
Surface quality classes for hot-rolled bars and wire rod

Classes de qualité de surface des barres et fils-machine laminés à chaud

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 4, *Heat treatable and alloy steels*.

This second edition cancels and replaces the first edition (ISO 9443:1991), which has been technically revised.

The following changes have been made in comparison with the first edition:

- the surface quality classes 5 to 12 (12A) have been removed;
- the surface classes 1 to 4 have been kept and renamed A, B, D and E and an additional surface quality class has been introduced as surface quality class C;
- the difference between shallow and sharp discontinuities has been removed due to the impracticality to differentiate between the two;
- the admissible portion of defective material z_a and z_b has been removed and only z has been kept.

Surface quality classes for hot-rolled bars and wire rod

1 Scope

This document specifies technical delivery requirements for the surface quality of round bars, squares, hexagons and wire rod in the hot rolled condition with nominal dimensions d_N from 5 mm to 200 mm. This document is applicable to bright products and tool steels, if agreed at the time of enquiry and order between manufacturer and purchaser.

By agreement between manufacturer and purchaser, this document can also be applied to other special profiles.

This document is particularly applicable to steels for engineering and structural applications.

This document does not include any requirements for the permissible depth of surface decarburization.

NOTE The determination of depth of surface decarburization is presented in ISO 3887.

The material standards for steel bars and wire rod can exclude the application of one or other of the surface quality classes of this document. They can also cover requirements for surface quality which deviate from this document. In these cases the requirements of the material standard prevail.

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 6929, *Steel products — Vocabulary* [ISO 9443:2018](https://standards.iteh.ai/catalog/standards/iso/8d94175-4557-4b36-9c4f-e3fb661dale/iso-9443-2018)

<https://standards.iteh.ai/catalog/standards/iso/8d94175-4557-4b36-9c4f-e3fb661dale/iso-9443-2018>

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6929 and the following apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

delivery lot

quantity of steel of the same type and the same dimension ordered with the same requirements for the surface quality and delivered at the same time, unless otherwise specified in the order or appropriate product standard

3.2

discontinuity

geometric irregularity projecting inwards

3.3

imperfection

discontinuity (3.2) with a depth smaller than or equal to the specified limiting value which may be left without repair

3.4

defect

discontinuity (3.2) with a depth greater than the specified limiting value

3.5

portion z

maximum admissible portion of defective material in the *delivery lot* (3.1) in percentage of the delivered mass

4 Ordering and designation

4.1 Ordering

If the appropriate International Standard specifying the quality requirements for the material does not contain exact specifications for the required surface quality class and the admissible portion of defective material, the following details shall be given in the following order.

- a) The surface quality class (see [Table 1](#)) unless class A or default class.
- b) The maximum admissible portion z of defective material in the total delivery lot (for the default value see [Table 1](#), other values can be agreed at the time of enquiry and order).
- c) The type of verification, which is left to the producer if not specified at the time of enquiry and order.

NOTE A guideline for applying surface quality classes is given in [Annex A](#).

4.2 Designation

The required surface finish shall be designated according to [Table 1](#). Two examples are given of possible designations based on the sampling method specified by the purchaser (e.g. test plan, statistical process control, etc.).

EXAMPLE 1 For an agreed surface quality class B and a maximum admissible portion z of defective material of 1 % (default value) in the total delivery lot.

Surface quality ISO 9443 – class B

EXAMPLE 2 For an agreed surface quality class C and a maximum admissible portion z of defective material of 0,5 % in the total delivery lot.

Surface quality ISO 9443 – class C – z 0,5

5 Requirements

The surface quality shall comply with the requirements of surface quality classes defined in [Table 1](#) (see also [Figure 1](#)) and shall be specified or agreed in accordance with [4.1](#) and [4.2](#).

The handling of defective material should also be agreed upon at the time of enquiry and order; for example, whether it shall be sent back to the manufacturer or scrapped, etc. This also applies if the total delivery is accepted.

6 Testing

6.1 General

6.1.1 The manufacturer takes, under their own responsibility and according to their own judgement, suitable measures to supervise their production in view of the specified surface quality requirements.