SLOVENSKI STANDARD
SIST EN IEC 61788-24:2018

01-november-2018

Superprevodnost - 24. del: Meritve kritičnega toka - Obdržani kritični tok po dvojnem upogibu posrebrenih Bi-2223 superprevodnih žic pri sobni temperaturi (IEC 61788-24:2018)

Superconductivity - Part 24: Critical current measurement - Retained critical current after double bending at room temperature of Ag-sheathed Bi-2223 superconducting wires (IEC 61788-24:2018)

Supraleitfähigkeit - Teil 24: Messung des kritischen Stroms - Verbleibender kritischer Strom nach Doppelbiegung bei Raumtemperatur in Ag-ummantelten Bi-2223 supraleitenden Drähten

Supraconductivité - Partie 24: Mesurage du courant critique - Courant critique retenu après double flexion à température ambiante des fils supraconducteurs Bi-2223 avec gaine Ag

Ta slovenski standard je istoveten z: **EN IEC 61788-24:2018**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
29.050	Superprevodnost in prevodni materiali	Superconductivity and conducting materials
29.060.10	Žice	Wires

SIST EN IEC 61788-24:2018 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61788-24

August 2018

ICS 29.050; 77.040.10; 17.220

English Version

Superconductivity - Part 24: Critical current measurement - Retained critical current after double bending at room temperature of Ag-sheathed Bi-2223 superconducting wires (IEC 61788-24:2018)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

European foreword

The text of document 90/402/FDIS, future edition 1 of IEC 61788-24, prepared by IEC/TC 90 "Superconductivity" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61788-24:2018.

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) 2019-04-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2021-07-23

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Endorsement notice

The text of the International Standard IEC 61788-24:2018 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61788-3	NOTE	Harmonized as EN 61788-3

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.

Publication	Year	Title	EN/HD	Year
IEC 60050-815	2015	International Electrotechnical Vocabulary Part 815: Superconductivity	-	-

IEC 61788-24

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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SUPERCONDUCTIVITY –

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FOREWORD

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International Standard IEC 61788-24 has been prepared by IEC technical committee 90: Superconductivity:

The text of this standard is based on the following documents:

FDIS	Report on voting
90/402/FDIS	90/406/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.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

In 1988, a new class of high critical temperature (T_c) copper oxide superconductors, Bi-Sr-Ca-Cu-O, was discovered. After nearly three decades, $(Bi,Pb)_2Sr_2Ca_2Cu_3O_x$ (Bi-2223) is now being utilized as a commercial high-T_c superconducting wire.

Superconducting wires are often subjected to bending deformation during production and application, e.g. during wire processing, magnet construction, cable fabrication, etc. The wire is bent towards both the upper and lower directions as it passes through several pulleys. These production processes are carried out at room temperature. Critical current of the wire is likely influenced through such bending, and may be accompanied by irreversible degradation in case of large deformation. The easiest way to evaluate the influence of bending on critical current is to carry out comparative measurement with the wire in the straight form before and after bending to a specific diameter.

After a wire is made into a coil or a cable, critical current is often measured under bending conditions or a more complex deformation state. In these cases, change in critical current may include both reversible and irreversible contributions depending on the amount of deformation. Irreversible degradation usually originates from a fracture in the superconducting component. In order to evaluate only irreversible contributions, measuring the retained critical current after the wire is straightened back from its deformed shape is necessary.

The critical bending diameter below which wire performance degrades significantly is typically specified for use of commercial superconducting wire. Thus, it is important to standardize measurement methods for the retained critical current after double bending. This document can be applied to other similar bending tests such as single bending, cyclic bending, etc.

This document consists of two fundamental technologies of the critical current measurement and the double bending process.