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Irish Standard I.S. EN 60519-6:2011

Safety in electroheat installations --Part 6: Specifications for safety in industrial microwave heating equipment (IEC 60519-6:2011 (EQV))

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EUROPEAN STANDARD

EN 60519-6

NORME EUROPÉENNE EUROPÄISCHE NORM

April 2011

ICS 25.180.10

Supersedes EN 60519-6:2002

English version

Safety in electroheat installations -Part 6: Specifications for safety in industrial microwave heating equipment

(IEC 60519-6:2011)

Sécurité dans les installations électrothermiques -Partie 6: Spécifications pour les installations de chauffage industriel à hyperfréquences (CEI 60519-6:2011) Lichtbogenschweißeinrichtungen -Teil 6: Schweißstromquellen mit begrenzter Einschaltdauer (IEC 60519-6:2011)

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CENELEC

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

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EN 60519-6:2011

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Foreword

The text of document 27/704/CDV, future edition 3 of IEC 60519-6, prepared by IEC TC 27, Industrial electroheating, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60519-6 on 2011-03-03.

This European Standard supersedes EN 60519-6:2002.

The significant changes with respect to EN 60519-6:2002 are as follows:

- the third edition of EN 60519-1:2003 has been taken into account (the structure of clauses was adapted to it as far as practicable);
- some definitions are modified or brought into line with IEC 60050-841:2004;
- clauses on abnormal operation, access openings, microwave enclosure and barriers are added;
- the microwave leakage measurements are in a normative Annex A;
- an informative Annex B on the rationales for microwave exposure and leakage limits is added;
- Bibliography is added.

This part of EN 60519 is to be used in conjunction with EN 60519-1:2003. It is intended to specify particular requirements for industrial microwave heating equipment. This Part 6 supplements or modifies the corresponding clauses of EN 60519-1, so as to convert it into an EN standard. Where a particular sub-clause of Part 1 is not mentioned in this Part 6, that sub-clause applies as far as is reasonable. Where this standard states "addition", modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

NOTE Sub-clauses and notes which are additional to those in Part 2 are numbered starting from 101, additional items and annexes are lettered aa, bb or AA, BB, etc.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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)	2011-12-03
_	latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-03-03

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60519-6:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60335-2-25	NOTE	Harmonized as EN 60335-2-25.
IEC 60335-2-90	NOTE	Harmonized as EN 60335-2-90.
IEC 61010-2-010	NOTE	Harmonized as EN 61010-2-010.
IEC 62311:2007	NOTE	Harmonized as EN 62311:2008 (modified)

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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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	Year
IEC 60050-841	2004	International Electrotechnical Vocabulary (IEV) - Part 841: Industrial electroheat	-	-
IEC 60519-1	2003	Safety in electroheat installations - Part 1: General requirements	EN 60519-1 ¹⁾	2003
IEC 61307	-	Industrial microwave heating installations - Test methods for the determination of power output	EN 61307	-
IEC 60417-DB	-	Graphical symbols for use on equipment	-	-

 $^{^{1)}}$ EN 60519-1 is superseded by EN 60519-1:2011, which is based on IEC 60519-1:2010.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY IN ELECTROHEAT INSTALLATIONS -

Part 6: Specifications for safety in industrial microwave heating equipment

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 for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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- 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 60519-6 has been prepared by IEC technical committee 27: Industrial electroheating.

This third edition cancels and replaces the second edition published in 2002 and constitutes a technical revision. The significant changes with respect to the previous edition are as follows:

- the third edition of IEC 60519-1:2003 has been taken into account (the structure of clauses was adapted to it as far as practicable);
- some definitions are modified or brought into line with IEC 60050-841:2004;
- clauses on abnormal operation, access openings, microwave enclosure and barriers are added;
- the microwave leakage measurements are in a normative Annex A;
- an informative Annex B on the rationales for microwave exposure and leakage limits is added;
- Bibliography is added.

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This part of IEC 60519 is to be used in conjunction with IEC 60519-1:2003. It is intended to specify particular requirements for industrial microwave heating equipment. This Part 6 supplements or modifies the corresponding clauses of IEC 60519-1, so as to convert it into an IEC standard. Where a particular subclause of Part 1 is not mentioned in this Part 6, that subclause applies as far as is reasonable. Where this standard states "addition", modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

NOTE Subclauses and notes which are additional to those in Part 2 are numbered starting from 101, additional items and annexes are lettered aa, bb or AA, BB, etc.

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

CDV	Report on voting
27/704/CDV	27/752/RVC

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.

The list of all parts of the IEC 60519 series, under the general title *Safety in electroheat installations*, 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.

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INTRODUCTION

This edition of IEC 60519-6 contains updates and revisions of IEC 60519-6:2002, which was used over several years. It specifies safety requirements for industrial microwave heating equipment and installations specially designed for specific applications, unlike household, commercial and laboratory microwave appliances. Criteria for discrimination between these categories are dealt with in the scope.

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SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 6: Specifications for safety in industrial microwave heating equipment

1 Scope

This part of IEC 60519 is applicable to equipment using microwave energy alone or in combination with other kinds of energy for industrial heating of materials.

This part is applicable to industrial microwave heating equipment operating in the frequency range 300 MHz to 300 GHz.

NOTE 1 Since the wavelength of the high end of the microwave band at 300 GHz is very short and particular leakage measurement instrumentation is needed in the low end of the band, the microwave leakage specification in Annex A applies only for the ISM frequencies between 800 MHz and 6 GHz. The centre frequencies of these are 2,45 GHz and 5,8 GHz universally, and between 896 MHz and 918 MHz in some regions. For such microwave equipment IEC 62311 applies. For other microwave frequencies, the basic restriction as addressed in informative Annex B or the ICNIRP Guidelines (see Bibliography) may be used.

This part does not apply to appliances for household and similar use (covered by IEC 60335-2-25), commercial use (covered by IEC 60335-2-90) or laboratory use (covered by IEC 61010-2-010).

NOTE 2 Since microwave tunnel ovens and also some other types of microwave equipment may be either for commercial, laboratory or industrial use, the following criteria are suitable for determination of the classification as industrial equipment:

- commercial equipment is typically designed and planned for series production of many identical units, whereas
 industrial equipment is typically produced in small series or even as single units. The processed goods are
 consumed or ready for final use at the end of the heating process.
- laboratory heating equipment is for preparing material in a laboratory environment, and the processed material is immediately available for investigations or further processing. Regular production of large quantities of material is not foreseen.
- with industrial equipment, the processed goods are not immediately accessible to the end user, and the goods
 may additionally not be in a final state from the perspective of the end user.

2 Normative references

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.

IEC 60050-841:2004, International Electrotechnical Vocabulary – Part 841: Industrial electroheat

IEC 60417, Graphical symbols for use on equipment

IEC 60519-1:2003, Safety in electroheat installations – Part 1: General requirements

IEC 61307, Industrial microwave heating installations – Test methods for the determination of power output



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