
Varnost pri električnih grelnih inštalacijah - 2. del: Posebne zahteve za inštalacije za opremo uporovnega segrevanja (IEC 60519-2:2006)

(istoveten EN 60519-2:2006)

Safety in electroheat installations - Part 2: Particular requirements for resistance heating equipment (IEC 60519-2:2006)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 60519-2:2007](https://standards.iteh.ai/catalog/standards/sist/a4d7db0c-6da0-4f89-abee-bd727157ba6c/sist-en-60519-2-2007)

<https://standards.iteh.ai/catalog/standards/sist/a4d7db0c-6da0-4f89-abee-bd727157ba6c/sist-en-60519-2-2007>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60519-2:2007

<https://standards.iteh.ai/catalog/standards/sist/a4d7db0c-6da0-4f89-abee-bd727157ba6c/sist-en-60519-2-2007>

English version

**Safety in electroheat installations
Part 2: Particular requirements
for resistance heating equipment
(IEC 60519-2:2006)**

Sécurité dans les installations
électrothermiques
Partie 2: Exigences particulières
pour les installations de chauffage
par résistance
(CEI 60519-2:2006)

Sicherheit in Elektrowärmeanlagen
Teil 2: Besondere Anforderungen an
Einrichtungen mit Widerstandserwärmung
(IEC 60519-2:2006)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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

Foreword

The text of document 27/525/FDIS, future edition 3 of IEC 60519-2, prepared by IEC TC 27, Industrial electroheating equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60519-2 on 2006-09-01.

This European Standard supersedes EN 60519-2:1993.

Significant changes with respect to EN 60519-2:1993 are as follows:

- the structure has been adjusted to the latest ISO/IEC Directives;
- the latest edition of EN 60519-1 has been taken into account;
- definitions have been brought into line with the second edition of IEC 60050-841.

This standard shall be used in conjunction with EN 60519-1:2003. It is intended to modify, replace or make additions to EN 60519-1 for particular requirements for resistance heating equipment.

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.

SIST EN 60519-2:2007

<https://standards.iteh.ai/catalog/standards/sist/a4d7db0c-6da0-4f89-abee-bd7271370663/sist-en-60519-2-2007>

Endorsement notice

The text of the International Standard IEC 60519-2:2006 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-841	2004	International electrotechnical vocabulary Part 841: Industrial electroheat	-	-
IEC 60335-1 (mod) A1	2001 2004	Household and similar electrical appliances - Safety Part 1: General requirements	EN 60335-1 A1 A11 A12 + corr. July	2002 2004 2004 2006 2006
IEC 60364-4-41	2005	Low-voltage electrical installations Part 4-41: Protection for safety - Protection against electric shock	-	-
IEC 60364-4-42	2001	Electrical installations of buildings Part 4-42: Protection for safety - Protection against thermal effects	-	-
IEC 60398	1999	Industrial electroheating installations - General test methods	EN 60398	1999
IEC/TS 60479-1	2005	Effects of current on human beings and livestock Part 1: General aspects	-	-
IEC 60519-1	2003	Safety in electroheat installations Part 1: General requirements	EN 60519-1	2003
IEC 60519-3	2005	Safety in electroheat installations Part 3: Particular requirements for induction and conduction heating and induction melting installations	EN 60519-3	2005
IEC 60519-4 A1	1995 2000	Safety in electroheat installations Part 4: Particular requirements for arc furnace installations	EN 60519-4 A1	1997 2000
IEC 60519-8	2005	Safety in electroheat installations Part 8: Particular requirements for electroslog remelting furnaces	EN 60519-8	2005
IEC 60519-10	2005	Safety in electroheat installations Part 10: Particular requirements for electrical resistance trace heating systems for industrial and commercial applications	-	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60519-21	1998	Safety in electroheat installations Part 21: Particular requirements for resistance heating equipment - Heating and melting glass equipment	EN 60519-21	1998
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ corr. May	1993
A1	1999		A1	2000
IEC 60990	1999	Methods of measurement of touch current and protective conductor current	EN 60990	1999
IEC 61140	2001	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2002

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 60519-2:2007

<https://standards.iteh.ai/catalog/standards/sist/a4d7db0c-6da0-4f89-abee-bd727157ba6c/sist-en-60519-2-2007>

NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC

60519-2

Troisième édition
Third edition
2006-08

Sécurité dans les installations électrothermiques –

Partie 2:

**Exigences particulières pour les installations
de chauffage par résistance**

iTeh STANDARD PREVIEW

Safety in electroheat installations –

Part 2: [SIST EN 60519-2:2007](https://standards.iteh.ai/catalog/standards/sist/a4d7db0c-6da0-4f89-abee-bd/27157ba0c/sist-en-60519-2-2007)

**Particular requirements for resistance
heating equipment**

© IEC 2006 Droits de reproduction réservés — Copyright - all rights reserved

Aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'éditeur.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembe, 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

Q

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

CONTENTS

FOREWORD.....	5
1 Scope and object.....	9
2 Normative references	11
3 Terms and definitions	13
4 Classification of electroheat equipment according to voltage bands.....	17
5 Classification of electroheat equipment according to frequency bands.....	17
6 General requirements.....	17
6.7 Resistivity	17
6.8 Auxiliary equipment.....	17
6.9 Bare heating conductors.....	19
6.10 Leakage current	19
6.11 Vapours, precipitates and sediments from the charge.....	19
6.12 Salt-bath furnaces and melting furnaces.....	19
6.13 Heating-up solidified contents of the bath.....	21
6.14 Vacuum furnaces	21
7 Isolation and switching	21
8 Connection to the supply network and internal connections.....	21
9 Protection against electric shock.....	21
9.5 Protection against direct contact	21
9.6 Protection against direct and indirect contact.....	23
10 Protection against overcurrent.....	25
11 Equipotential bonding.....	25
12 Control circuits and control functions.....	25
13 Protection against thermal influences	25
13.6 Surface temperature of resistance heating equipment	25
13.7 Special measures.....	27
13.8 Temperature safety devices	27
13.9 Nitrite and nitrate bath furnaces	27
14 Risk of fire and danger of explosion.....	29
14.1 Nitrite and nitrate bath furnaces	29
15 Marking, labelling and technical documentation	29
15.2 Labelling	31
15.3 Technical documentation.....	31
16 Information on inspection and commissioning and instructions for utilization and maintenance of electroheat installations	31
16.2 Information on inspection and commissioning.....	31
16.3 Instructions for utilization to be given in the technical documentation	33

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY IN ELECTROHEAT INSTALLATIONS –**Part 2: Particular requirements for resistance 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 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 60519-2 has been prepared by IEC technical committee 27: Industrial electroheating equipment.

This third edition cancels and replaces the second edition published in 1992 and constitutes a technical revision. Significant changes with respect to the previous edition are as follows:

- the structure has been adjusted to the latest ISO/IEC Directives;
- the latest edition of IEC 60519-1 has been taken into account;
- definitions have been brought into line with the second edition of IEC 60050-841.

This standard shall be used in conjunction with IEC 60519-1:2003. It is intended to modify, replace or make additions to IEC 60519-1 for particular requirements for resistance heating equipment.

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

FDIS	Report on voting
27/525/FDIS	27/541/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 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 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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 60519-2:2007

<https://standards.iteh.ai/catalog/standards/sist/a4d7db0c-6da0-4f89-abee-bd727157ba6c/sist-en-60519-2-2007>

SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 2: Particular requirements for resistance heating equipment

1 Scope and object

This part of IEC 60519 is applicable to the indirect resistance heating equipment and the direct resistance heating equipment specified in items a) and b) below respectively, operating in voltage bands 1 and 2.

The object of this standard is the standardization of safety requirements for both indirect and direct resistance heating equipment described below.

a) Indirect resistance heating equipment

These particular requirements apply to equipment for indirect resistance heating, such equipment being energized with d.c. voltage or with single-phase or multiphase a.c. voltage of frequency up to 60 Hz.

Heat generation is effected by current flow in

- solid metallic heating conductors;
- solid non-metallic heating conductors;
- radiant tubes and immersion heaters.

Examples of indirect resistance heating equipment in general use include

- discontinuous furnaces such as batch-type furnaces, muffle furnaces, pot-type furnaces (crucible furnaces), pit-type furnaces, bell-type furnaces, bogie-hearth furnaces, fluidized-bed furnaces, immersion heater metal baths;
- continuous furnaces with continuous or discontinuous charge conveyors, such as roller-hearth furnaces, pusher furnaces, walking-beam furnaces, rotary-retort furnaces, rotary-hearth furnaces, tunnel furnaces (kilns), continuous muffle furnaces.

Indirect resistance heating equipment in general use also includes

- equipment for heating solids, liquids or gases;
- equipment for melting and holding;
- individual heating-element assemblies (movable or fixed heaters).

Indirect resistance heating equipment where particular hazards are likely to occur includes

- nitrite bath furnaces;
- indirect resistance heating equipment where an explosive atmosphere is likely to occur inside the furnace during heat treatment: furnaces for carburizing in gas atmospheres consisting of the mixture of hydrogen and methane or propane and carbon monoxide;