Irish Standard
I.S. EN IEC 61788-26:2020

Superconductivity - Part 26: Critical current measurement - DC critical current of RE-Ba-Cu-O composite superconductors

I.S. EN IEC 61788-26:2020

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National Foreword

I.S. EN IEC 61788-26:2020 is the adopted Irish version of the European Document EN IEC 61788-26:2020, Superconductivity - Part 26: Critical current measurement - DC critical current of RE-Ba-Cu-O composite superconductors

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61788-26

August 2020

ICS 17.220.20; 19.080; 29.050

English Version

Superconductivity - Part 26: Critical current measurement - DC critical current of RE-Ba-Cu-O composite superconductors (IEC 61788-26:2020)

Supraconductivité - Partie 26: Mesurage du courant critique - Courant critique continu des composites supraconducteurs de RE-Ba-Cu-O (IEC 61788-26:2020)

Supraleitfähigkeit - Teil 26: Messung des kritischen Stroms - Kritischer DC-Strom von RE-Ba-Cu-O Komposit Supraleitern (IEC 61788-26:2020)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 90/455/FDIS, future edition 1 of IEC 61788-26, prepared by IEC/TC 90 "Superconductivity" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61788-26:2020.

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) 2021-04-16
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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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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	-	International Electrotechnical Vocabulary - Part 815: Superconductivity	-	-

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IEC 61788-26

Edition 1.0 2020-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Superconductivity – Part 26: Critical current measurement – DC critical current of RE-Ba-Cu-O composite superconductors

Supraconductivité – Partie 26: Mesurage du courant critique – Courant critique continu des composites supraconducteurs de RE-Ba-Cu-O

IEC 61788-26:2020-06(en-fr)

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IEC 61788-26

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INTERNATIONAL STANDARD

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Superconductivity – Part 26: Critical current measurement – DC critical current of RE-Ba-Cu-O composite superconductors

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SUPERCONDUCTIVITY –

Part 26: Critical current measurement – DC critical current of RE-Ba-Cu-O composite superconductors

FOREWORD

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International Standard IEC 61788-26 has been prepared by IEC technical committee 90: Superconductivity.

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

FDIS	Report on voting
90/455/FDIS	90/458/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 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 publication will remain unchanged until the stability 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 1986, superconductivity in some perovskite type materials containing copper oxides at temperatures far above the critical temperatures of metallic superconductors was discovered. In 1987, it was discovered that Y-Ba-Cu-O (YBCO) has a critical temperature (T_c) of 93 K. After a quarter century, the RE-Ba-Cu-O (REBCO, RE = rare earth) superconductors became commercially available.

In 2013, VAMAS-TWA 16 started working on the critical current measurement methods in REBCO superconductors. In 2014, an international round robin test (RRT) on the critical current measurement method for REBCO superconductors was conducted that was led by VAMAS-TWA 16. 10 institutions/universities/industries from five countries participated. The pre-standardization work of VAMAS was taken as a base for this document, on the DC critical current test method of REBCO composite superconductors.

The test method covered in this document is intended to give an appropriate and accepted technical base to engineers working in the field of superconductivity technology.

SUPERCONDUCTIVITY –

Part 26: Critical current measurement – DC critical current of RE-Ba-Cu-O composite superconductors

1 Scope

This part of IEC 61788 specifies a test method for determining the DC critical current of short RE (rare earth)-Ba-Cu-O (REBCO) composite superconductor specimens that have a shape of straight flat tape. This document applies to test specimens shorter than 300 mm and having a rectangular cross section with an area of 0,03 mm^2 to 7,2 mm^2, which corresponds to tapes with width ranging from 1,0 mm to 12,0 mm and thickness from 0,03 mm to 0,6 mm.

This method is intended for use with superconductor specimens that have critical current less than 300 A and n-values larger than 5 under standard test conditions: the test specimen is immersed in liquid nitrogen bath at ambient pressure without external magnetic field during the testing. Deviations from this test method that are allowed for routine tests and other specific restrictions are given in this document.

2 Normative references

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.

IEC 60050-815, *International Electrotechnical Vocabulary (IEV) – Part 815: Superconductivity*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-815 and the following apply.

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- IEC Electropedia: available at http://www.electropedia.org/
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3.1
constant sweep rate method
U-I data acquisition method where a current is swept at a constant rate from zero to a current above I_c, and where the U-I data are acquired continuously or frequently

3.2
ramp-and-hold method
U-I data acquisition method where a current is swept in stages from zero to a current above I_c, where the current is held for an appropriate amount of time at each stage, and where the U-I data are acquired continuously or frequently