SLOVENSKI STANDARD
SIST EN IEC 60519-6:2024

01-julij-2024

Varnost pri električnih grelnih inštalacijah in elektromagnetni obdelavi - 6. del: Posebne zahteve za visokofrekvenčno dielektrično in mikrovalovno segrevanje in procesno opremo (IEC 60519-6:2022)

Safety in installations for electroheating and electromagnetic processing - Part 6: Particular requirements for high frequency dielectric and microwave heating and processing equipment (IEC 60519-6:2022)

Sicherheit in Elektrowärmeanlagen - Teil 6: Sicherheitsanforderungen für industrielle Mikrowellen-Erwärmungseinrichtungen (IEC 60519-6:2022)

Sécurité dans les installations destinées au traitement électrothermique et électromagnétique - Partie 6: Exigences particulières pour les équipements de chauffage et de traitement diélectriques à hautes fréquences et à hyperfréquences (IEC 60519-6:2022)

Ta slovenski standard je istoveten z: **EN IEC 60519-6:2024**

ICS:

25.180.10	Električne peči	Electric furnaces

SIST EN IEC 60519-6:2024 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60519-6

May 2024

ICS 25.180.10

Supersedes EN 60519-6:2011

English Version

Safety in installations for electroheating and electromagnetic processing - Part 6: Particular requirements for high frequency dielectric and microwave heating and processing equipment (IEC 60519-6:2022)

Sécurité dans les installations destinées au traitement électrothermique et électromagnétique - Partie 6: Exigences particulières pour les équipements de chauffage et de traitement diélectriques à hautes fréquences et à hyperfréquences
(IEC 60519-6:2022)

Sicherheit in Elektrowärmeanlagen und Anlagen für elektromagnetische Bearbeitungsprozesse - Teil 6: Besondere Anforderungen für kapazitive Hochfrequenz- und Mikrowellen-Erwärmungs- und Bearbeitungseinrichtungen
(IEC 60519-6:2022)

This European Standard was approved by CENELEC on 2024-04-03. 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.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

Ref. No. EN IEC 60519-6:2024 E

European foreword

The text of document 27/1142/FDIS, future edition 4 of IEC 60519-6, prepared by IEC/TC 27 "Industrial electroheating and electromagnetic processing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60519-6:2024.

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) 2025-01-03
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-04-03

This document supersedes EN 60519-6:2011 and all of its amendments and corrigenda (if any).

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

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60519-6:2022 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 standard indicated:

IEC 62311:2019	NOTE	Approved as EN IEC 62311:2020 (not modified)
IEC 60335-2-25:2020	NOTE	Approved as EN IEC 60335-2-25:2021 (not modified) + A11:2021
IEC 60335-2-90:2015	NOTE	Approved as EN IEC 60335-2-90:2021 (not modified)
IEC 60335-2-90:2015/A1:2019	NOTE	Approved as EN IEC 60335-2-90:2021/A1:2021 (not modified)
IEC 60335-2-110:2013	NOTE	Approved as EN IEC 60335-2-110:2021 (not modified)
IEC 60335-2-110:2013/A1:2019	NOTE	Approved as EN IEC 60335-2-110:2021/A1:2023 (not modified)
IEC 60519-3	NOTE	Approved as EN 60519-3
IEC 60601-2-2:2017	NOTE	Approved as EN IEC 60601-2-2:2018 (not modified)
IEC 61010-2-010:2019	NOTE	Approved as EN IEC 61010-2-010:2020 (not modified)
IEC 61307:2011	NOTE	Approved as EN 61307:2011 (not modified)
IEC 61308:2005	NOTE	Approved as EN 61308:2006 (not modified)

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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEEE/ANSI C95.1	2019	IEEE standard for safety levels with respect to human exposure to electric, magnetic, and electromagnetic fields, 0 Hz to 300 GHz	-	-

IEC 60519-6

Edition 4.0 2022-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Safety in installations for electroheating and electromagnetic processing – Part 6: Particular requirements for high frequency dielectric and microwave heating and processing equipment

Sécurité dans les installations destinées au traitement électrothermique et électromagnétique – Partie 6: Exigences particulières pour les équipements de chauffage et de traitement diélectriques à hautes fréquences et à hyperfréquences

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 25.180.10

ISBN 978-2-8322-4203-2

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SAFETY IN INSTALLATIONS FOR ELECTROHEATING AND ELECTROMAGNETIC PROCESSING –

Part 6: Particular requirements for high frequency dielectric and microwave heating and processing 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 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.
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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.

IEC 60519-6 has been prepared by IEC technical committee 27: Industrial electroheating and electromagnetic processing. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2011.

This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the structure has been redrafted according to the IEC 60519-1:2020;
b) the scope and object have been redrafted;
c) the terms/definitions, normative references and bibliography have been updated and completed;

d) all requirements and content from IEC 60519-6:2011 which are included in IEC 60519-1:2020 were removed to avoid any duplication;

e) inclusion of high frequency equipment which was previously covered by IEC 60519-9:2005 (withdrawn). This edition constitutes an extension to high frequency equipment.

The text of this International Standard is based on the following documents:

Draft	Report on voting
27/1142/FDIS	27/1144/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60519 series, published under the general title *Safety in installations for electroheating and electromagnetic processing*, can be found on the IEC website.

The clauses of this part 6 of the IEC 60519 series (called Particular Requirements) supplement or modify the corresponding clauses of IEC 60519-1:2020 (*General Requirements*), hereinafter called Part 1.

In this standard, the following print types are used:

– requirements and definitions: in roman type;

– NOTES: in smaller roman type;

– terms defined in Clause 3 in this document and in Part 1 are in **bold type**, from Clause 1.

This part of IEC 60519 is to be read in conjunction with Part 1. It supplements or modifies the corresponding clauses of Part 1. Where the text indicates a “modification” of, “addition” to or a “replacement” of the relevant provision of Part 1, these changes shall be made to the relevant text of Part 1. Where no change is necessary, the words “This clause of Part 1 is applicable” are used. When a particular subclause of Part 1 is not mentioned in this part, that subclause applies as far as is reasonable. When a particular subclause of Part 1 is not applicable, the word “void” is used.

Additional specific provisions to those in Part 1, given as individual clauses or subclauses, are numbered starting from 101.

NOTE The following numbering system is used:

– subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;

– unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;

– additional annexes are lettered AA, BB, etc.

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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Some types of **electroheating equipment**, including the **workload**, can emit hazardous levels of infrared radiation. It has been agreed in the IEC Technical Committee 27 that IEC 60519-12 addresses these infrared radiation aspects for this document.

This document presumes that the **manufacturer** possesses sufficient knowledge in equipment design, manufacturing and documentation in accordance with good engineering practise, and that the installation or equipment is operated and maintained only by personnel consisting of **skilled** or **instructed persons**.

This document is intended to verify whether the installation or equipment meets the requirements of safety, by design, and numerical verification if carefully carried out, site acceptance tests, routine tests or inspection.

SAFETY IN INSTALLATIONS FOR ELECTROHEATING AND ELECTROMAGNETIC PROCESSING –

Part 6: Particular requirements for high frequency dielectric and microwave heating and processing equipment

1 Scope

This clause of Part 1 is modified by the following regarding the areas of application.

Modification:

This part of IEC 60519 is applicable to equipment using high frequency or microwave energy alone or in combination with other kinds of energy for industrial heating and processing of materials. It is also applicable to **HF** and **MW generators** made available to **users** as separate units.

This part is applicable to equipment operating in the frequency range 3 MHz to 300 GHz, with the following limitations.

– This document applies to only high frequency **dielectric heating** and **processing** as defined in 3.1.103. It does not apply to induction heating, which it is possible to carry out in the lower part of the specified frequency band and is covered by IEC 60519-3, with magnetic field safety aspects addressed in IEC TS 62997:2017, the latter to be replaced by a technical report (TR) or by a revised technical specification (TS).

– The ISM centre frequencies for **dielectric heating** and **processing** of industrial interest are narrow bands about 6,78 MHz, 13,56 MHz, 27,12 MHz and 40,68 MHz. Different field **emission** measurement procedures and limiting values are applicable, depending on the **processing frequency** in the high frequency range 3 to 300 MHz. Specifications are in Annex BB.

– This document specifies limits for microwave **emission** only for the ISM frequencies between 800 MHz and 6 MHz, as specified in Annex CC. For other microwave frequencies the **basic restriction** and IEC 62311 apply.

– The foundations for compliance with **emission** values **are** the **basic restrictions**, referred to in the IEEE/ANSI C95.1:2019 and Directive 2013/35/EU. However, maximum **HF processing frequency** electric and magnetic field values are taken from the IEEE/ANSI C95.1:2019 standard, as indicated in Annex BB.

– This document is not applicable to:

- appliances for household and similar use (covered by e.g. IEC 60335-2-25);
- commercial use (covered by IEC 60335-2-90 and IEC 60335-2-110);
- laboratory use (covered by IEC 61010-2-010);
- medical high frequency equipment and accessories (covered by IEC 60601-2-2).

NOTE 101 Since high frequency and microwave tunnel ovens and also some other types of microwave and high frequency equipment are sometimes intended 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.