GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 25.160.40

CCS J 33

GB/T 27552-2021

Replacing GB/T 27552-2011

Destructive Tests on Welds in Metallic Materials - Microhardness Testing of Welded Joints

金属材料焊缝破坏性试验

焊接接头显微硬度试验

(ISO 9015-2:2016, Destructive Tests on Welds in Metallic Materials - Hardness Testing - Part 2: Microhardness Testing of Welded Joints, MOD)

Issued on: October 11, 2021 **Implemented on: May 1, 2022**

Issued by: State Administration for Market Regulation;

Standardization Administration of the People's Republic of China.

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Foreword

This document was drafted in accordance with the stipulations of GB/T 1.1-2020 *Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This document serves as a replacement of GB/T 27552-2011 *Destructive Tests on Welds in Metallic Materials - Microhardness Testing of Welded Joints*. In comparison with GB/T 27552-2011, apart from structural adjustments and editorial modifications, the main technical changes are as follows:

---The expression of "Scope" is modified (see Chapter 1; Chapter 1 of Version 2011);

---GB/T 4340.1 is used to replace ISO 6507-1 (see Chapter 2; Chapter 2 of Version 2011);

---The Chapter "Terms and Definitions" is added (see Chapter 3);

---"Principle" is modified into "General Rules"; the requirements for the test temperature are modified (see Chapter 5; Chapter 3 of Version 2011);

---The relevant description of HV 5 in Table 2 is deleted. Figure 2 is modified: the NOTE in the clause is modified into the main text (see 7.1; 6.1 of Version 2011);

---The description of rows of indentations (Type-R test) and individual indentations (Type-E test) is modified (see 7.1 and 7.2; 6.1 and 6.2 of Version 2011);

---The expression of test report is modified (see Chapter 9; Chapter 8 of Version 2011);

---The reference of GB/T 39082 is added (see Bibliography).

This document uses the re-drafting method in the modification and adoption of ISO 9015-2:2016 *Destructive Tests on Welds in Metallic Materials - Hardness Testing - Part 2: Microhardness Testing of Welded Joints*.

---The Chapter "Terms and Definitions" is added.

In comparison with ISO 9015-2:2016, the technical differences and the causes for these differences are as follows:

---GB/T 4340.1, which modifies and adopts the international standard, is used to replace ISO 6507-1;

---HV 5 in Table 2 is deleted to be consistent with the stipulations of the Scope;

---The position of *H* in Figure 2 is modified to be consistent with the description of the symbol *H* in Table 1.

Please be noted that certain content of this document may involve patents. The institution issuing this document does not undertake the responsibility of identifying these patents.

Destructive Tests on Welds in Metallic Materials - Microhardness Testing of Welded Joints

1 Scope

This document specifies the general rules, specimen preparation, test procedures, test results and test report of the microhardness testing of welded joints [the range of test force is generally: 0.98 N ~ < 49.03 N (HV 0.1 ~ < HV 5)] performed in accordance with GB/T 4340.1.

This document is applicable to the cross-sectional microhardness test of welded joints of metallic materials with a large hardness gradient.

NOTE: the hardness test shall ensure that the highest hardness and lowest hardness of the weld metal and the parent material on both sides (for dissimilar materials) can be measured.

This document is not applicable to the hardness test with the test force greater than or equal to 49.03 N as specified in GB/T 2654.

This document is not applicable to the Vickers hardness test of resistance spot, projection and seam welds as specified in GB/T 39082.

This document is not applicable to the hardness test of narrow welded joint specimens, such as: laser and electron beam, whose hardness test shall be performed in accordance with GB/T 35085.

2 Normative References

Through the normative references in this text, the contents of the following documents constitute indispensable clauses of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 4340.1 Metallic Materials - Vickers Hardness Test - Part 1: Test Method (GB/T 4340.1-2009, ISO 6507-1:2005, MOD)

3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

4 Symbols and Abbreviations

The following symbols and abbreviations are applicable to this document (see Table 1).

5 General Rules

The microhardness test shall comply with the requirements of GB/T 4340.1.

The microhardness test may be performed through the mode of rows of indentations (Type-R test) or individual indentations (Type-E test).

For welded joint types not included in the examples, test procedures applicable to the welded joint shall be selected.

The test is generally carried out at an ambient temperature of 10 °C ~ 35 °C. For tests with a rigorous temperature requirement, the test temperature shall be (23 ± 5) °C.

6 Specimen Preparation

The preparation of specimens shall comply with the requirements of GB/T 4340.1.

The cross-section of the test piece shall be prepared by machining and generally perpendicular to the axis of the weld.

The machining and subsequent specimen surface preparation shall be carried out with care, so as to ensure that the hardness of the tested surface is not affected by overheating or cold working.

The surface of the specimen shall be prepared and eroded in a reasonable mode, so as to accurately determine the indentation diagonal lengths in different areas of the welded joint.

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