
Superprevodnost - 25. del: Merjenje mehanskih lastnosti - Natezni preskus pri sobni temperaturi na žicah REBCO (IEC 61788-25:2018)

Superconductivity - Part 25: Mechanical properties measurement - Room Temperature tensile test on REBCO wires (IEC 61788-25:2018)

Supraleitfähigkeit - Teil 25: Messung der mechanischen Eigenschaften - Messung der Zugfestigkeit von REBCO Supraleiterdrähten bei Raumtemperatur (IEC 61788-25:2018)

Supraconductivité - Partie 25: Mesure des propriétés mécaniques - Essai de traction à température ambiante des fils REBCO (IEC 61788-25:2018)

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Ta slovenski standard je istoveten z: EN IEC 61788-25:2018

ICS:

29.050	Superprevodnost in prevodni materiali	Superconductivity and conducting materials
29.060.10	Žice	Wires
77.040.10	Mehansko preskušanje kovin	Mechanical testing of metals

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EUROPEAN STANDARD

EN IEC 61788-25

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Superconductivity - Part 25: Mechanical properties measurement
- Room temperature tensile test on REBCO wires
(IEC 61788-25:2018)

Supraconductivité - Partie 25: Mesure des propriétés
mécaniques - Essai de traction à température ambiante des
fils REBCO
(IEC 61788-25:2018)

Supraleitfähigkeit - Teil 25: Messung der mechanischen
Eigenschaften - Messung der Zugfestigkeit von REBCO
Supraleiterdrähten bei Raumtemperatur
(IEC 61788-25:2018)

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European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 61788-25:2018 (E)**European foreword**

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The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-07-03
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IEC 61788-6:2011	NOTE	Harmonized as EN 61788-6:2011 (not modified)
IEC 61788-18:2013	NOTE	Harmonized as EN 61788-18:2013 (not modified)
IEC 61788-19:2013	NOTE	Harmonized as EN 61788-19:2014 (not modified)
IEC 61788-21:2015	NOTE	Harmonized as EN 61788-21:2015 (not modified)
ISO 6892-1	NOTE	Harmonized as EN ISO 6892-1

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 376	-	Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines	-	-
ISO 7500-1	-	Metallic materials - Calibration and verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Calibration and verification of the force-measuring system	EN ISO 7500-1-	
ISO 9513	-	Metallic materials - Calibration of extensometer systems used in uniaxial testing	EN ISO 9513 -	

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NORME INTERNATIONALE



Superconductivity – Mechanical properties measurement – Room temperature tensile test on REBCO wires

Supraconductivité – Mesure des propriétés mécaniques – Essai de traction à température ambiante des fils REBCO

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SUPERCONDUCTIVITY –

**Part 25: Mechanical properties measurement –
Room temperature tensile test on REBCO wires**

FOREWORD

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International Standard IEC 61788-25 has been prepared by IEC technical committee 90: Superconductivity.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
90/404/FDIS	90/411/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61788 series, published under the general title *Superconductivity*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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INTRODUCTION

Several types of composite superconductors have now been commercialized. The rare-earth-based oxide superconductor (SC) with chemical formula $\text{REBa}_2\text{Cu}_3\text{O}_7$ is used for practical SC wires, where the rare-earth element RE is typically Y, Dy, Gd, Nd, Ho or Sm, or a combination of two or more among them. This type of practical SC wire is usually called REBCO coated conductors. A typical architecture consists of a substrate of Ni-Cr-Mo based alloy, Ni-W alloy or stainless steel, a buffer layer consisting of a plurality of oxides, a SC layer and a protection layer of Ag. The substrate and buffer layer act as template to facilitate the well-oriented SC layer. In order to resist the large electromagnetic force, the wires are often externally reinforced by laminating thin stainless steel or Cu alloy foils. Commercial composite superconductors have a high current density and a small cross-sectional area. The major application of composite superconductors is to build electrical power devices and superconducting magnets. Complex stresses and strains are applied to the composite superconducting wires when devices are manufactured and energized. In the case of superconducting magnets, large electromagnetic forces are experienced by the windings due to the combination of high magnetic fields and high current density. It is therefore indispensable to determine the mechanical properties of the practical REBCO wires.

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