



SLOVENSKI STANDARD

SIST EN 10245-1:2002

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Jeklena žica in žični izdelki - Organske prevleke na jekleni žici - 1. del: Splošna pravila

Steel wire and wire products - Organic coatings on steel wire - Part 1: General rules

Stahldraht und Drahterzeugnisse - Organische Beschichtungen auf Draht - Teil 1: Allgemeine Regeln

Fils et produits tréfilés en acier - Revêtements organiques sur fils d'acier - Partie 1: Principes généraux

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EUROPEAN STANDARD
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Steel wire and wire products - Organic coatings on steel wire - Part 1: General rules

Fils et produits tréfilés en acier - Revêtements organiques
sur fils d'acier - Partie 1: Principes généraux

Stahldraht und Drahterzeugnisse - Organische
Beschichtungen auf Draht - Teil 1: Allgemeine Regeln

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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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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of an identical text or by endorsement, at the latest by September 2001, and conflicting national standards shall be withdrawn at the latest by September 2001.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.

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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.

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

This part of EN 10245 specifies the requirements for the characteristics and testing methods for organic coatings made of organic coating material suitable for the application on to steel wire and wire products of circular or other sections.

Other organic materials which are applied intentionally or otherwise such as oils, greases, waxes and temporary finishes which do not become integral or a permanent part of the finished wire product are excluded from this standard

This standard EN 10245 is in a number of parts, Part 1 covering the requirements of a general nature and applies to organic coatings and coating material for which no specific requirements have been established in the subsequent parts of EN 10245.

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 amendments).

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

[SIST EN 10245-1:2002](http://standards.iteh.ai/SIST/EN/10245-1/2002)

EN 10204, *Metallic materials - Inspection documents*

<http://standards.iteh.ai/standards/sist/64e0b942-d2df-4da2-9fac-b5dd43c62923/sist-en-10245-1-2002>

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 527-2, *Plastics — Determination of tensile test — Part 2: Test conditions for moulding and extrusion plastics*

ISO 527-3, *Plastics — Determination of tensile test — Part 3: Test conditions for films and sheets*

ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (shore hardness)*

ISO 1183, *Plastics — Methods of determining the density and relative density of non cellular plastics*

ISO 1512, *Paints and varnishes — Sampling of products in liquid or paste form*

ISO 2808, *Paints and varnishes — Determination of film thickness*

ISO 2809, *Paints and Varnishes — Determination of light fastness of paints for interior use*

ISO 2811, *Paints and varnishes — Determination of density*

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

ISO 3231, *Paints and varnishes — Determination of resistance to humid atmospheres containing sulphur dioxide*

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 artificial light*

ISO 4607, *Plastics — Methods of exposure to natural weathering*

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*

ISO 4892-3, *Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps*

ISO 6270, *Paints and varnishes — Determination of resistance to humidity (continuous condensation)*

ISO 6272, *Paints and varnishes — Falling weight test*

ISO 7724-2, *Paints and varnishes — Colorimetry — Part 2: Colour measurement*

ISO 7724-3, *Paints and varnishes — Colorimetry — Part 3: Calculations of colour measurements*

ISO 9227, *Corrosion test in artificial atmosphere. Salt spray test*

HD 22.2 S2, *Rubber insulated cables of rated voltages up to and including 450/750 V – Part 2: Test methods*

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HD 21.2 S2, *Polyvinyl chloride insulated cables of rated voltage up to and including 450/750 V – Part 2: test methods*

3 Terms and definitions

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

3.1

organic coating

the layer of organic coating material when deposited intentionally onto the wire/wire product substrate in a clearly specified manner. On becoming an integral part of the wire product the "organic coating" will impart specific functional and performance characteristics. The organic coating material may be applied directly to the surface of the steel wire or subsequent to a pre-treatment of the steel wire surface with a primary coating which can consist of inorganic or organic materials. For the purpose of this definition the steel wire/wire product may be coated with a non-ferrous metallic coating or not

3.2

organic coating material

a material made essentially of organic compounds capable of covering the steel wire surface after suitable preparation

The "organic coating materials" generally contain other matter such as pigments, fillers, plasticisers, lubricants and other additives which are specific to each organic coating material composition

The organic coating materials may be applied using a liquid solution containing organic products capable of covering the surface with the desired organic coating material

The organic coating material may also be applied in the solid form, e.g. powder or in the form of granules. A powder coating is generally applied by depositing the powder on the wire/wire product and then sintering by melting the powder onto the wire product. Granules are applied to a wire by feeding them into an extruder and extruding the "organic coating" onto the wire substrate.

Organic coating materials can be subdivided into several groups each having its own characteristic method of application

3.2.1

thermoplastics materials

materials having the specific property of softening when heated and hardening or solidifying when cooled. This process is reversible and allows a certain degree of recycling or reprocessing of the material

These materials include PVC, nylon, polyethylene, polypropylene and the copolymer vinyl ethylene acetate

These materials may be applied by one of the following methods: electrostatic spraying, fluidized bed or extrusion

3.2.2

thermosetting materials

materials having the property of changing into much more infusible and insoluble product when hot polymerized by methods such as radiation, catalysts, etc. Once polymerized and made insoluble they cannot be remelted. These materials include polyester and epoxy coatings. These materials are typically applied by electrostatic powder spray

3.2.3

plastisols/organosols

suspension of fine particles of inorganic materials such as resins, PVC, etc carried in an organic fluid or solvents. After immersion or spraying, exposure to heat causes the plastisol to melt to form a solid continuous flexible organic coating

3.2.4

paint

materials coloured with organic and sometimes inorganic components, dispersed in oils or water. They are applied in liquid form to the surface of the wire and after air drying they form a continuous adherent film on the wire. Application is by brush, roller or spray (electrostatic or atmospheric) or by immersion

3.2.5

varnish

generally organic materials which are transparent or coloured with an oil, resin and solvent base, which are then air dried. Application is the same as for paints (see 3.2.4)

3.2.6

lacquer

synthetic organic transparent or coloured coating which generally dries to form a film after evaporation of the solvent

3.3

test piece

as the definition in EN 10021

3.4**significant surface**

part of the total surface over which it shall be ensured that the "organic coating" complies with the specific requirements of the Standard

3.5**pre-treatment**

operation carried out on the wire/wire products before the final application of the organic coating material

3.6**shelf life**

the period which an organic coating material, securely packaged and stored according to the manufacturer's recommendations, may be kept from the time of manufacture to the actual use by the applicator and still retain the characteristics and properties as specified

3.7**meltflow index**

rate of extrusion of molten resins through a die of specified length and diameter under prescribed conditions of load and piston position in the barrel as the timed measurement is being made

3.8**manufacturer**

the organisation which manufactures the organic coating material

3.9**applicator**

the organisation which applies the organic coating material to the wire/wire product and transforms it into an organic coating which is an integral part of the finished wire product

3.10**specifier**

the organisation issuing a contract specifying the particular properties and performance requirements of a finished wire/wire products covered with an organic coating. The specifier is usually the purchaser of the finished wire product

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4 Requirements and testing methods for the organic coating material

Many characteristics of organic coating materials prove difficult to measure. This is why a good number of characteristics in this European Standard relate to requirements for organic coating materials as supplied by the manufacturer. The manufacturer's data sheet may supply many of these characteristics. They shall also give the necessary information for traceability of the materials.

4.1 Requirements

4.1.1 Composition

The manufacturer shall supply reference data for the qualification of the material. The organic coating material shall comply with the compositional characteristics specified at the time of the order. The specifications commonly include quantities and type of pigments, plasticizers, lubricants and other organic and inorganic materials agreed mutually.