a molten bath of zinc and a subsequent annealing

Note 1 to entry: The zinc content of the bath is at least 99%.

Note 2 to entry: The annealing produces an iron-zinc coating with an iron content of normally 8 % to 12 %.

Note 3 to entry: See also 7.4.3.

#### 3.3

##### **hot-dip zinc-aluminium coating (ZA)**

application of a zinc-aluminium coating by immersing the prepared strip in a molten bath of zinc-aluminium

Note 1 to entry: The composition of the bath is approximately 5% aluminium, small amounts of mischmetal and the balance zinc.

Note 2 to entry: See also 7.4.4.

#### 3.4

##### **hot dip zinc-magnesium coating (ZM)**

application of a zinc-magnesium coating by immersing the prepared strip in a molten bath of zinc-aluminium-magnesium

Note 1 to entry: The composition of the bath is sum of aluminium and magnesium from 1,5 % to 8 %, containing minimum of 0,2 % magnesium and the balance zinc.

Note 2 to entry: For information on chemical composition and density, the manufacturer may be asked for advice.

Note 3 to entry: See also 7.4.5.