

BS EN 60519-21:2009



BSI British Standards

Safety in electroheat installations —

Part 21: Particular requirements for
resistance heating equipment —
Heating and melting glass equipment

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British Standards

National foreword

This British Standard is the UK implementation of EN 60519-21:2009. It is identical to IEC 60519-21:2008. It supersedes BS EN 60519-21:1998 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PEL/27, Electroheating.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 60519-21

January 2009

ICS 25.180.10

Supersedes EN 60519-21:1998

English version

**Safety in electroheat installations -
Part 21: Particular requirements for resistance heating equipment -
Heating and melting glass equipment
(IEC 60519-21:2008)**

Sécurité dans les installations
électrothermiques -
Partie 21: Exigences particulières
pour les installations de chauffage
par résistance -
Installations électrothermiques
de fusion de verre
(CEI 60519-21:2008)

Sicherheit in Elektrowärmeanlagen -
Teil 21: Besondere Anforderungen
an Einrichtungen
mit Widerstandserwärmung -
Einrichtungen zum Erwärmen
und Schmelzen von Glas
(IEC 60519-21:2008)

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 27/630/CDV, future edition 2 of IEC 60519-21, prepared by IEC TC 27, Industrial electroheating equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60519-21 on 2008-12-01.

This European Standard supersedes EN 60519-21:1998.

The significant changes with respect to EN 60519-21:1998 are as follows:

- EN 60519-1:2003 and EN 60519-2:2006 have been taken into account;
- definitions have been brought into line with IEC 60050-841:2004.

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) 2009-09-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-12-01

This standard is to be used in conjunction with EN 60519-2:2006. It is intended to specify particular requirements for resistance heating and melting glass equipment. This Part 21 supplements or modifies the corresponding clauses of EN 60519-2, so as to convert it into a European Standard.

Where a particular subclause of Part 2 is not mentioned in this Part 21, that subclause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant text of Part 2 is to be adapted accordingly.

NOTE Subclauses and notes which are additional to those in Part 2 are numbered starting from 101.

Endorsement notice

The text of the International Standard IEC 60519-21:2008 was approved by CENELEC as a European Standard without any modification.

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SAFETY IN ELECTROHEAT INSTALLATIONS –

Part 21: Particular requirements for resistance heating equipment – Heating and melting glass equipment

1 Scope and object

Replacement:

This part of IEC 60519 is applicable to indirect resistance heating equipment for the heating and melting of glass, operating in voltage bands 1 and 2. These particular requirements also apply to equipment for direct resistance heating and melting of glass by means of current introduced by electrodes passing through the charge to be heated.

The object of this standard is the determination of safety requirements for both indirect and direct resistance heating equipment for the heating and melting of glass.

NOTE Extraction of liquid glass or a similar material at the extraction point is part of the production process and does not constitute part of the operation of the electroheat equipment.

This standard covers the safety aspects of electrical parts also in the case when electrical heating is combined with other means of heating, for example liquid fuel heating.

These requirements do not apply to equipment for direct resistance heating, where, owing to the technology used, IEC 60519-3, IEC 60519-4 and IEC 60519-8 are applicable.

2 Normative references

This Clause of part 2 is applicable.

3 Terms and definitions

This Clause of part 2 applies except as follows:

Addition:

3.101

glass-melting furnace (indirect resistance heating)
furnace in which glass is melted by means of indirect resistance heating

3.102

pot furnace
melting equipment in which the batch is melted by means of indirect electrical heating in vessels called “pots” made of a fire-proof material and placed in the furnace

3.103

filling machine
machine which feeds the batch into the glass furnaces

3.104**extraction machine**

machine which extracts molten glass from the glass furnaces

3.105**extraction point**

opening in the glass furnace through which molten glass is drawn off

NOTE Molten glass is drawn off for example, manually by means of glassmakers' tools or by means of extraction machines. In the case of pot furnaces, the extraction points also serve as openings for the feeding or extraction of samples.

3.106**earthing electrode**

electrode that is installed in the glass melt and is connected to the equipotential system

4 Classification of electroheat equipment according to voltage bands

This Clause of part 2 is applicable.

5 Classification of electroheat equipment according to frequency bands

This Clause of part 2 is applicable.

6 General requirements

This Clause of part 2 is applicable.

7 Isolation and switching

This Clause of part 2 is applicable.

8 Connection to the supply network and internal connections

This Clause of part 2 is applicable.

9 Protection against electric shock

This Clause of part 2 applies except as follows:

Addition:

9.2.101 Measures shall be taken in the case of directly or indirectly heated melting equipment, which provides protection against electric shock when glassmakers' tools or extraction machines are submerged in the conductive glass melt, or when the batch mixture is being fed into the glass melt.

Measures of this type are for example:

- installation of an earthing electrode for personnel safety at the extraction point. The electrode function shall be constantly monitored. When the monitoring device shows a reaction, the glass furnace shall automatically be shut down, possibly in partial areas, or by means of appropriate measures, further extraction shall be prevented;

NOTE The earthing electrode should be constructed and set in such a manner that, even under the most unfavourable circumstances, for example a change in the conduction and filling level of the melt in the region of the extraction point, effectiveness is not impaired.

- measures against contact with live parts (electrodes, heating elements) by appropriate construction-design when using glassmakers' tools, e.g. covers or barriers;
- insulation of the working platform at the place of operation;

In addition, in the case of indirectly heated glass furnaces (pot furnaces):

- automatic shut-off of heating when leakage current measurement indicates a dangerous situation.

9.2.102 Filling machines, extraction machines and the whole of the steel construction of the melting plant shall be connected to an equipotential system.

Earthing electrodes for safety of personnel shall be installed in the glass melt and be connected to the equipotential system.

If an underground equipotential system is installed, the requirements of IEC 60364-4-41 shall be fulfilled.

10 Protection against overcurrent

This Clause of part 2 is applicable.

11 Equipotential bonding

This Clause of part 2 is applicable.

12 Control circuits and control functions

This Clause of part 2 is applicable.

13 Protection against thermal influences

This Clause of part 2 is applicable.

14 Risk of fire and danger of explosion

This Clause of part 2 is applicable.

15 Marking, labelling and technical documentation

This Clause of part 2 is applicable.

16 Information on inspection and commissioning and instructions for utilization and maintenance of electroheat installations

This Clause of part 2 applies except as follows:

Replacement:

16.3.4 For directly or indirectly heated melting equipment, when glassmakers' tools or extraction machines are submerged in the conductive glass melt, or when the batch mixture is being fed into the glass melt, the following shall be applied (in compliance with local safety at work regulations):

- use of protective equipment (e.g. clothes, shoes, gloves),
- use of insulated tools.

These measures are to be provided in addition to the measures described in 9.2.101, to provide protection against electric shock.

Addition:

16.3.101 Compliance with the requirements for the avoidance of contact with live parts of the equipment (which are above earth potential), including the necessary shut-down systems, shall be checked at the time of setting up the equipment and periodically thereafter.

Addition:

16.4.101 During maintenance work, for replacing electrodes the following shall be applied (in compliance with local safety at work regulations):

- use of protective equipment (e.g. clothes, shoes, gloves),
 - use of insulated tools,
 - use of protective extra low voltage (PELV).
-

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