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

GB/T 10128-2026

Replacing GB/T 10128-2007

Metallic materials - Torsion test at ambient temperature

金属材料 室温扭转试验方法

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document replaces GB/T 10128-2007 "Metallic Materials - Test Method for Torsion at Room Temperature". Compared with GB/T 10128-2007, except for...

Aside from structural adjustments and editorial changes, the main technical changes are as follows.

---Added terms and definitions (see Chapter 3);

---Added examples of parameters and symbols for the torsion specimen in Figure 1 (see Figure 1 in Chapter 3);

---Added Figure 3, an example of a tubular specimen (see 6.1.2);

---The preparation of the sample has been added (see 6.1.3);

---Requirements have been added regarding the dimensional measurement deviations for cylindrical and tubular specimens (see Chapter 7);

--- An additional requirement has been added for the maximum relative error of torque (see 8.1.3);

---Formula (5) has been added (see Chapter 10);

---Added content on determining the elastic slope of the shear stress-shear strain curve (see 10.2);

---The numerical rounding requirements for performance results have been changed (see Chapter 11, Chapter 9 in the 2007 edition).

This document is modified to adopt ISO 18338:2021 "Metallic materials, torsion test at room temperature".

This document includes a new chapter on "Numerical Rounding of Performance Results".

The technical differences between this document and ISO 18338:2021, and the reasons therefor, are as follows.

---The presentation of the Psi angle has been modified (see Figure 1, Figure 1 of ISO 18338:2021) and the position of the inner diameter d_i arrow has been changed (Figure 3, Figure 3 of ISO 18338:2021), correcting editorial errors in the international standard;

---ISO 377 (see 6.1.3) has been replaced with the normatively referenced GB/T 2975 to adapt to my country's technical conditions and increase operability.

Actual nature;

---ISO 9513 has been replaced with the normatively referenced GB/T 12160 (see 8.2.5) to adapt to my country's technical conditions and increase operability.

Actual nature;

---References to GB/T 10623 (see Chapter 3), JJG269 (see 8.1.4), and GB/T 8170 (see Chapter 11) have been added to accommodate [the new standards/standards].

my country's technological conditions and increased operability;

---Added numerical rounding to the performance results in Chapter 11 (see Chapter 11) to enhance the operability of the standard.

The following editorial changes have been made to this document.

---Added a note on the plug diameter dimensions (see Figure 4).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Iron and Steel Association.

This document is under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC183).

1 Scope

This document specifies the principle, specimen, testing equipment, performance determination, rounding of performance values, and testing procedures for room temperature torsion testing of metallic materials.

Inspection report.

This document applies to the determination of the room temperature torsional mechanical properties of metallic materials.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 2975 Sampling location and specimen preparation for mechanical property testing of steel and steel products (GB/T 2975-2018, ISO 377.

2017, MOD)

GB/T 8170 Rules for rounding off numerical values and the representation and determination of limiting values GB/T 10623 Terminology for testing mechanical properties of metallic materials (GB/T 10623-2008, ISO 23718:2007, MOD) GB/T 12160 Calibration of extensometers for uniaxial testing of metallic materials (GB/T 12160-2019, ISO 9513:2012, IDT) JJG269 Torsion Testing Machine

3 Terms and Definitions

The terms and definitions defined in GB/T 10623 and the following terms and definitions apply to this document.

The length of the parallel portion of the specimen is measured using a torsion meter to determine the angle of torsion.

Torque

It generates or tends to generate a rotational or torsional torque.

maximum torque

For metallic materials exhibiting discontinuous yielding, the maximum torque that the specimen can withstand after the yielding stage.

Note: For metallic materials with no obvious yield (continuous yield), it is the maximum torque that the specimen withstands during the test.

Angle of twist

The relative rotation angle measured between two planes perpendicular to the longitudinal axis of the specimen along the gauge length.

Note: See Figure 1.