

STN	Tepelne spracovateľné ocele, legované ocele a automatové ocele Časť 3: Ocele na cementovanie (ISO 683-3: 2019)	STN EN ISO 683-3 42 0931
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Heat-treatable steels, alloy steels and free-cutting steels - Part 3: Case-hardening steels (ISO 683-3:2019)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/19

Obsahuje: EN ISO 683-3:2019, ISO 683-3:2019

Oznámením tejto normy sa ruší
STN EN ISO 683-3 (42 0925) z decembra 2018

128836

EUROPEAN STANDARD

EN ISO 683-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2019

ICS 77.140.10; 77.140.20

Supersedes EN ISO 683-3:2018

English Version

Heat-treatable steels, alloy steels and free-cutting steels - Part 3: Case-hardening steels (ISO 683-3:2019)

Aciers pour traitement thermique, aciers alliés et
aciers pour décolletage - Partie 3: Aciers pour
cémentation (ISO 683-3:2019)

Für eine Wärmebehandlung bestimmte Stähle, legierte
Stähle und Automatenstähle - Teil 3: Einsatzstähle (ISO
683-3:2019)

This European Standard was approved by CEN on 17 December 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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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COMITÉ EUROPÉEN DE NORMALISATION
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 683-3:2019 (E)

Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 683-3:2019) 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 2019, and conflicting national standards shall be withdrawn at the latest by August 2019.

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 683-3:2018.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 683-3:2019 has been approved by CEN as EN ISO 683-3:2019 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:

EN 10017, *Steels rod for drawing and/or cold rolling – Dimensions and tolerances*

EN 10021, *General technical delivery conditions for steel products*

EN 10029, *Hot-rolled steel plates 3 mm thick or above – Tolerances on dimensions and shape*

EN 10048, *Hot-rolled narrow steel strip – Tolerances on dimensions and shape*

EN 10051, *Continuously hot-rolled strip and plate/sheet cut from wide strip of non.-alloy and alloy steels – Tolerances on dimensions and shape*

EN 10058, *Hot rolled flat steel bars and steel wide flats for general purposes – Dimensions and tolerances on shape and dimensions*

EN 10059, *Hot rolled square steel bars for general purposes – Dimensions and tolerances on shape and dimensions*

EN 10060, *Hot rolled round steel bars - Dimensions and tolerances on shape and dimensions*

EN 10061, *Hot rolled hexagon steel bars – Dimensions and tolerances on shape and dimensions*

EN 10160, *Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method)*

EN 10204, *Metallic products – Types of inspection documents*

EN 10308, *Non-destructive testing – Ultrasonic testing of steel bars*

INTERNATIONAL STANDARD

ISO 683-3

Third edition
2019-01

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

Part 3: Case-hardening steels

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

Partie 3: Aciers pour cémentation



Reference number
ISO 683-3:2019(E)

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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
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Published in Switzerland

Contents

Page

Foreword	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Classification and designation	3
4.1 Classification.....	3
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.....	4
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	5
7.1 Chemical composition, hardness and hardenability.....	5
7.1.1 General.....	5
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	7
9.1 Chemical analysis.....	7
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	30
Annex B (informative) Designation of steels given in this document and of comparable grades covered in various designation systems	32

ISO 683-3:2019(E)

Annex C (informative) Dimensional standards applicable to products complying with this document	34
Annex D (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

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 third edition cancels and replaces the second edition (ISO 683-3:2016), which has been technically revised. The main changes compared with the previous edition are as follows:

- in [Table 1](#), footnote ^a has been added;
- in [Table 3](#), footnote ^e has been changed.

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.

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 hammer-forged 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 complying 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.

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 A](#)).

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

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 683-3:2019(E)

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/TS 4949, *Steel names based on letter symbols*

ISO 4967, *Steel — Determination of content of non-metallic inclusions — Micrographic method using standard diagrams*

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

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*

ISO 6929, *Steel products — Vocabulary*

ISO 7788, *Steel — Surface finish of hot-rolled plates and wide flats — Delivery requirements*

ISO 9443, *Surface quality classes for hot-rolled bars and wire rod*

ISO/TR 9769, *Steel and iron — Review of available methods of analysis*

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

ISO 14284, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition*

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