

Safety in electroheat installations —

Part 3: Particular requirements for induction and conduction heating and induction melting installations

The European Standard EN 60519-3:2005 has the status of a British Standard

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National foreword

This British Standard is the official English language version of EN 60519-3:2005. It is identical with IEC 60519-3:2005. It supersedes BS EN 60519-3:1996 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PEL/27, Electroheating, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Summary of pages

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électrothermiques
Partie 3: Règles particulières pour
les installations de chauffage
par induction et par conduction
et pour les installations de fusion
par induction
(CEI 60519-3:2005)

Sicherheit in Elektrowärmeanlagen
Teil 3: Besondere Anforderungen
an induktive und konduktive
Erwärmungsanlagen und an
Induktionsschmelzanlagen
(IEC 60519-3:2005)

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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.

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CENELEC

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

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Foreword

The text of document 27/446/FDIS, future edition 3 of IEC 60519-3, prepared by IEC TC 27, Industrial electroheating equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60519-3 on 2005-04-12.

This European Standard supersedes EN 60519-3:1995.

Significant technical changes with respect to EN 60519-3:1995 are as follows:

- the latest edition of EN 60519-1 (2003), in particular the extension of the scope to cover also voltage band 3 equipment with rated voltages not exceeding 3 600 V AC or 5 000 V DC, has been taken into account;
- definitions have been brought into line with the second edition of IEC 60050-841.

This part of EN 60519 is to be used in conjunction EN 60519-1:2003. It is intended to modify, replace or make additions to EN 60519-1 for particular requirements for induction and conduction heating and induction melting installations.

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) | 2006-01-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2008-04-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60519-3:2005 was approved by CENELEC as a European Standard without any modification.

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SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 3: Particular requirements for induction and conduction heating and induction melting installations

1 Scope

This part of IEC 60519 is applicable to

- installations for induction and conduction heating of solids, at low, mains, medium and high frequencies (for conduction heating, use of direct current is also included);
- installations for induction melting, holding and superheating liquid metal at low, mains, medium and high frequencies;
- those parts of the conveying or handling equipment of the electroheat installation which are within the influence of the heating section.

Examples of application are:

- installations for induction and conduction heating of slabs, billets, rods, strip, wire, tubes, rivets, etc. for subsequent hot forming and heat treatment;
- installations with induction crucible furnaces or induction channel furnaces.

This standard consists of requirements common to both induction and conduction heating installations and induction melting installations (Clauses 1 to 14) and specific requirements for induction and conduction heating installations (Annex A) and specific requirements for induction melting installations (Annex B).

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 60110-1:1998, *Power capacitors for induction heating installations – Part 1: General*

IEC 60143-1:2004, *Series capacitors for power systems – Part 1: General*

IEC 60364-4-41:2001, *Electrical installations of buildings – Part 4-41: Protection for safety – Protection against electric shock*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-841 (some of which are repeated here), IEC 60519-1 and the following apply.

3.1

induction heating

electric heating using the Joule effect produced by induced currents

[IEV 841-27-04]

3.2

conduction heating

resistance heating, in which the current flows through the material to be heated

3.3

heating section

that part of the equipment in which heating by induction or conduction takes place

3.4

heating inductor

component, e.g. coil or coils, of induction heating or induction melting equipment, carrying an alternating current and designed to create the magnetic field which induces currents in the charge

[IEV 841-27-48, modified]

3.5

contact system

component of a conduction heating work station by which the charge is electrically connected to the heating circuit

3.6

induction crucible furnace

induction melting furnace or induction holding furnace in which the heat is generated directly in the charge, or in the crucible containing it, by means of a heating inductor arranged around the crucible

[IEV 841-27-32, modified]

3.7

induction channel furnace

induction melting furnace or induction holding furnace consisting of one or more refractory lined chambers into which the charge to be heated or melted is placed and to which one or more channel inductors are attached

[IEV 841-27-30]

4 Heating inductor

4.1 Heating inductors with high power ratings may be equipped with yokes (coil flux guides) to guide the magnetic flux outside the induction coil/s to reduce stray fields possibly heating the surrounding metal structure.