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Kovinski materiali – Preskus trdote po Rockwellu – 1. del: Preskusna metoda (skale A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)

Metallic materials - Rockwell hardness test - Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)

Metallische Werkstoffe - Härteprüfung nach Rockwell - Teil 1: Prüfverfahren (Skalen A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)

Matériaux métalliques - Essai de dureté Rockwell - Partie 1: Méthode d'essai (échelles A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)

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EUROPEAN STANDARD

NORME EUROPÉENNE

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Metallic materials - Rockwell hardness test - Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)

Matériaux métalliques - Essai de dureté Rockwell - Partie 1: Méthode d'essai (échelles A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)

Metallische Werkstoffe - Härteprüfung nach Rockwell - Teil 1: Prüfverfahren (Skalen A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)

This European Standard was approved by CEN on 14 December 2005.

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Foreword

This document (EN ISO 6508-1:2005) has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" in collaboration with Technical Committee ECISS/TC 1 "Steel - Mechanical testing", 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of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This document supersedes EN ISO 6508-1:1999.

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

Endorsement notice

The text of ISO 6508-1:2005 has been approved by CEN as EN ISO 6508-1:2005 without any modifications.

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INTERNATIONAL STANDARD

ISO 6508-1

Second edition
2005-12-15

Metallic materials — Rockwell hardness test —

Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)

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Matériaux métalliques — Essai de dureté Rockwell —
Partie 1: Méthode d'essai (échelles A, B, C, D, E, F, G, H, K, N, T)

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 6508-1 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 3, *Hardness testing*.

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This second edition cancels and replaces the first edition (ISO 6508-1:1999), which has been technically revised.

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

— *Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)*

— *Part 2: Verification and calibration of testing machines (scales A, B, C, D, E, F, G, H, K, N, T)*

— *Part 3: Calibration of reference blocks (scales A, B, C, D, E, F, G, H, K, N, T)*

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Introduction

The periodic checking of the testing machine described in informative Annex E is good metrological practice. It is intended to make the annex normative in the next revision of this part of ISO 6508.

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Metallic materials — Rockwell hardness test —

Part 1:
Test method (scales A, B, C, D, E, F, G, H, K, N, T)

1 Scope

This part of ISO 6508 specifies the method for Rockwell and Rockwell superficial hardness tests (scales and field of application according to Table 1) for metallic materials.

Attention is drawn to the fact that, in this part of ISO 6508, the use of hardmetal for ball indenters is considered to be the standard type of Rockwell indenter ball. Steel indenter balls may be continued to be used if specified in a product specification, or by special agreement.

NOTE 1 Attention is drawn to the fact that results obtained with hardmetal balls can be significantly different than when using a steel ball. For specific materials and/or products, other specific International Standards apply (for instance ISO 3738-1 and ISO 4498-1).

NOTE 2 For certain materials, the fields of application may be narrower than those indicated.

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2 Normative references

The following referenced documents are indispensable for the application 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 6508-2:2005, *Metallic materials — Rockwell hardness test — Part 2: Verification and calibration of testing machines (scales A, B, C, D, E, F, G, H, K, N, T)*

3 Principle

Forcing an indenter of specified size, shape and material into the surface of a test piece in two steps under specified conditions (see Clause 7). Measuring the permanent depth h of indentation under preliminary test force after removal of additional test force.

From the values of h and that of the two constants N and S (see Table 2), the Rockwell hardness is calculated according to the formula:

$$\text{Rockwell hardness} = N - \frac{h}{S} \quad (1)$$

4 Symbols, abbreviated terms and designations

4.1 See Tables 1 and 2 and Figure 1.

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Table 1 — Rockwell scales

Rockwell hardness scale	Hardness symbol	Type of indenter	Preliminary test force F_0	Additional test force F_1	Total test force F	Field of application (Rockwell hardness test)
A[a]	HRA	Diamond cone	98,07 N	490,3 N	588,4 N	20 HRA to 88 HRA
B[b]	HRB	Ball 1,587 5 mm	98,07 N	882,6 N	980,7 N	20 HRB to 100 HRB
C[c]	HRC	Diamond cone	98,07 N	1,373 kN	1,471 kN	20 HRC to 70 HRC
D	HRD	Diamond cone	98,07 N	882,6 N	980,7 N	40 HRD to 77 HRD
E	HRE	Ball 3,175 mm	98,07 N	882,6 N	980,7 N	70 HRE to 100 HRE
F	HRF	Ball 1,587 5 mm	98,07 N	490,3 N	588,4 N	60 HRF to 100 HRF
G	HRG	Ball 1,587 5 mm	98,07 N	1,373 kN	1,471 kN	30 HRG to 94 HRG
H	HRH	Ball 3,175 mm	98,07 N	490,3 N	588,4 N	80 HRH to 100 HRH
K	HRK	Ball 3,175 mm	98,07 N	1,373 kN	1,471 kN	40 HRK to 100 HRK
15N	HR15N	Diamond cone	29,42 N	117,7 N	147,1 N	70 HR15N to 94 HR15N
30N	HR30N	Diamond cone	29,42 N	264,8 N	294,2 N	42 HR30N to 86 HR30N
45N	HR45N	Diamond cone	29,42 N	411,9 N	441,3 N	20 HR45N to 77 HR45N
15T	HR15T	Ball 1,587 5 mm	29,42 N	117,7 N	147,1 N	67 HR15T to 93 HR15T
30T	HR30T	Ball 1,587 5 mm	29,42 N	264,8 N	294,2 N	29 HR30T to 82 HR30T
45T	HR45T	Ball 1,587 5 mm	29,42 N	411,9 N	441,3 N	10 HR45T to 72 HR45T

[a] The field of application can be extended to 94 HRA for testing carbides.

[b] The field of application can be extended to 10 HRBW if specified in the product specification or by special agreement.

[c] The field of application can be extended to 10 HRC if the indenter possesses the appropriate dimensions.

NOTE Indenter balls with diameter 6,350 mm and 12,70 mm may also be used, if specified in the product specification or by special agreement.

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