



BSI Standards Publication

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

Part 3: Case-hardening steels

This is a preview of "BS EN ISO 683-3:2022". [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN ISO 683-3:2022. It is identical to ISO 683-3:2022. It supersedes BS EN ISO 683-3:2019, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/105, Steels for Heat Treatment, Alloy Steels, Free-Cutting Steels and Stainless Steels.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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February 2022

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English Version

Heat-treatable steels, alloy steels and free-cutting steels - Part 3: Case-hardening steels (ISO 683-3:2022)

Aciers pour traitement thermique, aciers
alliés et aciers pour décolletage - Partie 3:
Aciers pour cémentation (ISO 683-3:2022)

Für eine Wärmebehandlung bestimmte
Stähle, legierte Stähle und Automatenstähle
- Teil 3: Einsatzstähle (ISO 683-3:2022)

This European Standard was approved by CEN on 18 January 2022.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN ISO 683-3:2022) has been prepared by Technical Committee ISO/TC 17 "Steel" in collaboration with Technical Committee CEN/TC 459/SC 5 "Steels for heat treatment, alloy steels, free-cutting steels and stainless steels" the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by August 2022, and conflicting national standards shall be withdrawn at the latest by August 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 683-3:2019.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 683-3:2022 has been approved by CEN as EN ISO 683-3:2022 without any modification.

The European steel numbers to the steel grades are to be found in informative Annex B.

The references to following European standards are given for information:

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Contents

	Page
Foreword	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Classification and designation	2
4.1 Classification.....	2
4.2 Designation.....	3
5 Information to be supplied by the purchaser	3
5.1 Mandatory information.....	3
5.2 Options and/or supplementary or special requirements.....	3
5.3 Ordering example.....	3
6 Manufacturing process	4
6.1 General.....	4
6.2 Deoxidation.....	4
6.3 Heat-treatment condition and surface condition at delivery.....	4
6.3.1 Normal condition at delivery.....	4
6.3.2 Particular heat-treatment condition.....	4
6.3.3 Particular surface conditions.....	4
6.4 Traceability of the cast.....	4
7 Requirements	4
7.1 Chemical composition, hardness and hardenability.....	4
7.1.1 General.....	4
7.1.2 Hardenability.....	5
7.1.3 Chemical composition.....	5
7.2 Machinability.....	5
7.3 Cold shearability.....	5
7.4 Grain size.....	5
7.5 Non-metallic inclusions.....	6
7.5.1 Microscopic inclusions.....	6
7.5.2 Macroscopic inclusions.....	6
7.6 Internal soundness.....	6
7.7 Surface condition.....	6
7.8 Shape, dimensions and tolerances.....	6
8 Inspection	7
8.1 Testing procedures and types of documents.....	7
8.2 Frequency of testing.....	7
8.3 Tests to be carried out for specific inspection.....	7
8.3.1 General.....	7
8.3.2 Visual and dimensional inspection.....	7
9 Test methods	8
9.1 Chemical analysis.....	8
9.2 Hardness and hardenability tests.....	8
9.2.1 Verification of hardness.....	8
9.2.2 Verification of hardenability.....	8
9.3 Retests.....	8
10 Marking	8
Annex A (normative) Supplementary or special requirements	31
Annex B (informative) Designation of steels given in this document and of comparable grades covered in various designation systems	33

This is a preview of "BS EN ISO 683-3:2022". [Click here to purchase the full version from the ANSI store.](#)

Annex C (informative) Classification of steel grades according to minimum tensile strength as a function of diameter after hardening and tempering at 200 °C	35
Bibliography	36

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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 of 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 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 fourth edition cancels and replaces the third edition (ISO 683-3:2019), which has been technically revised. The main changes are as follows:

- steel grades 23MnCrMo5-5-4 and 17NiCrMoS6-4 have been added;
- the lower silicon content in [Table 3](#) has been deleted and replaced by a new option in [Clause A.4](#).

A list of all parts in the ISO 683 series can be found on the ISO website.

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

Part 3: Case-hardening steels

1 Scope

This document specifies the technical delivery requirements for

- semi-finished products, hot formed (e.g. blooms, billets, slabs) (see NOTE 1),
- bars (see NOTE 1),
- wire rod,
- finished flat products, and
- hammer or drop forgings (see NOTE 1)

manufactured from the case-hardening non-alloy or alloy steels listed in [Table 3](#) and supplied in one of the heat-treatment conditions given for the different types of products in [Table 1](#) and in one of the surface conditions given in [Table 2](#).

The steels are, in general, intended for the manufacture of case-hardened machine parts.

NOTE 1 Hammer-forged semi-finished products (blooms, billets, slabs, etc.), seamless rolled rings and hammerforged bars are covered under semi-finished products or bars and not under the term “hammer and drop forgings”.

NOTE 2 For International Standards relating to steels conforming with the requirements for the chemical composition in [Table 3](#), however, supplied in other product forms or treatment conditions than given above or intended for special applications, and for other related International Standards, see the Bibliography.

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 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 642:1999, *Steel — Hardenability test by end quenching (Jominy test)*

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

ISO 4885, *Ferrous materials — 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*