International Standard

ISO 16650

Bead wire

Fil d'acier pour tringle

Second edition
2025-08

Reference number
ISO 16650:2025(en)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 17, *Steel wire rod and wire products*.

This second edition cancels and replaces the first edition (ISO 16650:2004), which has been technically revised.

The main changes are as follows:

— the terms and definitions clause (Clause 3) has been revised;

— super tensile strength has been added in Clause 4;

— the table of chemical composition (former Table 1) of steel has been deleted and subsequent tables have been renumbered;

— metallic coating (6.2) has been revised;

— cumar weight (6.3) has been added;

— the mechanical properties (6.4) has been revised;

— surface quality (6.5) has been revised;

— delivery conditions (6.6) has been revised;

— torsion test (6.4.3) has been revised;

— adhesion testing (Annex A) has been revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Bead wire

1 Scope

This document specifies the requirements and characteristics of round and flat wire used for strengthening the bead of all kinds of tyres.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 404, *Steel and steel products — General technical delivery requirements*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 7800, *Metallic materials — Wire — Simple torsion test*

ISO 10474, *Steel and steel products — Inspection documents*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
nominal diameter
d
diameter by which the wire is designated and specified by the purchaser

Note 1 to entry: The nominal diameter is expressed in millimetres.

Note 2 to entry: This is the basis on which the values of all relevant characteristics are determined for the acceptance of the wire.

3.2
out-of-roundness
absolute value of the arithmetic difference between the maximum and minimum diameter measured in the same transverse cross-section perpendicular to the wire axis

3.3
tensile strength
R_m
maximum force, F_m, that the test piece withstands divided by the original cross-sectional area, S_o

$$R_m = F_m / S_o$$

Note 1 to entry: The tensile strength is calculated based on the actual diameter of starting cross-sectional area.

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3.4
total elongation at fracture
percentage of the ratio of the arithmetic value of subtracting the original gauge length from the total length of the specimen at the time of fracture to the original gauge length

3.5
yield strength
tensile strength (3.3) corresponding to the 0,2 % proof strength, $Rp_{0,2}$

3.6
yield ratio
percentage of the *yield strength* (3.5) divided by the *tensile strength* (3.3)

4 Classification

Bead wire is supplied in three levels of tensile strength, designated as:

— NT normal tensile strength;

— HT high tensile strength;

— ST super tensile strength.

5 Designation and ordering

5.1 Designation

For products supplied in accordance with this document, the designation shall be stated in the following order:

— the term: “bead wire”;

— the coating: see 6.2;

— the number of this document, i.e. ISO 16650;

— the tensile strength grade;

— for round wire, the required nominal diameter.

For flat wire, the designation shall be stated in format of: “Bead wire” followed with “flat”, then “ISO 16650”, and ended with the dimension in the form of width × thickness, e.g. 3 × 1,5.

EXAMPLE Bronze-coated bead wire 1,295 mm high tensile strength in accordance with ISO 16650 is designated as follow:

Bead wire bronze-coated ISO 16650-HT-1,295

5.2 Information to be supplied by the purchaser

The purchaser shall clearly state in his enquiry or order the product and the following information:

— the desired quantity;

— the unit and type of delivery;

— the inspection document.

EXAMPLE

20 t bead wire bronze-coated ISO 16650-HT-1,295 on spools of ca.450 kg ISO 10474.1.B

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