



SLOVENSKI STANDARD SIST EN ISO 6508-2:2015

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Kovinski materiali - Preskus trdote po Rockwellu - 2. del: Preverjanje in umerjanje naprav za preskušanje (ISO 6508-2:2015)

Metallic materials - Rockwell hardness test - Part 2: Verification and calibration of testing machines and indenters (ISO 6508-2:2015)

Metallische Werkstoffe - Härteprüfung nach Rockwell - Teil 2: Prüfung und Kalibrierung der Prüfmaschinen und Eindringkörper (ISO 6508-2:2015)

Matériaux métalliques - Essai de dureté Rockwell - Partie 2: Vérification et étalonnage des machines d'essai (ISO 6508-2:2015)

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Metallic materials - Rockwell hardness test - Part 2: Verification and calibration of testing machines and indenters (ISO 6508-2:2015)

Matériaux métalliques - Essai de dureté Rockwell - Partie 2: Vérification et étalonnage des machines d'essai et des pénétrateurs (ISO 6508-2:2015)

Metallische Werkstoffe - Härteprüfung nach Rockwell - Teil 2: Überprüfung und Kalibrierung der Prüfmaschinen und Eindringkörper (ISO 6508-2:2015)

This European Standard was approved by CEN on 10 January 2015.

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Foreword

This document (EN ISO 6508-2:2015) has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" in collaboration with Technical Committee ECISS/TC 101 "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of an identical text or by endorsement, at the latest by September 2015, and conflicting national standards shall be withdrawn at the latest by September 2015.

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

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INTERNATIONAL
STANDARD

ISO
6508-2

Third edition
2015-03-01

**Metallic materials — Rockwell
hardness test —**

**Part 2:
Verification and calibration of testing
machines and indenters**

iTeh STANDARD PREVIEW
*Matériaux métalliques — Essai de dureté Rockwell —
Partie 2: Vérification et étalonnage des machines d'essai et des
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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](http://www.iso.org/foreword)

The committee responsible for this document is ISO ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 3, *Hardness testing*.

This third edition cancels and replaces the first edition (ISO 6508-2:2005), which has been technically revised.

ISO 6508 consists of the following parts, under the general title *Metallic materials — Rockwell hardness test*:

- *Part 1: Test method*
- *Part 2: Verification and calibration of testing machines and Indenters*
- *Part 3: Calibration of reference blocks*

Metallic materials — Rockwell hardness test —

Part 2:

Verification and calibration of testing machines and indenters

1 Scope

This part of ISO 6508 specifies two separate methods of verification of testing machines (direct and indirect) for determining Rockwell hardness in accordance with ISO 6508-1:2015, together with a method for verifying Rockwell hardness indenters.

The direct verification method is used to determine whether the main parameters associated with the machine function, such as applied force, depth measurement, and testing cycle timing, fall within specified tolerances. The indirect verification method uses a number of calibrated reference hardness blocks to determine how well the machine can measure a material of known hardness.

The indirect method may be used on its own for periodic routine checking of the machine in service.

If a testing machine is also to be used for other methods of hardness testing, it shall be verified independently for each method.

This part of ISO 6508 is applicable to stationary and portable hardness testing machines.

Attention is drawn to the fact that the use of tungsten carbide composite for ball indenters is considered to be the standard type of Rockwell indenter ball. Steel indenter balls may continue to be used only when complying with ISO 6508-1:2015, Annex A.

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 376, *Metallic materials — Calibration of force-proving instruments used for the verification of uniaxial testing machines*

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

ISO 6508-1:2015, *Metallic materials — Rockwell hardness test — Part 1: Test method*

ISO 6508-3:2015, *Metallic materials — Rockwell hardness test — Part 3: Calibration of reference blocks*

3 General conditions

Before a Rockwell hardness testing machine is verified, the machine shall be checked to ensure that it is properly set up and operating in accordance with the manufacturer's instructions.

Especially, it should be checked that the test force can be applied and removed without shock, vibration, or overload and in such a manner that the readings are not influenced.

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4 Direct verification of the testing machine**4.1 General**

4.1.1 Direct verification involves calibration and verification of the following:

- a) test forces;
- b) depth-measuring system;
- c) testing cycle;
- d) machine hysteresis test.

4.1.2 Direct verification should be carried out at a temperature of (23 ± 5) °C. If the verification is made outside of this temperature range, this shall be reported in the verification report.

4.1.3 The instruments used for calibration shall be traceable to national standards.

4.1.4 An indirect verification according to [Clause 5](#) shall be performed following a successful direct verification.

4.2 Calibration and verification of the test force

4.2.1 Each preliminary test force, F_0 , (see [4.2.4](#)) and each total test force, F , used (see [4.2.5](#)) shall be measured, and, whenever applicable, this shall be done at not less than three positions of the plunger spaced throughout its range of movement during testing. The preliminary test force shall be held for at least 2 s.

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4.2.2 Three readings shall be taken for each force at each position of the plunger. Immediately before each reading is taken, the plunger shall be moved in the same direction as during testing.

4.2.3 The forces shall be measured by one of the following two methods:

- by means of a force-proving device according to ISO 376 class 1 or better and calibrated for reversibility;
- by balancing against a force, accurate to $\pm 0,2$ %, applied by means of calibrated masses or by another method having the same accuracy.

Evidence should be available to demonstrate that the output of the force-proving device does not vary by more than 0,2 % in the period 1 s to 30 s following a stepped change in force.

4.2.4 The tolerance on each measurement of the preliminary test force, F_0 , (before application and after removal of the additional test force, F_1) shall be $\pm 2,0$ %, see Formula (B.2) The range of all force measurements (highest value minus lowest value) shall be $\leq 1,5$ % of F_0 .

4.2.5 The tolerance on each measurement of the total test force, F , shall be $\pm 1,0$ %. The range of the force measurements (highest value minus lowest value) shall be $\leq 0,75$ % of F .

4.3 Calibration and verification of the depth-measuring system

4.3.1 The depth-measuring system shall be calibrated by making known incremental movements of the indenter or the indenter holder.