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

**GB/T 46551-2025**

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**Test method of solid rivets for aerospace**

航空航天用实心铆钉试验方法

**(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 is modified to adopt ISO 17057:1999 "Aerospace solid rivets - Test methods".

This document includes a new chapter on "Terms and Definitions".

The technical differences between this document and ISO 17057:1999, and the reasons therefor, are as follows.

---A description of double-cutting has been added to the scope (see Chapter 1) to maintain consistency with the rest of the text;

---ISO 7500-1:1999 (see 4.1.1) has been replaced with the normatively referenced GB/T 16825.1 to adapt to my country's technical conditions;

---The fixture hardness has been changed from 530HV30 to a hardness of not less than 52HRC (see 4.1.2) to maintain consistency with the technical requirements of current Chinese standards.

Consistent;

---The requirement that "the surface roughness Ra is not greater than 0.2  $\mu\text{m}$ " has been added (see 4.1.2), which is consistent with the technical requirements of the current Chinese standards.

The following editorial changes have been made to this document.

---The standard name has been changed to "Test Methods for Solid Rivets for Aerospace

Use";

---Formula numbering has been added and the explanations within the formulas have been standardized;

---The representation of the structure diagram 1 has been changed and all symbols appearing in Figure 1 have been indexed and explained;

---The dimensional requirements in Figure 1 of ISO 17057:1999 are now described in Table 1.

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 and is under the jurisdiction of the National Aircraft Standardization Technical Committee (SAC/TC435).

## 1 Scope

This document describes the double shear test method for solid rivets used in aerospace applications, including the test apparatus and test procedures.

This document applies to the double shear test of solid rivets for aerospace applications.

## 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 16825.1 Inspection and calibration of static uniaxial testing machines for metallic materials - Part 1: Tensile and/or compressive testing machines Inspection and calibration of force measurement systems (GB/T 16825.1-2022, ISO 7500-1:2018, IDT)

## 3 Terms and Definitions

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

### 4.1.1 Test Equipment

The accuracy of the testing equipment shall comply with the requirements of GB/T 16825.1, and the measurement range of the testing machine shall be of level 1.

The testing equipment shall be calibrated in accordance with the provisions of Appendix A.

#### 4.1.2 Test Fixture

The test fixture is made of high-strength steel with a hardness of not less than 52 HRC. The dimensions of the fixture shall conform to the specifications in Figure 1 and Table 1.

Steel bolts should be used to install the clamps.

The surfaces of the blade, shearing hole, and pad should be smooth, with a surface roughness Ra not exceeding 0.2  $\mu\text{m}$ .

#### 4.2 Test Procedure

##### 4.2.1

Place the rivet or rivet shank into the test fixture, making it contact the entire surface of the shear hole.

##### 4.2.2

Record the maximum load at the time of fracture.

Shear strength is calculated according to formula (1).

$R_s = 0.5$

$d^2a$

$\pi d^2a$

In the formula.

$R_s$  --- Shear strength, measured in megapascals (MPa);