

Steel - Determination of the thickness of
surface-hardened layers (ISO 18203:2026)

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EESTI STANDARDI EESSÕNA

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EUROPEAN STANDARD

EN ISO 18203

NORME EUROPÉENNE

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English Version

Steel - Determination of the thickness of surface-hardened layers (ISO 18203:2026)

Acier - Détermination de l'épaisseur des couches durcies superficielles (ISO 18203:2026)

Stahl - Bestimmung der Dicke gehärteter Randschichten (ISO 18203:2026)

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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 18203:2026) has been prepared by Technical Committee ISO/TC 17 "Steel" in collaboration with Technical Committee CEN/TC 459/SC 1 "Test methods for steel (other than chemical analysis)" the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by August 2026, and conflicting national standards shall be withdrawn at the latest by August 2026.

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 18203:2022.

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Endorsement notice

The text of ISO 18203:2026 has been approved by CEN as EN ISO 18203:2026 without any modification.



**International
Standard**

ISO 18203

**Steel — Determination of the
thickness of surface-hardened
layers**

*Acier — Détermination de l'épaisseur des couches durcies
superficielles*

**Second edition
2026-01**

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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).

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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 7, *Methods of testing (other than mechanical tests and chemical analysis)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 459/SC 1, *Test methods for steel (other than chemical analysis)*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 18203:2016), which has been technically revised.

The main changes are as follows:

- removal of the reference to shot peening;
- removal of the compound layer thickness (CLT);
- introduction of standard test loads for the determination of hardness depths, and the procedure for measurements in the event of arbitration;
- extension of [Table 1](#) by Rockwell test methods;
- extension of [Table 2](#) by further abbreviations;
- precise definition of how the core hardness shall be tested;
- determination of the edge distance of the first hardness impression from the edge;
- explanation of how to determine the total thickness of surface hardening depth THD.

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.

Introduction

There are several ways of creating a surface-hardened layer in steel, but the measurement of its thickness follows the same principle, regardless of the chemical composition or heat treatment of the sample. This document presents the basic principle of determining the thickness of surface-hardened layers as well as the differences particular to the different methods of creating the surface-hardened layer.

No method of estimating uncertainty is presented in this document. As real applications of this procedure accrue, the need may arise to address this topic in future revisions.

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Steel — Determination of the thickness of surface-hardened layers

1 Scope

This document specifies a method of measuring the case hardening depth, surface hardening depth, nitriding hardness depth and total thickness of surface hardening depth obtained using, e.g. thermal (flame and induction hardening, electron beam hardening, laser beam hardening, etc.) or thermochemical (carbonitriding, carburizing and hardening, hardening and nitriding, etc.) treatment.

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 4545-2, *Metallic materials — Knoop hardness test — Part 2: Verification and calibration of testing machines*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

ISO 6507-2, *Metallic materials — Vickers hardness test — Part 2: Verification and calibration of testing machines*

3 Terms and definitions

For the purposes of this document, 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

case hardening depth

CHD

perpendicular distance between the surface and the layer having a hardness of 550 HV or equivalent Knoop hardness of 550 HK

Note 1 to entry: For steels which present a hardness higher than 450 HV at a distance three times of the case hardening depth (determined with a limiting hardness value of 550 HV in accordance with ISO 6507-1 or equivalent Knoop hardness of 550 HK in accordance with ISO 4545-1) from the surface, a limiting hardness value higher than 550 HV, in steps of 25 units, can be selected for the determination of the case hardening depth by agreement between interested parties.

Note 2 to entry: To measure the core hardness, five individual hardness measurements should be made, and the average value of these measurements should be taken. To determine the depth for the core hardness measurement, use three times the upper value of the case depth tolerance.

EXAMPLE CHD $1,0_{-0}^{+0,4}$ = depth for core hardness 4,2 mm. If this is not geometrically possible (e.g. in case the workpiece is too thin), separate agreements can be made to specify the core hardness check position. The core hardness is only determined once for several hardness curves and is taken for all hardness curves measured on the sample.