

Heat-treated steels, alloy steels and free-cutting steels
- Part 17: Ball and roller bearing steels (ISO
683-17:2023)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN ISO 683-17:2023 sisaldab Euroopa standardi EN ISO 683-17:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.10.2023.</p> <p>Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN ISO 683-17:2023 consists of the English text of the European standard EN ISO 683-17:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 04.10.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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English Version

Heat-treated steels, alloy steels and free-cutting steels -
Part 17: Ball and roller bearing steels (ISO 683-17:2023)

Aciers pour traitement thermique, aciers alliés et
aciers pour décolletage - Partie 17: Aciers pour
roulements (ISO 683-17:2023)

Für eine Wärmebehandlung bestimmte Stähle, legierte
Stähle und Automatenstähle - Teil 17: Wälzlagerstähle
(ISO 683-17:2023)

This European Standard was approved by CEN on 5 September 2023.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

European foreword

This document (EN ISO 683-17:2023) 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of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

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 683-17:2014.

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, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 683-17:2023 has been approved by CEN as EN ISO 683-17:2023 without any modification.

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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 document 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).

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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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 459/SC 5, *Steels for heat treatment, alloy steels, free-cutting steels and stainless steels*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 683-17:2014), which has been technically revised.

The main changes are as follows:

- induction hardening steel 50CrMo4 and stainless steel X30CrMoN15-1 were added;
- requirements for Ca and Ti content have been added for through-hardening bearing steels;
- requirements for O content have been further restricted for through-hardening and induction-hardening bearing steels;
- option for H content for premium bearing steels has been added for through-hardening, case-hardening and induction-hardening bearing steels;
- option for verification of microscopic inclusions in [Table A.1](#) for through-hardening bearing steels has been revised.

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 17: Ball and roller bearing steels

1 Scope

This document specifies the technical delivery requirements for five groups of wrought ball and roller bearing steels as listed in [Table 3](#), namely

- through-hardening bearing steels (steels with about 1 % C and 1 % to 2 % Cr),
- case-hardening bearing steels,
- induction-hardening bearing steels (unalloyed and alloyed),
- stainless bearing steels, and
- high-temperature bearing steels.

This document is applicable to the products and heat-treatment conditions given in [Table 1](#) and the surface conditions given in [Table 2](#).

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

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

ISO 3763, *Wrought steels — Macroscopic methods for assessing the content of non-metallic inclusions*

ISO 3887, *Steels — Determination of the depth of decarburization*

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*

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

ISO 4969, *Steel — Etching method for macroscopic examination*

ISO 5949, *Tool steels and bearing steels — Micrographic method for assessing the distribution of carbides using reference photomicrographs*

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

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

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

ISO 23825, *Method for evaluating the nodularity of spheroidal carbides — Steels for cold heading and cold extruding*

ASTM A892, *Standard Guide for Defining and Rating the Microstructure of High Carbon Bearing Steels*

JIS G0555, *Microscopic testing method for the non-metallic inclusions in steel*

SEP 1520, *Microscopic examination of carbide structure in steels by means of diagram series*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 377, ISO 4885, ISO 4948-1, ISO 4948-2, ISO 6929, ISO 9443, ISO 14284 and the following terms and definitions apply.

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

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

3.1
ball and roller bearing steel
 steel for rings and/or rolling bodies which use balls and rollers to maintain the separation between the moving parts of the bearing

4 Classification and designation

4.1 Classification

The classification of the relevant steel grades is allocated in accordance with ISO 4948-1 and ISO 4948-2. All steel grades covered by this document are special steels.

4.2 Designation

For the steel grades covered by this document, the steel names given in the relevant tables are allocated in accordance with ISO/TS 4949.

NOTE Designation of steels covered by this document and of comparable grades covered in various other designation systems are given in [Annex B](#).