
Jeklena žica in žični izdelki za ograje - 1. del: S cinkom ali cinkovimi zlitinami prevlečena bodeča žica

Steel wire and wire products for fences - Part 1: Zinc and zinc-alloy coated steel barbed wire

Stahldraht und Drahterzeugnisse für Zäune - Teil 1: Stacheldraht aus Stahl, mit Zink oder Zinklegierung überzogen

Fils et produits tréfilés en acier pour clôtures - Partie 1: Ronces en acier revetu de zinc ou d'alliage de zinc

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EUROPEAN STANDARD
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Descriptors: fences, wire, metal barbed wires, steels, galvanized materials, galvanizing, zinc alloys, design, manufacturing, dimensions, tensile strength, packing

English version

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Stacheldraht aus Stahl, mit Zink oder Zinklegierung
überzogen

This European Standard was approved by CEN on 22 June 1997.

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 Central Secretariat 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 Central Secretariat 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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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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of an identical text or by endorsement, at the latest by June 1998, and conflicting national standards shall be withdrawn at the latest by June 1998.

The Standard will comprise the following parts:

- Part 1: Zinc and zinc alloy coated steel barbed wire
- Part 2: Hexagonal steel wire netting for agricultural, insulation and fencing purposes
- Part 3: Hexagonal steel wire netting for engineering purposes
- Part 4: Steel wire welded mesh fencing
- Part 5: Steel wire woven hinged joint and knotted mesh fencing
- Part 6: Steel wire chain link fencing

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.

0 Introduction

There are many types of barbed wire. This standard specifies three types of barbed wire, conventional (C), reverse twist (RT) and barbed wire entanglement (BWE).

Drawings of typical conventional and reverse twist barbed wire are given for information in annex A, figures A.1 and A.2.

1 Scope

This European Standard specifies zinc coated and zinc alloy coated steel barbed wire, conventional and reverse twist consisting of two stranded line wires, around which the barbs are tightly wound, a twist being imparted between the barbs to restrict their movement. The barbed wire entanglement has a single line wire, around which the barbs are wound.

2 Normative references

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 EN only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 10021	General technical delivery conditions for iron and steel
EN 10204	Metallic products - Types of 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
prEN 10244-1	Steel wire and wire products - Non-ferrous metallic coatings on steel wire Part 1: General principles
prEN 10244-2	Steel wire and wire products - Non-ferrous metallic coatings on steel wire Part 2: Zinc or zinc alloy coatings on steel wire

3 Information to be supplied by the purchaser

The following information shall be supplied by the purchaser at the time of enquiry and order:

- a) The number of this European Standard.
- b) quantity;
- c) type of barbed wire;
- d) coating type;
- e) barb spacing;
- f) length on reels;
- g) in the case of barbed wire entanglement (BWE) the type of finish;
- h) whether uniformity of coating is to be measured;
- i) inspection documentation requirements
- j) agreed quality characteristics for testing (see clause 6).

4 Manufacture

4.1 Base metal

The base metal of the barbed wire shall be of a good commercial quality steel wire, having the properties specified in table 1.

4.2 Fabrication

4.2.1 General

The wire shall be zinc coated or zinc alloy coated to prEN 10244-2, before fabrication into barbed wire, except for barbed wire entanglement, which may be made from bright wire and suitably finish coated (other than zinc) as the final product.

4.2.2 *Conventional barbed wire (C)*

4.2.2.1 The conventional barbed wire shall be formed from two line wires complying with 4.1 and table 1, twisted together with an approximate lay of 50 mm. Typical barb spacing is $75 \text{ mm} \pm 7 \text{ mm}$, or $100 \text{ mm} \pm 10 \text{ mm}$ (or other spacing by agreement). Barb spacing shall be measured in accordance with 8.4.

4.2.2.2 The barbs shall be tightly wrapped round the two stranded line wires by a method that prevents slipping, to expose the four barbs at an angle of approximately 90° apart in a plane at right angles to the axis of the line wire (e.g. see figure 1). The barbs shall project a distance of $12,5 \text{ mm} \pm 3,5 \text{ mm}$ from the centreline of the wire and the barb ends shall be cut at an angle not greater than 35° to the axis of the barb.

4.2.3 *Reverse twist type (RT)*

4.2.3.1 The barbed wire shall be formed from two line wires complying with 4.1 and table 1, twisted together alternately with an approximate lay of 25 mm, typical barb spacing is $75 \text{ mm} \pm 7 \text{ mm}$, or $100 \text{ mm} \pm 10 \text{ mm}$ (or other spacing by agreement). Barb spacing shall be measured in accordance with 8.4.

4.2.3.2 The barbs shall be formed by tightly wrapping round the two stranded line wires to expose the four barbs in a fixed position at an angle of approximately 90° apart in a plane at right angles to the axis of the line wires. The barbs shall project a distance of $12,5 \text{ mm} \pm 3,5 \text{ mm}$ from the centreline of the wire and the barb ends shall be cut at an angle not greater than 35° to the axis of the barb.

4.2.3.3 The barbed wire shall not start to unwind until 75 % of the total nominal breaking load is applied. The unwinding of the barbed wire occurs when the stranded wires no longer extend under the influence of the applied load. The wires start to unravel in such a way that the number of twists of the wire around each other diminishes. This is noticeable in the stress-strain curve of the tensile test, where the first major drop in stress occurs. The tensile test shall be performed on a sample of two barb spacings.

4.2.4 *Barbed wire entanglement (BWE)*

4.2.4.1 The entanglement shall be formed from wire complying with 4.1 and table 1. The single line wire shall be crimped to an approximate pitch of 16 mm and approximate amplitude of 1 mm excluding the wire diameter.

4.2.4.2 The barbed wire shall be formed from one crimped line wire with four point barbs spaced at intervals between centres of $60 \text{ mm} \pm 15 \text{ mm}$. The barbs shall be formed by wrapping round the line wire approximately four turns to expose the barbs in a fixed position at an angle of approximately 90° apart in a plane at right angles to the axis of the line. The barbs shall project a distance of 15 mm to 20 mm from the centreline of the wire and the barb ends shall be cut at an angle not greater than 35° to the axis of the barb.

4.2.4.3 The barbed wire entanglement shall be supplied as a uniform cylindrical coil complying with (a) or (b) as follows:

- a) 68 turns approximately 1 m in diameter, with adjacent turns clipped together in a diamond pattern, the coil being capable of being extended to a length of 15 m;
- b) 32 turns $0,50 \text{ m} \pm 0,1 \text{ m}$ diameter, clipped together in a diamond pattern, the coil being capable of being extended to a length of 6 m.

4.2.4.4 Along the length of the coil adjacent turns in the coil shall be fastened together with five rows of clips made from austenitic stainless steel in the softened condition or galvanized steel. The rows of clips shall be spaced around the circumference of the coils at $72^\circ \pm 10^\circ$ intervals. The start and end of the coil shall also be fitted with two additional clips 50 mm apart to secure the ends of the coil.

The clips shall be completely closed round the two wires, but allowing sufficient movement to permit the formation of the concertina when the coil is extended, without the line wire being permanently deformed at the clips.

NOTE: If the entanglement is manufactured from bright wire a finish should be applied, such as bitumastic (by spraying or by dipping) to provide durability during weather.

4.3 Welding

Joining of individual wires by means of an electric butt weld is permitted provided such joints are 10 m apart and are made in a workmanlike manner. The weld area shall be suitably protected against corrosion.