

INTERNATIONAL STANDARD

**ISO
8457-2**

First edition
1989-09-01

Steel wire rod —

Part 2:

Quality requirements for unalloyed steel wire rods for
conversion to wire

Fil-machine en acier —

*Partie 2: Prescriptions de qualité pour fil-machine en acier non allié destiné à la
fabrication de fils*



Reference number
ISO 8457-2 : 1989 (E)



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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8457-2 was prepared by Technical Committee ISO/TC 17, *Steel*.

ISO 8457 consists of the following parts, under the general title *Steel wire rod*:

- *Part 1: Dimensions and tolerances*
- *Part 2: Quality requirements for unalloyed steel wire rods for conversion to wire*
- *Part 3: Quality requirements for wire rods for the manufacture of welding electrodes*

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International Organization for Standardization

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Printed in Switzerland

Steel wire rod —

Part 2:

Quality requirements for unalloyed steel wire rods for conversion to wire

1 Scope

1.1 This part of ISO 8457 specifies requirements for wire rods of unalloyed steel listed in table 1, of diameters 5 mm and over, and which are intended for conversion to wire by cold drawing or by cold rolling.

1.2 The wire rods may be of round, half-round, square, hexagonal or rectangular cross-section, the dimensions and tolerances of which are given in ISO 8457-1.

1.3 This part of ISO 8457 does not cover the following steel wire rods, some of which are covered by other International Standards:

- wire rod intended for cold heading (covered by ISO 4954 : 1979, *Steels for cold heading and cold extruding*);
- wire rod intended for the manufacture of welding electrodes (to be covered by ISO 8457-3¹⁾);
- wire rod intended for quenching and tempering or surface hardening.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8457. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8457 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 377 : 1985, *Wrought steel — Selection and preparation of samples and test pieces*.

ISO 404 : 1981, *Steel and steel products — General technical delivery requirements*.

ISO 3887 : 1976, *Steel, non-alloy and low-alloy — Determination of depth of decarburization*.

ISO 4948-2 : 1981, *Steels — Classification — Part 2: Classification of unalloyed and alloy steels according to main quality classes and main property or application characteristics*.

ISO 8457-1 : 1989, *Steel wire rod — Part 1: Dimensions and tolerances*.

3 Definition and designation

For the purposes of this part of ISO 8457, the following definition applies.

wire rod: A hot-rolled finished product hot wound into irregular coils primarily intended for wire drawing.

Designation

The designations of steel types as shown in table 1 are in accordance with ISO 4948-2, as follows:

1CDXX	Base steel
2CDXX	Quality steel
3CDXX	Special steel

In addition, suffixes A and B have been added to indicate steels with differing manganese ranges.

4 Ordering

4.1 General

The purchaser shall state in his enquiry and order:

- a) the nominal size (see ISO 8457-1);
- b) the designation of steel type (see table 1);
- c) the quantity ordered (in tonnes), tolerance on mass of consignment, and delivery instructions;
- d) coil mass, limitations on coil mass, and mass tolerance if required.

1) To be published.

4.2 Options

Certain options for grades 2CDXX and 3CDXX are permitted by this part of ISO 8457 and the purchaser may also state in his enquiry and order his requirements as shown below:

- a) whether a product analysis is required (see 5.2.2);
- b) special limitations on surface defect depth;
- c) whether a test for detection of surface defects is required and the test to be used (see 5.3.1 to 6.3);
- d) whether wire rod with a surface condition other than "hot-rolled, not surface treated", is required;
- e) depth of decarburization (see 5.3.3);
- f) limitation of non-metallic inclusion content (for grade 3CDXX only);
- g) the required type of test certification document (see 6.2).

5 Requirements

5.1 Manufacture of the steel

5.1.1 Unless otherwise agreed on the order, the process used in making the steel is left to the discretion of the manufacturer.

When he so requests, the user shall be informed what steel-making process is being used for the manufacture of quality and special steels.

5.2 Chemical composition

5.2.1 The chemical composition of the steel, as given by the cast analysis, shall be in accordance with the specifications in table 1.

5.2.2 The permissible deviations between the specified cast analysis and the product analysis shall be those specified in table 2.

5.3 Defects

5.3.1 The steel shall be free from pipe, harmful segregation, surface flaws and other defects detrimental to its further processing and end use.

NOTE — Normal segregation of rimming steel is allowable.

5.3.2 When agreed at the time of enquiry and order, rods in all grades (except 1CDXX grades), for special purposes and requiring special limitations on surface defect depth, shall be tested for maximum permissible depth of defect in accordance with 6.3.1. The maximum permissible defect depth shall be negotiated at the time of enquiry and order but the values given in table 3 may be used as a basis for negotiation.

5.3.3 When agreed at the time of enquiry and order, rods in grades 3CD45 and higher carbon shall be tested for the depth of decarburization in accordance with 6.3.3. The maximum

average permissible depth of decarburization shall be negotiated at the time of enquiry and order but the values given in table 4 may be used as a basis for negotiation.

5.3.4 When agreed at the time of enquiry and order, rods in grade 3CDXX shall be tested for limitation of non-metallic inclusion content. The limits of acceptance shall be negotiated at the time of enquiry and order.

6 Inspection and testing

6.1 General

6.1.1 If acceptance tests have been agreed, the general conditions of clause 5 of ISO 404 regarding inspection, testing and conformity of the product are valid, and furthermore, the conditions given in 6.2 and 6.3 shall be observed.

6.1.2 In the selection and preparation of samples and test pieces, the general conditions given in ISO 377 are valid, and furthermore, the conditions given in 6.2 and 6.3 shall be observed.

6.1.3 Samples shall be taken at least 300 mm from one of the ends of the coil. In cases of dispute, this distance shall be as indicated in table 5.

6.2 Inspection and testing procedures and types of documents

6.2.1 The inspection procedures and the types of documents of ISO 404 which may be agreed upon at the time of enquiry and order are summarized in table 6.

6.2.2 If agreed at the time of enquiry and order that a test report is to be provided, then this shall cover

- a) the statement that the material complies with the requirements of the order, and
- b) the results of the cast analysis for all elements specified for the steel supplied.

6.2.3 If agreed at the time of enquiry and order that an inspection certificate (IC or ICP) or an inspection report (IR) is to be provided (see table 6), then the specific inspections and tests described in 6.3 shall be carried out and their results shall be certified in the document.

In addition, the document shall cover

- a) the statement that the material complies with the requirements of the order, and
- b) the results of all specific inspections and tests agreed upon at the time of enquiry and order.

For grade 1CD8, the statement of compliance document (SC) can be supplied by agreement.