NSAI Standards

Irish Standard
I.S. EN 10245-2:2011

Steel wire and wire products - Organic coatings on steel wire - Part 2: PVC finished wire

I.S. EN 10245-2:2011

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Stahldraht und Drahterzeugnisse - Organische Beschichtungen auf Stahldraht - Teil 2: PVC beschichteter Draht

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Foreword

This document (EN 10245-2:2011) has been prepared by Technical Committee ECISS/TC 106 “Wire rod and wires”, 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of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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 10245-2:2001.

This standard is made up of the following parts:

— *Part 1: General Rules*;

— *Part 2: PVC finished wire*;

— *Part 3: PE coated wire*;

— *Part 4: Polyester coated wire*;

— *Part 5: Polyamide coated wire*.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard for organic coatings for steel wire covers the requirements of a general nature and applies 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.

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, the 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 European Standard specifies the characteristics and requirements for steel wire and wire products coated with PVC.

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 10021, *General technical delivery conditions for steel products*

EN 10204, *Metallic products — Types of inspection documents*

EN 10245-1:2008, *Steel wire and wire products — Organic coatings on steel wire — Part 1: General rules*

EN ISO 527 (all parts), *Plastics — Determination of tensile properties*

EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003)*

EN ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pyknometer method and titration method (ISO 1183-1:2004)*

EN ISO 1183-2, *Plastics — Methods for determining the density of non-cellular plastics — Part 2: Density gradient column method (ISO 1183-2:2004)*

EN ISO 1183-3, *Plastics — Methods for determining the density of non-cellular plastics — Part 3: Gas pyknometer method (ISO 1183-3:1999)*

EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° (ISO 2813:1994, including Technical Corrigendum 1:1997)*

EN ISO 3668, *Paints and varnishes — Visual comparison of the colour of paints (ISO 3668:1998)*

EN ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance (ISO 4892-1:1999)*

EN ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2:2006)*

EN ISO 4892-3, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps (ISO 4892-3:2006)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10245-1:2008 and the following apply.

3.1
PVC coating
coating on wire and wire products made from organic coating material consisting primarily of vinylchloride homopolymer or copolymer obtained by various polymerisation process

NOTE The coating material may also contain plasticisers, pigments, stabilisers, lubricants and other substances. The coating material is in the form of powder or granules

4 Methods of application and classes of PVC coatings

The organic coating material shall be applied from granules by extrusion or from powders by the fluidised bed method or powder spraying.

PVC coatings are classified on the basis of their method of application: either by extrusion or by fluidised bed or powder spraying and on the basis of their degree of adherence to the base wire.

— **Class1a**: Wire with a PVC coating applied by direct extrusion onto the base wire. This process usually produces a non-adherent tube covering the wire.

— **Class1b**: Wire with PVC coating applied by extrusion and made to adhere to the base wire by the use of a primer which may be thermally cured or by the use of organic glues.

— **Class2a**: PVC powder material applied by thermal fusion or electrostatic spray which is adherent to the base wire.

— **Class2b**: Wire that has been pretreated with a primer, thermally cured and then covered with a PVC powder applied thermally or electrostatically to give an adherent coating.

5 Requirements and testing methods for the PVC coating material

5.1 Requirements

5.1.1 General

The requirements for the coating material are summarized in Table 1.

5.1.2 The PVC organic coating composition

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

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

5.1.3 PVC 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 ordering. The processing of the PVC coating material shall be at the manufacturer's discretion.

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 shall be cadmium free.

5.2 Test methods

The tests shall be performed in accordance with EN 10245-1 and Table 1 below.

Table 1 — Requirements and testing methods for PVC coating material

Characteristics	Requirements	Test methods
Density	≤ 1,5 g/cm^3	EN ISO 1183 Parts 1 to 3
Hardness (Shore)	Min. 38 Scales D	EN ISO 868
Tensile strength	Min. 17 MPa	EN ISO 527 (all parts)
Elongation	Min. 200 %	EN ISO 527 (all parts)

6 Requirement and test on the PVC coating on wire

6.1 Requirements

The coating requirements are summarized in Table 2.

6.2 Test methods

Unless otherwise specified in this Part 2 the test methods shall be in accordance with EN 10245-1.

An overview of the test methods is given in Table 2.

Table 2 — Requirements and testing methods for PVC coating on wire

Characteristics	Requirements		Test methods
Appearance	see EN 10245-1		Visual - With the naked eye
Colour	see product standard [a]		EN ISO 3668
Gloss	see product standard [a]		EN ISO 2813
Coating thickness	see product standard		EN 10245-1
Concentricity of the coating	60 % minimum		EN 10245-1
Adherence	PVC class 1b or 2b PVC class 2a	0 or 1 3 or 4	EN 10245-1
Performance after accelerated artificial light exposure [b]	See product standard [a]		EN ISO 4892-1 Xenon arc: EN ISO 4892-2 QUV (A) or QUV (B) light: EN ISO 4892-3

[a] In the absence of a product specification the requirements shall be agreed at the time of enquiry and order.

[b] ISO samples of material of PVC coating can be used as in Table 1.