SLOVENSKI STANDARD

SIST EN 61788-10:2007

01-februar-2007

Nadomeġļa:

SIST EN 61788-10:2003

Superprevodnost - 10. del: Meritve kritiļne temperature - Merjenje kritiļne temperature kompozitnih superprevodnikov z metodo upornosti (IEC 61788-10:2006)

Superconductivity - Part 10: Critical temperature measurement - Critical temperature of composite superconductors by a resistance method

Supraleitfähigkeit - Teil 10: Messung der kritischen Temperatur - Kritische Temperatur von Verbundsupraleitern bestimmt durch ein Widerstandsmessverfahren

Supraconductivité - Partie 10: Mesure de la température critique - Température critique des composites supraconducteurs par une méthode par résistance

Ta slovenski standard je istoveten z: **EN 61788-10:2006**

ICS:

17.220.20

29.050

SIST EN 61788-10:2007 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61788-10

October 2006

ICS 29.050

Supersedes EN 61788-10:2002

English version

Superconductivity
Part 10: Critical temperature measurement - Critical temperature of composite superconductors by a resistance method
(IEC 61788-10:2006)

Supraconductivité
Partie 10: Mesure de la température critique -
Température critique
des composites supraconducteurs
par une méthode par résistance
(CEI 61788-10:2006)

Supraleitfähigkeit
Teil 10: Messung der kritischen Temperatur -
Kritische Temperatur
von Verbundsupraleitern bestimmt durch ein Widerstandsmessverfahren
(IEC 61788-10:2006)

This European Standard was approved by CENELEC on 2006-09-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61788-10:2006 E

Foreword

The text of document 90/191/FDIS, future edition 2 of IEC 61788-10, prepared by IEC TC 90, Superconductivity, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61788-10 on 2006-09-01.

This European Standard supersedes EN 61788-10:2002.

Modifications made in this EN 61788-10:2006 mostly increase covered composite superconductors in this standard, i.e. Cu/Nb_3Al and metal-sheathed MgB_2 composite superconductors and Yttrium- or rare-earth-based coated conductors are added. Furthermore, examples of technical change made are the base plate dimension and definition of the bending strain.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2007-06-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-09-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61788-10:2006 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-815	-[1)]	International Electrotechnical Vocabulary (IEV) Part 815: Superconductivity	-	-
IEC 61788-4	-[1)]	Superconductivity Part 4: Residual resistance ratio measurement - Residual resistance ratio of Nb-Ti composite superconductors	EN 61788-4	2001[2)]

[1)] Undated reference.

[2)] Valid edition at date of issue.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61788-10

Deuxième édition
Second edition
2006-08

Supraconductivité –

Partie 10:
Mesure de la température critique – Température critique des composites supraconducteurs par une méthode par résistance

Superconductivity –

Part 10:
Critical temperature measurement – Critical temperature of composite superconductors by a resistance method

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE N

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SUPERCONDUCTIVITY –

Part 10: Critical temperature measurement – Critical temperature of composite superconductors by a resistance method

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61788-10 has been prepared by IEC technical committee 90: Superconductivity.

This second edition cancels and replaces the first edition published in 2002. It constitutes a technical revision. Modifications made to the second edition mostly increase covered composite superconductors in this standard, i.e. Cu/Nb_3Al and metal-sheathed MgB_2 composite superconductors and Yttrium- or rare-earth-based coated conductors are added. Furthermore, examples of technical change made are the base plate dimension and definition of the bending strain.

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

FDIS	Report on voting
90/191/FDIS	90/194/RVD

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

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

A list of all parts of 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 publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

INTRODUCTION

In addition to critical current and critical field, critical temperature is an important, basic property of materials that exhibit superconductivity. Also, critical temperature is practically important in applications of superconductors, since the higher the critical temperature is, the larger is temperature margin and the lower the cooling power consumption. Thus, standardization of the measurement method of critical temperature is quite beneficial to conductor users and is urgently required.

There are a lot of test methods to measure the critical temperature of superconductors, including the resistance method, d.c. susceptibility methods using a SQUID magnetometer and VSM (vibrating-sample magnetometer), a.c. susceptibility methods, specific heat methods etc.

Test methods, other than the resistance method, may generally be more sensitive and informative compared to the resistance method and may be more appropriate for non-homogeneous materials or for thick films, thin films, bulks and powders, for which the resistance method is difficult to apply.

In this International Standard, however, the resistance measurement method is employed. This is because the resistance method is simpler and more reliable and can be applied to most of the composite superconductors in industrial use.

The outline of this standard was basically prepared by the Japan Fine Ceramics Association, a member institution of VAMAS (Versailles Project on Advanced Materials and Standards), TWA16 (Superconducting materials). The extensive revisions of the outline were primarily made by the New Materials Center supervised by the Japan National Committee and VAMAS.