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# GB/T 26957-2022

Replacing GB/T 26957-2011

# Destructive Tests on Welds in Metallic Materials – Tensile Test on Cruciform and Lapped Joints

(ISO 9018:2015, MOD)

金属材料焊缝破坏性试验 十字接头和搭接接头拉伸试验方法

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**Standardization Administration of the People's Republic of China.**

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# Foreword

This document was drafted as per the rules specified in GB/T 1.1-2020 *Directives for Standardization – Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This Document replaced GB/T 26957-2011 *Destructive Tests on Welds in Metallic Materials - Tensile Test on Cruciform and Lapped Joints*. Compared with GB/T 26957-2011, the major technical changes of this Document are as follows besides the structural adjustments and editorial modifications:

--- Change the content of "Scope" (see Clause 1 of this Edition; Clause 1 of the 2011 Edition);

--- Change the normative reference GB/T 228 to GB/T 228.1; and delete GB/T 5185 (see Clause 2 of this Edition; Clause 2 of the 2011 Edition);

--- Add the Clause "Terms and Definitions" (see Clause 3 of this Edition);

--- Change "Symbols" to "Symbols and Abbreviations"; and change the unit of $R_m$ from $N/mm^2$ to MPa (see Clause 4 of this Edition; Clause 4 of the 2011 Edition);

--- Change the title of the Clause "Principle" to "General"; and change the detailed provisions (see Clause 5 of this Edition; Clause 3 of the 2011 Edition);

--- Change "Test Process" and "Test Result" to "Test Procedure"; and change related expressions (see Clause 7 of this Edition; Clauses 6 and 7 of the 2011 Edition);

--- Change the relevant expressions and temperature requirements in the "Test Report" (see Clause 8 of this Edition; Clause 8 of the 2011 Edition).

This Document modifies and adopts ISO 9018:2015 Destructive Tests on Welds in Metallic Materials – Tensile Test on Cruciform and Lapped Joints.

Compared with ISO 9018:2015, this Document made the following structural adjustments:

--- Add the Clause "Terms and Definitions";

--- Clause 4 corresponds to Clause 3 in ISO 9018:2015;

--- Clause 5 corresponds to Clause 4 in ISO 9018:2015;

--- Clause 6 corresponds to Clause 5 in ISO 9018:2015;

--- Clause 7 corresponds to Clause 6 in ISO 9018:2015;

--- Clause 8 corresponds to Clause 7 in ISO 9018:2015;

--- Clause 9 corresponds to Clause 8 in ISO 9018:2015.

# Destructive Tests on Welds in Metallic Materials – Tensile Test on Cruciform and Lapped Joints

## 1 Scope

This Document describes the test piece and specimen dimensions, test procedure and test report for tensile tests of fillet weld joints with transverse stress.

This Document applies to tensile tests of cruciform and lapped joints welded individually or in combination from metal sheet, sheet material, extruded profiles, or other solid profiles.

NOTE: This Document does not give information on the evaluation of test results.

## 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 228.1 Metallic materials - Tensile testing - Part 1: Method of test at room temperature (GB/T 228.1-2021, ISO 6892-1:2019, MOD)

## 3 Terms and Definitions

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

## 4 Symbols and Abbreviations

See Table 1 for the symbols and corresponding descriptions used in the tensile test; and see Figures 1 to 5 for the specific meanings of the symbols.

Unless otherwise specified, the room temperature test shall be carried out within the range of 10 ℃ ~ 35 ℃. For tests with strict temperature requirements, the test temperature shall be 23°C ± 5°C.

Unless otherwise specified, follow the general principles of GB/T 228.1.

# 6 Test Piece and Specimen

### 6.1 Test piece

The test piece shall be prepared and welded according to the relevant application standards and the provisions in Figures 2 and 4. The misalignment and angular deformation of the test piece should be kept to a minimum and recorded in the test report.

### 6.2 Specimen

#### 6.2.1 Dimension

The dimension of the specimen shall comply with the provisions in Figures 3 and 5. The axis of the weld shall be kept perpendicular to the longitudinal direction of the specimen.

#### 6.2.2 Marking

Each specimen shall be marked to identify its exact position in the test piece. If required by the relevant application standard, the direction of machining of the base metal (e.g., rolled or extruded) shall be marked.

### 6.3 Heat treatment and/or aging

Welded joints or specimens shall not be heat treated; except that the relevant application standards stipulate or allow the heat treatment of the welded joints to be tested. In this case, the heat treatment process parameters shall be recorded in the test report in details. For aluminum alloys that will undergo natural aging, the interval between welding and the start of the test shall be recorded.

### 6.4 Sampling

#### 6.4.1 General requirements

The mechanical processing method or thermal processing method used for sampling shall not have any influence on the performance of the specimen.

#### 6.4.2 Steel

It shall be processed by sawing or milling.

When the specimen is cut by thermal cutting or other cutting methods that may affect the

8):

--- Test temperature ($T$);

--- The surface of the fracture shall be inspected, and the defect situation (including type, size and quantity) shall be recorded. If a white spot occurs, its location shall be recorded and only the central area of the white spot shall be considered as a defect;

--- The width of the fracture surface shall be measured at several points, the distance between two adjacent measurement points is about $3\alpha$; and the average value of the width ($w_f$) of the fracture surface can be calculated (see Figure 1);

--- Tensile strength ($R_m$), calculated from the ratio of the maximum force ($F_m$) borne by the specimen during the test and the fracture area ($A_f$), the unit is megapascal (MPa).

If delamination occurs on the test plate, the test should be considered invalid.

# 8 Test Report

The test report shall include the following:

a) The number of this Document is GB/T 26957;

b) The test date;

c) The conditions of tester and testing agency;

d) The dimensions of the specimen before fracture ($\alpha_1$, $\alpha_2$, $\alpha_3$, $\alpha_4$, $t_1$, $t_2$, $t_3$, $b$);

e) Misalignment and angular deformation;

f) Fracture location;

g) Location, type, size and quantity of defects (see Clause 7 for provisions on white spots);

h) The mean value of the width of the fracture surface ($w_f$);

i) Tensile strength ($R_m$);

j) Test force per unit length ($F_m/b$);

k) Test temperature (when the test is not carried out at room temperature);

l) Heat treatment process parameters required according to relevant standard (see 6.3).

m) Appendix A gives an example of typical test report; and its format can refer to the provisions of Table A.1.

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