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Steel wire and wire products – Non-ferrous metallic coatings on steel wire – Part 2: Zinc or zinc alloy coatings

The European Standard EN 10244-2:2001 has the status of a Swedish Standard. This document contains the official English version of EN 10244-2: 2001.

Swedish Standards corresponding to documents referred to in this Standard are listed in ”Catalogue of Swedish Standards”, issued by SIS. The Catalogue lists, with reference number and year of Swedish approval, International and European Standards approved as Swedish Standards as well as other Swedish Standards.

Tråd och trådprodukter av stål – Beläggning av icke-järnmetall – Del 2: Beläggning av zink eller zinklegeringar

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Steel wire and wire products - Non-ferrous metallic coatings on steel wire - Part 2: Zinc or zinc alloy coatings

Fils et produits tréfilés en acier - Revêtements métalliques non ferreux sur fils d'acier - Partie 2: Revêtements de zinc ou d'alliage de zinc

Stahldraht und Drahterzeugnisse - Überzüge aus Nichteisenmetall auf Stahldraht - Teil 2: Überzüge aus Zink und Zinklegierungen

This European Standard was approved by CEN on 21 January 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 30 "Steel wires", the secretariat of which is held by BSI.

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 September 2001, and conflicting national standards shall be withdrawn at the latest by September 2001.

This European Standard for non-ferrous metallic coating on steel wire is made up of the following parts:

Part 1 : General principles

Part 2 : Zinc and zinc alloy coatings

Part 3 : Aluminium coatings

Part 4 : Tin coatings

Part 5 : Nickel coatings

Part 6 : Copper, bronze and brass coatings

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.

1 Scope

This part of this European Standard specifies the requirement for coating mass, other properties and testing of zinc and zinc alloy coatings on steel wire and steel wire products of circular or other section.

2 Normative reference

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 (including amendments).

EN 1179, *Zinc and zinc alloys — Primary zinc*

EN 10218-1, *Steel wire and wire products – General – Part 1: Test methods*

EN 10244-1, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 1: General principles*

ISO 7989, *Zinc coatings for steel wire*

ASTM B 750, *Standard Specification for Zinc-5% Aluminium-Mischmetal [1] Alloy in Ingot Form for Hot-Dip Coatings*

3 Terms and definitions

For the purposes of this European standard the following terms and definitions apply.

3.1
wire with zinc or zinc alloy coating
wire to which zinc or zinc alloy coating has first been applied to protect it against corrosion. The coating method may be hot dipping in a bath of molten zinc or by means of an aqueous solution of suitable electrolyte. In the hot dipping process wiping media may be used to modify the mass of coating

3.2
zinc or zinc alloy coating
zinc alloy is zinc to which deliberately other elements are added in order to obtain particular characteristics. In all cases the quantity of zinc in the alloy shall be minimum 50 %. The most common alloy elements are aluminium, tin, nickel but other elements may also considered

3.3
mass of coating
the mass of zinc per unit of surface area is expressed in grams per square metre of surface of bare wire

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[1] Mischmetal is a mixture of rare earth metals (La and others) which is a by product from zinc production

Table 1 — Mass of coating

Diameter *d* mm	Classes [a] A g/m²	AB g/m²	B g/m²	C g/m²	D g/m²	A x 3 [b] g/m²
0,15 ≤ *d* < 0,20	-	-	15	-	10	
0,20 ≤ *d* < 0,25	30	20	20	20	15	
0,25 ≤ *d* < 0,32	45	30	30	25	15	
0,32 ≤ *d* < 0,40	60	30	30	25	15	
0,40 ≤ *d* < 0,50	85	55	40	30	15	
0,50 ≤ *d* < 0,60	100	70	50	35	20	
0,60 ≤ *d* < 0,70	115	80	60	40	20	
0,70 ≤ *d* < 0,80	130	90	60	45	20	
0,80 ≤ *d* < 0,90	145	100	70	50	20	
0,90 ≤ *d* < 1,00	155	110	70	55	25	
1,00 ≤ *d* < 1,20	165	115	80	60	25	
1,20 ≤ *d* < 1,40	180	125	90	65	25	540
1,40 ≤ *d* < 1,65	195	135	100	70	30	585
1,65 ≤ *d* < 1,85	205	145	100	75	30	615
1,85 ≤ *d* < 2,15	215	155	115	80	40	645
2,15 ≤ *d* < 2,50	230	170	125	85	45	690
2,50 ≤ *d* < 2,80	245	185	125	95	45	735
2,80 ≤ *d* < 3,20	255	195	135	100	50	765
3,20 ≤ *d* < 3,80	265	210	135	105	60	795
3,80 ≤ *d* < 4,40	275	220	135	110	60	825
4,40 ≤ *d* < 5,20	280	220	150	110	70	840
5,20 ≤ *d* < 8,20	290			110	80	870
8,20 ≤ *d* ≤ 10,00	300			110	80	900

[a] The coating class with a designation starting with A relates to thick coatings (generally final coating). Designations ending in B relate to classes usually but not always obtained by (zinc coating) and subsequent drawing. Classes C and D are standard classes for low mass coating which are usually produced but not exclusively, produced by hot zinc dipping and then wiping.

[b] A x 3 relates to very high mass requirement three times higher than class A. Other multiples of Class A are possible and these classes will be identified in the same way, e.g. A x 4.

4 Coating requirements

4.1 Requirements for the coatings material

The zinc or zinc alloy used for the coating shall comply with the standard EN 1179. For zinc-alloy grades not mentioned in the EN the alloy shall be specified at the enquiry and order. For Zn95Al5 reference is made to ASTM B 750 with or without mischmetall (MM).

The ingot of the material used for the zinc coating shall be of minimum 99,9 % purity unless otherwise stated in the relevant product standard or other specification in the order. Coatings applied by electrolysis shall contain a minimum of 99 % zinc.

4.2 Requirements relating to coating on the wire

4.2.1 Coating mass

The minimum mass of zinc per unit of surface area of the wire shall comply with the requirements of Table 1.

If no class of zinc coating or no coating mass is specified the coating shall be called "regular coating". Such a coating shall be not less than 1 g zinc mass per Kg of zinc coated wire equivalent to the coating mass in g/m^2 not less than two times the wire diameter expressed in mm.

The requirements for zinc-aluminium coatings of type Zn 95Al 5 are given in Table 2.

For other zinc alloy coatings, the manufacturer and supplier shall agree on the required coating mass.

4.2.2 Appearance of coating

The coating applied to the wire shall be reasonably smooth and as evenly distributed as industrial technology allows and not show discontinuities such as bare patches, dross contamination etc.

NOTE The Zn 95Al5 zinc-aluminium alloy might show difference in colour and become darker with time. This does not affect the corrosion protection performance.

4.2.3 Dipping test

When specified the dipping (immersion) test shall be carried out according to the procedure detailed in 5.3. However it should be pointed out that there is no direct link between the number of dips and the mass of the coating and that the result is determined as much by the conditions of manufacture of the coating as by the uniformity of the coating.

Table 3 gives the minimum number of immersions for coatings of classes A and AB.

The dipping test does not apply to class B, C and D.