SLOVENSKI STANDARD
SIST EN 10245-3:2002

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Jeklena žica in žični izdelki - Organske prevleke na jekleni žici - 3. del: Žica, prevlečena s PE

Steel wire and wire products - Organic coatings on steel wire - Part 3: PE coated wire

Stahldraht und Drahterzeugnisse - Organische Beschichtungen auf Draht - Teil 3: PE-beschichteter Draht

Fils et produits tréfilés en acier - Revetements organiques sur fils d'acier - Partie 3: Fils a revetement de PE

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English version

Steel wire and wire products - Organic coatings on steel wire - Part 3: PE coated wire

Fils et produits tréfilés en acier - Revêtements organiques sur fils d'acier - Partie 3: Fils à revêtement de PE

Stahldraht und Drahterzeugnisse - Organische Beschichtungen auf Draht - Teil 3: PE-beschichteter Draht

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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.

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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of an identical text or by endorsement, at the latest by September 2001, and conflicting national standards shall be withdrawn at the latest by September 2001.

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.

Introduction

This European Standard for organic coatings for steel wire is a number of parts; Part 1 covering the requirements of a general nature and applying also to coatings for which no specific requirements have been established in the subsequent parts of this standard.

The subsequent parts of this standard deal more specifically with clearly defined coatings or groups of coatings. These coatings may have their own particular methods of application and their individual requirements which are specified in these parts of this standard, in other standards or in manufacturers data sheets.

Because the standard specifies requirements and tests not only for the coating but also for the coating material, it has proved not practical to put all the requirements in one clause and all the tests in another one. Following structure has been chosen in order to limit complexity and to facilitate the use.

This standard is made up of the following parts :

Part 1 : General Rules

Part 2 : PVC coated wire

Part 3 : PE coated wire

Part 4: Polyester coated wire

In writing this series of standards consideration has been given to the nomenclature and transformation of organic coating materials as applied to steel wire products. These organic coating materials may on application to wire and by their integration into the finished wire product change their characteristics and properties.

This standard specifies characteristics and tests not only for the organic coating but also for the coating materials both before and after their application to steel wire and wire products. In addition it specifies the requirements for performance levels and testing methods on organic coating material which have become an integral and permanent part of the finished wire product. Therefore it has proven not to be practical to put all requirements in one clause and all the tests in another one.

To aid continuity and in order to limit complexity following structure has been chosen for this standard.

Clause 4 Deals with the characteristics and testing methods of organic coating material as supplied by the manufacturer for the purposes of its application to the wire product.

Tests described in this section are intended to be carried out by the organic coating material manufacturer or the applicator **before** the coating operation.

Clause 5 relates to the characteristics and testing methods for the "organic coating" when the organic coating material has been applied to and has become an integral part of the finished wire. Consequently tests are intended to be in the main carried out by the coating "applicators".

Clause 6 defines the performance requirements and testing methods on the "organic coating" of the finished wire product, and where this is not possible, tests will be carried out on "coated" panels.

1 Scope

Complementary to EN 10245-1, this Part of EN 10245 specifies the characteristics and requirements for steel wire and wire products coated with polyethylene, (PE).

2 Normative references

This European Standard incorporates by dated and undated reference, provisions from other publications. The 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 amndments).

EN 10021, *General technical delivery requirements for steel and iron products*

EN 10204, *Metallic materials — Inspection documents*

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

EN 10218-2, *Steel wire and wire products — General — Part 2: Wire dimensions and tolerances*

ISO 1133, *Plastics; determination of the melt mass-flowrate (MFR) and the melt volume flow rate (MVR) of thermoplastics*

ISO 2813, *Paints and varnishes — Determination of specular gloss of non metallic paint films at 20°, 60° and 85°*

ISO 3668, *Paints and varnishes — Visual comparison of the colour of paints*

ISO 4582, *Plastics - Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or laboratory light sources*

ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance*

ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon arc sources*

ASTM D1238, *Test method for the determination of flow rates of thermoplastics by extrusion, plastometer*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in EN 10245-1 and the following term and definition apply.

3.1
PE coating
a coating on steel wire or wire products made from organic coating material comprising a polymer base compound made up of at least 85 % ethylene (Ethene) which constitutes essentially the only monomer

4 Types of PE coating materials

Polyethylene coatings are classified into three types according to their density.

Type 1 - Low density (0,910 - 0,925 g/cm^3)

Type 2 - medium density (0,926 - 0,940 g/cm^3)

Type 3 - high density (0,941 - 0,965 g/cm^3)

5 Requirements and test methods for PE coating material

5.1 Requirements

5.1.1 The composition and method of application

The composition shall be agreed between manufacturer and the applicator and shall take account of the latter's method of application. However the PE coating material shall fulfil the requirements of this standard.

The processing of the PE coating material shall be at the manufacturer's discretion.

5.1.2 PE organic coating material consistency

The manufacturer shall ensure that the organic coating material composition and its characteristics remain constant from batch to batch and unchanged from that as agreed at the time of enquiry and order.

The manufacturer shall immediately notify the applicator of any subsequent change in the type and quantity of the constituent parts of the composition once this has been agreed between the two parties. At the request of the specifier/purchaser the presence of certain elements may be limited. In any case, the compound composition shall be cadmium free.

5.1.3 Density

The density at a temperature of 20 °C shall satisfy the values specified in clause 4 of this standard.

5.1.4 Melt flow index

Polyethylene is classified in one of the following categories defined in Table 1 on the basis of the determined melt flow index:

The melt flow index of the base material shall be 0,3 ± 0,1g/10 min. According to Table 1, the material is category 5, unless otherwise specified at the time of enquiry and order.

Table 1 — Classification according to the melt flow index

Category	Nominal melt flow index of the base material g/10min (at 190°C and 21,2 N load)
1	> 25
2	> 10 - 25
3	> 1,0 - 10
4	> 0,4 - 1,0
5	max 0,4

5.1.5 Tensile strength

Depending on the type of coating specified the minimum tensile strength shall satisfy the requirements of Table 2.

Table 2 — Tensile strength

Type of coating	Minimum tensile strength (MPa)
type 1	8,5
type 2	11,0
type 3	17,0

5.1.6 Elongation

The minimum elongation of the coating material shall be 800 %.

5.2 Test methods

5.2.1 General

Unless otherwise specified the test methods shall be in accordance with EN 10245-1.

5.2.2 Melt flow index

The melt flow index shall be determined in accordance with ISO 1133 condition E at 190 °C under a load of 21,2 N.

6 Requirements and test methods for PE coating on wire

6.1 Requirements

In addition to the general requirements of EN 10245-1, PE coatings shall satisfy following requirements.