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

GB/T 7314-2017

**Metallic materials - Compression test method at room
temperature**

金属材料 室温压缩试验方法

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009. The standard instead of GB/T 7314-2005 "metal materials at room temperature compression test method", compared with GB/T 7314-2005 main technology The content changes as follows:

- modified the standard English name;
- Added GB/T 8653 and GB/T 10623 two normative references (see Chapter 2); - modified terms and definitions (see Chapter 3);
- modified the principle of the statement (see Chapter 4);
- modify the sample of the legend, unified use of the new roughness labeling method (see Figure 1, Figure 2, Figure 3, Figure 4); - modified test conditions (see Chapter 8); - the numerical correction interval of the performance determination results has been modified (see Chapter 10); - the removal of the uncertainty of the performance determination results (see Chapter 11 of.2005); - modified test results (see Chapter 11, Chapter 12 of.2005); - modified part of the test report (see Chapter 12, Chapter 13 of.2005); - Appendix A has been deleted (see Appendix A of.2005). This standard is proposed by China Iron and Steel Industry Association. This standard is under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC183). The drafting of this standard unit. Iron and Steel Research Institute, National University of Defense Technology, Metallurgical Industry Standard Information Research Institute. The drafters of this standard. Zhou Fenglan, Gao Yifei, Zheng Wenlong, Dong Li. This standard replaced the previous version of the standard release. GB/T 7314-1987, GB/T 7314-2005. Standard Test Method for Atmospheric Compression of Metallic Materials

1 Scope

China's national method for the room temperature compression testing of metallic materials. Compression is not simply tension reversed, and that is why it needs its own method. A ductile metal in compression does not fail - it flattens, barrelling as friction at the platens restrains the ends, so there is no fracture point and no ultimate strength in the

tensile sense; a brittle material, on the other hand, is far stronger in compression than in tension and fails by shear along an inclined plane. So the properties the test yields are different ones, and the specimen geometry has to be chosen against buckling, which is the parasitic failure mode that ruins a compression test if the specimen is too slender. The standard specifies the terms and definitions, principle, symbols, specimens, testing equipment, test conditions, determination of properties, correction of results, treatment of results and the test report, and covers specified plastic and total compressive strength, upper and lower compressive yield strength, compressive modulus and compressive strength.

This standard specifies the terms and definitions, principles, symbols and instructions for the testing of metallic materials at room temperature. Samples, test equipment, tests Condition, performance determination, performance determination results numerical correction, test results processing and test report. This standard applies to the determination of metal materials at room temperature, one-way compression of the specified plastic compression strength, the provisions of the total compressive strength, the upper compression yield Strength, compressive yield strength, compressive elastic modulus and compressive strength.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document. Representation and Judgment of Numerical Correction Rule and Limit Value of

GB/T 8170 Test terminology for mechanical properties of metallic materials GB/T Calibration of extensometers for uniaxial test GB/T

GB/T 16825.1 Tests for static uniaxial testing machines - Part 1. Tests for force measurement systems of tension and/or pressure testing machines calibration

3 Terms and definitions

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

3.1 Buckling buckling In addition to compression failure caused by compression, the following methods may also occur compression failure.

- a) due to non-axial force caused by the cylindrical specimen in its length of the elastic instability;
- b) Inelastic instability of the column specimen at its full length;
- c) elastic or inelastic local instability on small areas of plate specimens;

d) Twist or torsion failure occurs when the cross section of the specimen is rotated about its longitudinal axis. These types of failures are collectively referred to as buckling.

3.2 One-way compression singlecompression When the specimen is subjected to axial compression, the effect of bending is negligible, and the stress in the gauge is evenly distributed, and no buckling occurs during the test.

3.3 Sample original gauge gaugeoriginalgaugelength L

0 To measure the original length of the part of the specimen deformation, the length should not be less than the width or diameter.

3.4 Actual compression force realcompressionforce The force acting in the direction of the specimen axis during the compression process; the plate-like specimen, which is clamped in the restraint device, is the midpoint of the gauge