SLOVENSKI STANDARD

SIST EN 60519-4:1999

prva izdaja
julij 1999

Safety in electroheat installations - Part 4: Particular requirements for arc furnace installations (IEC 60519-4:1995)

ICS 25.180.10

Referenčna številka
SIST EN 60519-4:1999(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60519-4

May 1997

ICS 25.180.10

Descriptors: Electroheat installations, arc furnace, safety, requirements, direct arc, indirect arc

English version

Safety in electroheat installations
Part 4: Particular requirements for arc furnace installations
(IEC 519-4:1995)

Sécurité dans les installations électrothermiques
Partie 4: Règles particulières pour les installations des fours à arc
(CEI 519-4:1995)

Sicherheit in Elektrowärmeanlagen
Teil 4: Besondere Bestimmungen für Lichtbogenofenanlagen
(IEC 519-4:1995)

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.

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

Ref. No. EN 60519-4:1997 E

Foreword

The text of the International Standard IEC 519-4:1995 prepared by IEC TC 27, Industrial electroheating equipment, was submitted to the formal vote and was approved by CENELEC as EN 60519-4 on 1997-03-11 without any modification.

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) 1997-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-12-01

For products which have complied with the relevant national standard before 1997-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2002-12-01.

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 519-4:1995 was approved by CENELEC as a European Standard without any modification.

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.

Publication	Year	Title	EN/HD	Year
IEC 50(841)	1983	International electrotechnical vocabulary (IEV) - Chapter 841: Industrial electroheating	-	-
IEC 73	1991	Coding of indicating devices and actuators by colours and supplementary means	EN 60073[1)]	1993
IEC 364-4-43 (mod)	1977	Electrical installations of buildings Part 4: Protection for safety Chapter 43: Protection against overcurrent	HD 384.4.43 S1	1980
IEC 364-4-473 (mod)	1977	Chapter 47: Application of protective measures for safety Section 473: Measures of protection against overcurrent	HD 384.4.473 S1	1980
IEC 479-1	1994	Effects of current on human beings and livestock Part 1: General aspects	-	-
IEC 519-1	1984	Safety in electroheat installations Part 1: General requirements	EN 60519-1	1993

1) EN 60073 is superseded by EN 60073:1996, which is based on IEC 73:1996.

NORME INTERNATIONALE
INTERNATIONAL STANDARD

CEI
IEC
519-4

Deuxième édition
Second edition
1995-05

Sécurité dans les installations électrothermiques –

Partie 4:
Règles particulières pour les installations des fours à arc

Safety in electroheat installations –

Part 4:
Particular requirements for arc furnace installations

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE P

Pour prix, voir catalogue en vigueur
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 4: Particular requirements for arc furnace installations

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 cooperation 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, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

3) They have the form of recommendations for international use 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.

International Standard IEC 519-4 has been prepared by IEC technical committee 27: Industrial electroheating equipment.

This second edition cancels and replaces the first edition published in 1977.

This part of IEC 519 shall be read in conjunction with IEC 519-1, 2nd edition. It is intended to modify, replace or make additions to IEC 519-1 for particular requirements concerning arc furnace installations.

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

DIS	Report on voting
27(CO)104	27(CO)109

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

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

SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 4: Particular requirements for arc furnace installations

1 Scope

This part of IEC 519 is applicable to electroheat installations such as:

– furnaces for direct-arc heating such as direct arc furnaces, submerged arc furnaces, ladle arc heating furnaces;

– furnaces for indirect arc heating.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 519. 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 519 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.

IEC 50(841): 1983, *International Electrotechnical Vocabulary (IEV) – Chapter 841: Industrial electroheating*

IEC 73: 1991, *Coding of indicating devices and actuators by colours and supplementary means*

IEC 364-4-43: 1977, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 43: Protection against overcurrent*

IEC 364-4-473: 1977, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 47: Application of protective measures for safety – Section 473: Measures of protection against overcurrent*

IEC 479-1: 1994, *Effects of current on human beings and livestock – Part 1: General aspects*

IEC 519-1: 1984, *Safety in electroheat installations – Part 1: General requirements*

3 Definitions

For the purposes of this part of IEC 519, the definitions given in IEC 519-1 and in IEC 50(841) apply.

4 Classification of electroheat equipment according to voltage bands

The requirements of clause 4 of IEC 519-1 apply, except as follows:

4.1 *Addition:*

The voltage band is determined by the line-to-like open circuit rated supply voltage to the electrodes.

5 Classification of electroheat equipment according to frequency bands

The requirements of clause 5 of IEC 519-1 apply, except as follows:

5.1 *Addition:*

DC is classified as low frequency.

6 General requirements

The requirements of clause 6 of IEC 519-1 apply, except as follows:

6.1.3 *Replacement*

Sufficient mechanical stability of the furnace shall be ensured even without a refractory lining. In case of rectangular submerged arc furnaces where refractory lining is needed to obtain mechanical stability, the design shall be such that adjustments in accordance with furnace expansion are possible.

The operating devices shall be arranged within easy and safe reach of the operator, or operators, at his or their normal positions as far as is reasonably practicable.

The operating devices shall be designed and placed to prevent their unintended activation, as far as is reasonably practicable. Operating devices designed for plug connection shall have connectors that are mechanically lockable and which do not march with supply network connectors.

6.1.5 *Replacement:*

Utility supply hoses (for water, hydraulic liquid, etc.) shall not be subjected to undue mechanical overstressing during the movements of the installations.

6.2.1 *Replacement:*

Electrical equipment installed near components with high operating temperatures shall have sufficient thermal strength and sufficient protection.

6.2.3 *Replacement:*

Precautions shall be taken to avoid any hazard to persons due to transient voltages which might occur during normal operation in circuits comprising transformers, inductors and capacitors, etc. The equipment shall be designed to suppress and/or withstand the very high voltages which are normal in the operation of arc furnace.