SLOVENSKI STANDARD

SIST EN 61788-9:2005

december 2005

Superprevodnost – 9. del: Meritve volumskih lastnosti visokotemperaturnih superprevodnikov - Ujet magnetni pretok v oksidnih superprevodnikih z velikimi zrni (IEC 61788-9:2005)

Superconductivity – Part 9: Measurements for bulk high temperature superconductors – Trapped flux density of large grain oxide superconductors (IEC 61788-9:2005)

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61788-9

August 2005

ICS 17.220; 29.050

English version

Superconductivity
Part 9: Measurements for bulk high temperature superconductors - Trapped flux density of large grain oxide superconductors
(IEC 61788-9:2005)

Supraconductivité
Partie 9: Mesures pour supraconducteurs haute température massifs –
Densité de flux résiduel des oxydes supraconducteurs à gros grains
(CEI 61788-9:2005)

Supraleitfähigkeit
Teil 9: Messungen an massiven Hochtemperatursupraleitern -
Eingefrorene magnetische Flussdichte bei grobkörnigen oxidischen Supraleitern
(IEC 61788-9:2005)

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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

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Ref. No. EN 61788-9:2005 E

Foreword

The text of document 90/167/FDIS, future edition 1 of IEC 61788-9, prepared by IEC TC 90, Superconductivity, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61788-9 on 2005-06-01.

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)	2006-03-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2008-06-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61788-9:2005 was approved by CENELEC as a European Standard without any modification.

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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 Where 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	2000	International Electrotechnical Vocabulary (IEV) Chapter 815: Superconductivity	-	-

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NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI IEC 61788-9

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Supraconductivité –

Partie 9:
Mesures pour supraconducteurs haute température massifs –
Densité de flux résiduel des oxydes supraconducteurs à gros grains

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Superconductivity –

Part 9:
Measurements for bulk high temperature superconductors –
Trapped flux density of large grain oxide superconductors

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SUPERCONDUCTIVITY –

Part 9: Measurements for bulk high temperature superconductors – Trapped flux density of large grain oxide superconductors

FOREWORD

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International Standard IEC 61788-9 has been prepared by IEC technical committee 90: Superconductivity.

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

FDIS	Report on voting
90/167/FDIS	90/175/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.

IEC 61788 consists of the following parts, under the general title *Superconductivity*:

Part 1: Critical current measurement – DC critical current of Cu/Nb-Ti composite superconductors

Part 2: Critical current measurement – DC critical current of Nb_3Sn composite superconductors

Part 3: Critical current measurement – DC critical current of Ag-sheathed Bi-2212 and Bi-2223 oxide superconductors

Part 4: Residual resistance ratio measurement – Residual resistance ratio of Nb-Ti composite superconductors

Part 5: Matrix to superconductor volume ratio measurement – Copper to superconductor volume ratio of Cu/Nb-Ti composite superconductors

Part 6: Mechanical properties measurement – Room temperature tensile test of Cu/Nb-Ti composite superconductors

Part 7: Electronic characteristic measurements – Surface resistance of superconductors at microwave frequencies

Part 8: AC loss measurements – Total AC loss measurement of Cu/Nb-Ti composite superconducting wires exposed to a transverse alternating magnetic field by a pickup coil method

Part 9: Measurements for bulk high temperature superconductors – Trapped flux density of large grain oxide superconductors

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Part 10: Critical temperature measurement – Critical temperature of Nb-Ti, Nb_3Sn, and Bi-system oxide composite superconductors by a resistance method

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Part 11: Residual resistance ratio measurement – Residual resistance ratio of Nb_3Sn composite superconductors

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Part 12: Matrix to superconductor volume ratio measurement – Copper to non-copper volume ratio of Nb_3Sn composite superconducting wires

Part 13: AC loss measurements – Magnetometer methods for hysteresis loss in Cu/Nb-Ti multifilamentary composites

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

Large grain bulk high temperature superconductors (BHTSC) have significant potential for a variety of engineering applications, such as magnetic bearings, flywheel energy storage systems, load transports, levitation, and trapped flux density magnets. Large grain superconductors have already been brought to market worldwide.

For industrial applications of bulk superconductors, there are two important material properties. One is the magnetic levitation force, which determines the tolerable weight supported by a bulk superconductor. The other is the trapped flux density, which determines the maximum field that a bulk superconductor can generate. The users of bulk superconductors must know these values for the design of their devices. However, these values are strongly dependent on the testing method, and therefore it is critically important to set up an international standard for the determination of these values both for manufacturers and industrial users.

The test method covered in this standard is based on the VAMAS (Versailles Project on Advanced Materials and Standards) pre-standardization work on the properties of bulk high temperature superconductors.

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