
Varnost pri električnih grelnih inštalacijah - 11. del: Posebne zahteve za inštalacije za elektromagnetno mešanje, prevoz ali pretakanje tekočih kovin (IEC 60519-11:1997)

Safety in electroheat installations - Part 11: Particular requirements for installations for electromagnetic stirring, transport or pouring of metal liquids

Sicherheit in Elektrowärmeanlagen - Teil 11: Besondere Anforderungen für Anlagen zum elektromagnetischen Rühren, Fördern und Gießen flüssiger Metalle

Sécurité dans les installations électrothermiques - Partie 11: Règles particulières pour les installations pour brassage, transport ou coulée électromagnétique des métaux liquides

Ta slovenski standard je istoveten z: EN 60519-11:1997

ICS:

25.180.10 Električne peči Electric furnaces

SIST EN 60519-11:1999

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60519-11:1999

<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999>

ICS 25.180.10

Descriptors: Electroheat installation, safety, electromagnetic pouring, stirring, liquid metal

English version

Safety in electroheat installations
Part 11: Particular requirements for installations for
electromagnetic stirring, transport or pouring of metal liquids
(IEC 60519-11:1997)

Sécurité dans les installations
électrothermiques
Partie 11: Règles particulières pour les
installations pour brassage, transport
ou coulée électromagnétique des
métaux liquides
(CEI 60519-11:1997)

Sicherheit in Elektrowärmeanlagen
Teil 11: Besondere Anforderungen
für Anlagen zum elektromagnetischen
Rühren, Fördern und Gießen flüssiger
Metalle
(IEC 60519-11:1997)

This European Standard was approved by CENELEC on 1997-03-11. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 60519-11:1999](https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999)

<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999>

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 27/181/FDIS, future edition 1 of IEC 60519-11, prepared by IEC TC 27, Industrial electroheating equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60519-11 on 1997-03-11.

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) 1998-02-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1998-02-01

For products which have complied with the relevant national standard before 1998-02-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2003-02-01.

This part 11 of EN 60519 is to be used in conjunction with EN 60519-1:1993 and EN 60519-3:1995.

Annexes designated "normative" are part of the body of the standard.
In this standard, annexes A, B and ZA are normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60519-11:1997 was approved by CENELEC as a European Standard without any modification.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60519-11:1999
<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999>

Annex ZA (normative)

**Normative references to international publications
with their corresponding European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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)	1983	International Electrotechnical Vocabulary (IEV) Chapter 841: Industrial electroheating	-	-
IEC 60364-4-41 (mod)	1992	Electrical installations of buildings Part 4: Protection for safety Chapter 41: Protection against electric shock	HD 384.4.41 S2	1996
IEC 60519-1	1984	Safety in electroheat installations Part 1: General requirements	EN 60519-1	1993
IEC 60519-3 (mod)	1988	Part 3: Particular requirements for induction and conduction heating and induction melting installations	EN 60519-3	1995

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60519-11:1999

<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60519-11:1999

<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999>

NORME
INTERNATIONALE

CEI
IEC

INTERNATIONAL
STANDARD

60519-11

Première édition
First edition
1997-05

Sécurité dans les installations électrothermiques –

**Partie 11:
Règles particulières pour les installations pour
brassage, transport ou coulée électromagnétique
de métaux liquides**

Safety in electroheat installations –

**Part 11:
Particular requirements for installations for
electromagnetic stirring, transport or pouring
of metal liquids**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

© IEC 1997 Droits de reproduction réservés — Copyright - all rights reserved

[SIST EN 60519-11:1999](https://standards.iteh.ai/catalog/standards/sist/60519-11/1997)

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 photo, la copie 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
Telefax: +41 22 919 0300

3, rue de Varembé Geneva, Switzerland
e-mail: inmail@iec.ch IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

N

For price, see current catalogue
For price, see current catalogue

CONTENTS

	Page
FOREWORD	5
INTRODUCTION	7
 Clause	
1 General	9
1.1 Scope.....	9
1.2 Normative references	9
2 Definitions	11
3 Inductor.....	11
4 Capacitors	13
5 Mains frequency power sources	15
6 Motor-alternator frequency converters.....	15
7 Solid-state frequency converters	15
8 Ferromagnetic frequency multipliers	15
9 Switchgear	15
10 Cables, wires and busbars.....	17
11 Liquid cooling (see 6.5 of IEC 60519-1).....	17
12 Rating plate (see clause 8 of IEC 60519-1)	19
13 Clearance and creepage distances	19
14 Protection against electric shock (see clause 12 of IEC 60519-1)	19
15 Radio interferences	25
16 Operation instructions.....	25
 Annexes	
A Specific requirements for electromagnetic pouring equipment	27
B Specific requirements for electromagnetic equipment with lining.....	29

(standards.iteh.ai)

SIST EN 60519-11:1999

<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 11: Particular requirements for installations for electromagnetic stirring, transport or pouring of metal liquids

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60519-11 has been prepared by IEC technical committee 27: Industrial electroheating equipment.

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

FDIS	Report on voting
27/181/FDIS	27/191/RVD

SIST EN 60519-11:1999

<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9058-coaction/2000/sist-en-60519-11-1999>

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 part of IEC 60519 should be read in conjunction with the following standards:

IEC 60519-1: 1984, *Safety in electroheat installations – Part 1: General requirements*

IEC 60519-3: 1988, *Safety in electroheat installations – Part 3: Particular requirements for induction and conduction heating and induction melting installations*

Annexes A and B form an integral part of this standard.

INTRODUCTION

Installations for electromagnetic stirring, transport or pouring of liquid metals have largely identical technical features to induction heating or melting plants treated in IEC 60519-3. The numeration of the clauses of this part of IEC 60519 is in line with the numeration in IEC 60519-3. Installations contain liquid or partly solidified material at high temperature under normal operating conditions, consequently they require safety regulations similar to those of electroheat installations. For the above reason the regulation given for electroheat installations applies even though these devices are not used for heating purposes.

This standard consists of:

- general requirements common to installations for electromagnetic stirring, transport or pouring of liquid metals;
- two annexes, A and B, giving specific requirements for electromagnetic pouring equipment and for electromagnetic equipment with lining.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60519-11:1999

<https://standards.iteh.ai/catalog/standards/sist/2b118140-c390-4d84-9638-e0ac06fe2880/sist-en-60519-11-1999>

SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 11: Particular requirements for installations for electromagnetic stirring, transport or pouring of metal liquids

1 General

1.1 Scope

This part of IEC 60519 applies to:

- installations for electromagnetic (induction) stirring or transport of liquid metals at low frequency;
- installations that influence the pouring process by an electromagnetic field;
- parts directly affected by the electromagnetic stirring, transport or pouring installation.

Examples of application:

- stirring devices for continuous machines, adjoining or being part of arc furnaces, ladles, etc.;
- transport of liquid metal for emptying or filling furnaces, launders or moulds;
- devices to transport liquid metal with simultaneous proportioning of the transported quantity, e.g. for filling (pressure) diecasting machines;
- influencing the ingot surface or the pouring stream enhancing crystallization by means of an electromagnetic field during continuous casting.

This standard shall be read in conjunction with IEC 60519-1.

NOTE – When applying IEC 60519-1 in connection with this standard, the terms "electroheat installation" or "electroheat device" should be replaced by the term "installation for electromagnetic stirring, transport or pouring of liquid metals".

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60519. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60519 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

[SIST EN 60519-11:1999](#)

IEC 60050(841): 1983, [International Electrotechnical Vocabulary \(IEV\) – Chapter 841: Industrial electroheating](#) [9638-e0ac06fe2880/sist-en-60519-11-1999](#)

IEC 60364-4-41: 1993, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 41: Protection against electric shock*

IEC 60519-1: 1984, *Safety in electroheat installations – Part 1: General requirements*