



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 2650-2022

Destructive tests on welds in metallic materials - Impact tests

金属材料焊缝破坏性试验 冲击试验

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Foreword

This document was issued on 12 October 2022 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 12 October 2022.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 2650-2022 covers impact testing on welded butt joints in metallic materials, fusion welded and pressure welded alike - the general rules for taking the specimen, the sampling code, worked examples of that code, the test procedure, and the test report, with an informative appendix showing a typical report. Toughness in a weld is not one number: it changes between the weld metal, the fusion line and the heat-affected zone, and between the surface and the root, so a result carries no meaning unless the position and orientation of the notch are recorded with it. The general clause fixes how the specimen is taken, horizontally from the joint with its longitudinal axis perpendicular to the length of the weld, the notch position being located with the help of macroscopic etching. The sampling code then puts that geometry into a short string: letters for the specimen type, the location and the notch direction, and figures for the distance in millimetres between the notch and the

reference line. The test itself is carried out to GB/T 229, and the report carries the reference of this document alongside the requirements of that one. Written for welding engineers, procedure qualification bodies, and the laboratories that report weld impact results.

This Document specifies the sampling code, code example, test procedure and test report for

the impact test of welded butt joints.

This Document applies to impact tests of fusion welded and pressure welded joints of metallic

materials.

This Document is a supplement to GB/T 229, including the sampling code of butt joint specimens and additional reporting requirements.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates

indicated are applicable to this Document; for the undated documents, only the latest version

(including all the amendments) is applicable to this Document.

GB/T 229 Metallic materials - Charpy pendulum impact test method (GB/T 229-2020, ISO 148-1:2016, MOD)

3 Terms and Definitions

For the purposes of this Document, there are no terms and definitions apply.

4 General

The impact specimen shall be taken horizontally from the welded joint; and the longitudinal axis of the specimen is perpendicular to the length direction of the weld. The notch location can

be determined by macroscopic erosion.

The impact test shall be carried out according to the provisions of GB/T 229. The test temperature, sampling location, specimen type, specimen size and notch orientation shall

comply with the provisions of relevant application standards.

5 Sampling Code

5.1 Sampling code system

The sampling code system consists of letters indicating the specimen type, location and notch

direction, and numbers indicating the distance (in mm) between the notch and the reference line

RL. See Tables 1 and 2 for the sampling code representation method.

5.2 Characters

The sampling code consists of the following characters:

First character: Use "U" for Charpy U-notch; "V" for Charpy V-notch.

The second character: Use "W" to indicate that the notch is in the weld metal; at this time, the

reference line RL is the centerline of the weld on the specimen. Use "H" to indicate that the notch is in the heat-affected zone; and at this time the reference line RL is vertical line drawn

from the intersection of the longitudinal central axis and fusion line/pressure welding bonding

line to the surface of the base metal.

Third character: Use "S" to indicate that the notched face is parallel to the surface of the joint/test piece.

NOTE 1: The direction of the notched surface parallel to the surface of the joint/test piece is equivalent

to the meaning of "surface notch" in the fracture mechanical test.

Use "T" to indicate that the notched face is perpendicular to the surface of the joint/test piece

(the notch passes through the thickness of the joint/specimen).

The fourth character: Use "alpha" to indicate the distance from the axis of the notch to the reference

line (if the centerline of the notch is the centerline of the weld metal, record $\alpha=0$).

The fifth character: Use "b" to indicate the distance between the surface of the joint/test piece

and the surface of the nearest side of the specimen (if the surface of the specimen is the surface

of the joint, record b=0).

NOTE 2: For X-shaped, K-shaped or similar welds, the surface of the weld is the wider side of the weld

or the side where the welding starts.

5.3 Additional information

When the above sampling codes cannot fully describe the specimen location or the notch orientation, a schematic diagram prepared according to the welding procedure specification should be provided.

- 1 - notch axis;
- 2 - base metal;
- 3 - heat affected zone;
- 4 - fusion line;
- 5 - weld metal.

Figure 1 - Typical Sampling Code Example

7 Test Procedure

The specimens marked in this Document shall be tested according to the provisions of GB/T

229.

8 Test Report

In addition to the requirements specified in GB/T 229, the test report shall also include the following:

- a) The reference number of this Document: such as GB/T 2650-2022;
- b) Specimen sampling code;
- c) If any, give the type and size of the observed imperfections;
- d) If necessary, give a schematic diagram;