
**Heat-treatable steels, alloy steels and
free-cutting steels —**

**Part 4:
Free-cutting steels**

*Aciers pour traitement thermique, aciers alliés et aciers pour
décolletage —*

Partie 4: Aciers pour décolletage

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Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Classification and designation	2
4.1 Classification	2
4.2 Designation	2
5 Information to be supplied by the purchaser	2
5.1 Mandatory information	2
5.2 Options/supplementary or special requirements	3
5.3 Ordering example	3
6 Manufacturing process	3
6.1 General	3
6.2 Heat treatment and surface condition at delivery	3
6.2.1 Normal condition at delivery	3
6.2.2 Particular heat-treatment condition	3
6.3 Traceability of the cast	3
7 Requirements	4
7.1 Chemical composition, hardness, and mechanical properties	4
7.1.1 General	4
7.1.2 Chemical composition	4
7.1.3 Mechanical properties	4
7.2 Machinability	4
7.3 Weldability	4
7.4 Grain size	4
7.5 Internal soundness	4
7.6 Surface quality	5
7.7 Shape, dimensions, and tolerances	5
8 Inspection	5
8.1 Testing procedures and types of documents	5
8.2 Frequency of testing	6
8.3 Specific inspection and testing	6
8.3.1 Verification of the hardness and mechanical properties	6
8.3.2 Visual and dimensional inspection	6
9 Test methods	6
9.1 Chemical analysis	6
9.2 Hardness and mechanical tests	6
9.2.1 Hardness	6
9.2.2 Mechanical tests	6
9.3 Retests	6
10 Marking	7
Annex A (normative) Ruling sections for mechanical properties	14
Annex B (normative) Supplementary or special requirements	17
Annex C (informative) Designation of steels given in this part of ISO 683 and of comparable grades covered in various designation systems	19
Annex D (informative) Dimensional standards applicable to products complying with this part of ISO 683	20
Bibliography	21

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 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.

The committee responsible for this document is ISO/TC 17, *Steel*, Subcommittee SC 4, *Heat treatable and alloy steels*.

This second edition cancels and replaces the first edition (ISO 683-4:2014), of which it constitutes a minor revision.

ISO 683 consists of the following parts, under the general title *Heat-treatable steels, alloy steels and free-cutting steels*:

- *Part 1: Non-alloy steels for quenching and tempering*
- *Part 2: Alloy steels for quenching and tempering*
- *Part 3: Case-hardening steels*
- *Part 4: Free-cutting steels*
- *Part 5: Nitriding steels*
- *Part 14: Hot-rolled steels for quenched and tempered springs*
- *Part 15: Valve steels for internal combustion engines*
- *Part 17: Ball and roller bearing steels*
- *Part 18: Bright steel products*

Heat-treatable steels, alloy steels and free-cutting steels —

Part 4: Free-cutting steels

1 Scope

This part of ISO 683 gives the technical delivery requirements for semi-finished products (e.g. blooms, billets, slabs), bars and wire rod, manufactured from the free-cutting steels listed in [Table 2](#) and supplied in one of the treatment conditions given for the different types of products in [Table 1](#), rows 2 to 4.

This part of ISO 683 covers three groups of free-cutting steels for mechanical purposes as listed in [Table 2](#), namely

- a) not intended for heat treatment,
- b) suitable for case-hardening, and
- c) suitable for quenching and tempering.

Free-cutting steels are often used as bright bars. For these products, refer to ISO 683-18.

In special cases, variations in these technical delivery requirements or additions to them can form the subject of an agreement at the time of enquiry and order (see [5.2](#) and [Annex B](#)).

In addition to this part of ISO 683, the general technical delivery requirements of ISO 404 are applicable.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 377, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing*

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

ISO 643, *Steels — Micrographic determination of the apparent grain size*

ISO 4885, *Ferrous products — Heat treatments — Vocabulary*

ISO 4948-1, *Steels — Classification — Part 1: Classification of steels into unalloyed and alloy steels based on chemical composition*

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

ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

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

ISO 6929, *Steel products — Vocabulary*

ISO 9443, *Heat-treatable and alloy steels — Surface quality classes for hot-rolled round bars and wire rods — Technical delivery conditions*