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

GB/T 36611-2018

**Mechanical properties measurement -- Room temperature
tensile test of Ag-and/or Ag alloy-sheathed Bi-2223 and Bi-2212
composite superconductors**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to IEC 61788-18.2013

"Superconductivity Part 18. Mechanical properties measurement Ag and/or

Room Temperature Tensile Test Method for Ag Alloy Cover Bi-2223 and Bi-2212 Composite Superconductors.

The documents of our country that have a consistent correspondence with the international documents referenced in this standard are as follows.

--- GB/T 228.1-2010 tensile testing of metallic materials - Part 1. Test methods for room temperature (ISO 6892-1.2009,

MOD)

---GB/T 2900 (all parts) Electrotechnical terminology [IEC 60050 (all parts)]

---GB/T 12160-2002 Calibration of extensometers for single-axis tests (ISO 9513.1999, IDT)

---GB/T 13634-2008 Calibration of standard dynamometer for inspection of single-axis testing machine (ISO 376.2004, IDT)

GB/T 16825.1-2008 Inspection of static single-axis testing machines - Part 1 . Tensile and/or

Inspection and calibration (ISO 7500-1.2004, IDT)

This standard has made the following editorial changes.

--- To be consistent with the existing standard system, change the name of this standard to "Mechanical Properties Measurement Ag and/or Ag Alloy Cover Bi-

2223 and Bi-2212 composite superconductor room temperature tensile test method";

--- The original international standards of A.14 and B.5 are included in the reference, and their references in the text have also been adjusted accordingly.

Introduction

Several composite superconductors have been commercialized. Especially high temperature superconductors, such as Ag and/or Ag alloy covers Bi-2223 (Ag /

Bi-2223) Superconducting wire and Ag and/or Ag alloy sheathed Bi-2212 (Ag/Bi-2212) superconducting wire, which has been produced on an industrial scale. Commercial complex

The superconductor has a high current density and a small cross-sectional area, and is mainly used for building electrical devices and superconducting magnets. When building a magnet, complex

Miscellaneous stress/strain acts on the coil; when the magnet is excited, due to the high current density of the superconducting wire, a large electromagnetic force acts on the superconducting

on-line. Therefore, it is essential to determine the mechanical properties of the superconducting wire in the coil. Ag/Bi-2223 prepared by powder tube method (PIT)

The Ag/Bi-2212 composite superconducting wire is composed of a plurality of oxide cores and Ag and Ag alloys which are stable and supporting. This standard also

Suitable for external Ag/Bi-2223 and Ag/Bi-2212 composite superconductors strengthened with thin stainless steel or copper foil to carry large electromagnetic force.

Mechanical property measurement

Ag and/or Ag alloy covers Bi-2223 and Bi-2212

Composite superconductor room temperature tensile test method

1 Scope

This standard specifies the room temperature tensile test method for Ag/Bi-2223 and Ag/Bi-2212 composite superconductors.

This test method is used to measure the elastic modulus and determine the 0.2% specified plastic elongation.

When the 0.2% specified plastic elongation strength cannot be obtained due to premature

fracture of the material, the nominal strain to be measured is 0.05%,

The stress level at 0.1%, 0.15%, 0.2%, and 0.25%, and the strain interval is 0.05%.

The elastic limit, the breaking strength, the elongation after break and the fitted 0.2% specified plastic elongation are for reference only (see Appendix A).

A.4, A.5, A.6 and A.10).

This standard is applicable to the test of round or rectangular section samples with a cross-sectional area of 0.3mm²~2.0mm² (corresponding strip width)

2.0mm~5.0mm, thickness 0.16mm~0.4mm).

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 376 Metallic material uniaxial testing machine for calibration of standard dynamometers (Metalicmaterials-Calibrationof

Force-provinginstrumentsusedfortheverificationofuniaxialtestingmachines)

Metallic materials -- Tensile test for metallic materials - Part 1 . Test methods for room temperature (Metalicmaterials-Tensile

testing-Part 1. Methodoftestatroomtemperature)

Testing of static uniaxial testing machines for metallic materials - Part 1 . Tensile and/or

Inspection and calibration (Metalicmaterials-Verification of staticuniaxialtestingmachines-Part 1.Tension/

compressiontestingmachines-Verificationandcalibrationoftheforce-measuringsystem)

ISO 9513 Calibration of extensometers for uniaxial testing of metallic materials (Metalicmaterials-Calibrationofextensometer

Systemsusedinuniaxialtesting)

IEC 60050 (all parts) International electrotechnical vocabulary

3 Terms and definitions

The following terms and definitions, as defined by IEC 60050 (all parts) and ISO 6892-1, apply to this document.

3.1

Tensile stress

The tensile force at any point during the test is divided by the quotient of the original cross-sectional area of the specimen.

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