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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

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Replacing GB/T 230.1-2009

**Metallic materials - Rockwell hardness test -
Part 1: Test method**

金属材料 洛氏硬度试验 第 1 部分：试验方法
(ISO 6508-1:2016, MOD)

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Foreword

GB/T 230 “Metallic materials - Rockwell hardness test” is divided into the following 3 parts:

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

This Part is Part 1 of GB/T 230.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part replaces GB/T 230.1-2009 “Metallic materials - Rockwell hardness test - Part 1: Test method”. As compared with GB/T 230.1-2009, the main technical changes are as follows:

- Modify the material of the spherical standard Rockwell hardness indenter (see Clause 1; Clause 1 of the 2009 version);
- Modify the scope of use of ball indenters (see Clause 1, Note; Clause 1 of the 2009 version);
- Modify the applicable range of application of Rockwell hardness HRA and HRB (see Table 1; Table 1 of the 2009 version);
- Modify the provision that the application range of application of Rockwell Hardness HRC is extended to 10HRC (see Note to Table 1; Note to Table 1 of the 2009 version);
- Modify the duration of preliminary test force F_0 and of the additional test force F_1 (see 7.6 and 7.9; 7.3 and 7.5 of the 2009 version);
- Modify the distance between the centres of two adjacent indentations (see 7.13; 7.8 of the 2009 version);
- Delete the Rockwell hardness value rounding-off requirement [see 2009 version, Clause 9 d)];
- Delete the requirement for sample roughness (see 6.1 of the 2009 version);
- Modify the indenter used in the thin products HR30T_{Sm} and HR15T_{Sm} in Annex A (see Annex A, Note 1; Annex A, A.1 of the 2009 version);
- Annex C is changed from an informative annex to a normative annex. The

contents of Annex C Daily verification procedure have been modified (see Annex C; Annex E of the 2009 version);

- Annex D is changed from an informative annex to a normative annex (see Annex D; Annex F of the 2009 version);
- Modify the evaluation method for uncertainty of the measured hardness values in Annex G (see Annex G; Annex G of the 2009 version).

This Part uses redraft law to modify and adopt ISO 6508-1:2016 “Metallic materials - Rockwell hardness test - Part 1: Test method”.

Compared with ISO 6508-1:2016, the structure of this Part is basically the same. This Part, as compared with ISO 6508-1:2016, has technical differences. The clauses involved in these differences have been marked by a vertical single line (|) at the blank of the outer margin. The technical differences between this Part and ISO 6508-1:2016 and their reasons are as follows:

- About normative references, this Part has made adjustments with technical differences, to adapt to the technical conditions of China. The adjustments are reflected in Clause 2 “Normative references”, as follows:
 - Replace ISO 6508-2 with GB/T 230.2 which adopts the international standard by modification;
 - Replace ISO 6508-3 with GB/T 230.3 which adopts the international standard by modification;
 - ADD reference to JJG 112 (see Clause 5);
 - ADD reference to JJF 1059.1 (see Clause 8).

This Part also makes the following editorial changes:

- In Annex G, ADD Figure G.1 and the corresponding note;
- According to the order in which the annex appears in the standard, adjust the number of Annex C, Annex D, Annex E, and Annex F;
- Delete Annex H and Annex I of the international standard.

This Part was proposed by China Iron and Steel Association.

This Part shall be under the jurisdiction of National Technical Committee 183 on Steel of Standardization Administration of China (SAC/TC 183).

Drafting organizations of this Part: Central Iron & Steel Research Institute,

Metallic materials - Rockwell hardness test -

Part 1: Test method

1 Scope

This Part of GB/T 230 specifies the method for Rockwell regular and Rockwell superficial hardness tests for scales A, B, C, D, E, F, G, H, K, 15N, 30N, 45N, 15T, 30T, and 45T for metallic materials.

This Part is applicable to stationary and portable Rockwell hardness testing machines. For specific materials or products, other specific standards apply (for instance, GB/T 3849.1^[1] and GB/T 9097^[2]).

Note: 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 are allowed to continue to be used only when complying with Annex A.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the versions with the dates indicated are applicable to this document. For the undated references, the latest version (including all the amendments) are applicable to this document.

GB/T 230.2-2012 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) (GB/T 230.2-2012, ISO 6508-2:2005, MOD)

GB/T 230.3 Metallic materials - Rockwell hardness test - Part 3: Calibration of reference blocks (scales A, B, C, D, E, F, G, H, K, N, T) (GB/T 230.3-2012, ISO 6508-3:2005, MOD)

JJG 112 Verification Regulation of Metallic Rockwell Hardness Testing Machines (Scales A, B, C, D, E, F, G, H, K, N, T)

JJF 1059.1 Evaluation and Expression of Uncertainty in Measurement

3 Principle

An indenter of specified size, shape, and material is forced into the surface of a test specimen under two force levels using the specific conditions defined in

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