



NSAI
Standards

Irish Standard
I.S. EN 60335-2-73:2003

Household and similar electrical
appliances - Safety -- Part 2-73:
Particular requirements for fixed
immersion heaters (IEC 60335-2
-73:2002 (MOD))

I.S. EN 60335-2-73:2003

Incorporating amendments/corrigenda issued since publication:

EN 60335-2-73:2003/A1:2006

EN 60335-2-73:2003/A2:2009

This document replaces:
EN 60335-2-73:1996

This document is based on:
EN 60335-2-73:2003
EN 60335-2-73:1996

Published:
22 August, 2003
7 October, 1997

This document was published
under the authority of the NSAI and
comes into effect on:

20 October, 2003

ICS number:
91.140.65

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

ICS 91.140.65

English version

**Household and similar electrical appliances -
Safety -
Part 2-73: Particular requirements for fixed immersion heaters
(IEC 60335-2-73:2002/A2:2009)**

Appareils électrodomestiques
et analogues -
Sécurité -
Partie 2-73: Règles particulières
pour les thermoplongeurs
installés à poste fixe
(CEI 60335-2-73:2002/A2:2009)

Sicherheit elektrischer Geräte
für den Hausgebrauch
und ähnliche Zwecke -
Teil 2-73: Besondere Anforderungen
für ortsfeste Heizeinsätze
(IEC 60335-2-73:2002/A2:2009)

This amendment A2 modifies the European Standard EN 60335-2-73:2003; it was approved by CENELEC on 2009-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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, Bulgaria, 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: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 61/3866/FDIS, future amendment 2 to IEC 60335-2-73:2002, prepared by IEC Technical Committee 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60335-2-73:2003 on 2009-10-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2010-07-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2014-10-01

This amendment supplements or modifies the corresponding clauses of EN 60335-2-73:2003.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

p NOTE In this document, p is used in the margin to indicate instructions for preparing the printed version.

Endorsement notice

The text of amendment 2:2009 to the International Standard IEC 60335-2-73:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

p In the Bibliography, add the following note to the standard mentioned:

ISO 13732-1 NOTE Harmonized as EN ISO 13732-1:2008 (not modified).

EUROPEAN STANDARD

EN 60335-2-73/A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2006

ICS 91.140.65

English version

**Household and similar electrical appliances –
Safety**
Part 2-73: Particular requirements for fixed immersion heaters
(IEC 60335-2-73:2002/A1:2006)

Appareils électrodomestiques et
analogues –
Sécurité
Partie 2-73: Règles particulières
pour les thermoplongeurs
installés à poste fixe
(CEI 60335-2-73:2002/A1:2006)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke
Teil 2-73: Besondere Anforderungen
für ortsfeste Heizeinsätze
(IEC 60335-2-73:2002/A1:2006)

This amendment A1 modifies the European Standard EN 60335-2-73:2003; it was approved by CENELEC on 2006-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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 61/2957/FDIS, future amendment 1 to IEC 60335-2-73:2002, prepared by IEC Technical Committee 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60335-2-73:2003 on 2006-03-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2006-12-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2009-03-01

This amendment supplements or modifies the corresponding clauses of EN 60335-2-73:2003.

As a consequence of endorsing amendment 1:2006 to IEC 60335-2-73:2002, the common modifications in EN 60335-2-73:2003 are replaced by IEC text and therefore withdrawn.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

Endorsement notice

The text of amendment 1:2006 to the International Standard IEC 60335-2-73:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

EUROPEAN STANDARD

EN 60335-2-73

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2003

ICS 91.140.65

Supersedes EN 60335-2-73:1996

English version

**Household and similar electrical appliances -
Safety
Part 2-73: Particular requirements for fixed immersion heaters
(IEC 60335-2-73:2002, modified)**

Appareils électrodomestiques
et analogues -
Sécurité
Partie 2-73: Règles particulières pour les
thermoplongeurs installés à poste fixe
(CEI 60335-2-73:2002, modifiée)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke
Teil 2-73: Besondere Anforderungen
für ortsfeste Heizeinsätze
(IEC 60335-2-73:2002, modifiziert)

This European Standard was approved by CENELEC on 2003-05-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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

I.S. EN 60335-2-73:2003

EN 60335-2-73:2003

- 2 -

Foreword

The text of the International Standard IEC 60335-2-73:2002 (61/2176/FDIS), prepared by the IEC Technical Committee 61, together with the common modifications prepared by CENELEC TC 61, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60335-2-73 on 2003-05-01.

This European Standard replaces EN 60335-2-73:1996 + corrigendum December 1999.

The following dates are applicable:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-05-01
- date on which national standards conflicting with the EN have to be withdrawn (dow) 2006-05-01

This part 2 has to be used in conjunction with EN 60335-1, Household and similar electrical appliances - Safety - Part 1: General requirements. It was established on the basis of the 2002 edition of that standard. Amendments and revisions of Part 1 have also to be taken into account and the dates when such changes become applicable will be stated in the relevant amendment or revision of Part 1.

This part 2 supplements or modifies the corresponding clauses of EN 60335-1, so as to convert it into the European Standard: Safety requirements for fixed electric immersion heaters.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

NOTE 1 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.;
- subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letter Z.

NOTE 2 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

There are no special national conditions causing a deviation from this European Standard, other than those listed in Annex ZA to EN 60335-1.

There are no national deviations from this European Standard, other than those listed in Annex ZB to EN 60335-1.

p NOTE In this document, p is used in the margin to indicate instructions for preparing the printed version.



CONTENTS

FOREWORD..... 3

INTRODUCTION..... 5

1 Scope..... 6

2 Normative references 7

3 Definitions 7

4 General requirement..... 7

5 General conditions for the tests 7

6 Classification..... 7

7 Marking and instructions..... 7

8 Protection against access to live parts..... 8

9 Starting of motor-operated appliances 8

10 Power input and current 8

11 Heating 8

12 Void..... 8

13 Leakage current and electric strength at operating temperature..... 8

14 Transient overvoltages 8

15 Moisture resistance 8

16 Leakage current and electric strength..... 8

17 Overload protection of transformers and associated circuits 9

18 Endurance..... 9

19 Abnormal operation 9

20 Stability and mechanical hazards 9

21 Mechanical strength 9

22 Construction 9

23 Internal wiring..... 10

24 Components 10

25 Supply connection and external flexible cords 10

26 Terminals for external conductors..... 10

27 Provision for earthing 10

28 Screws and connections..... 10

29 Clearances, creepage distances and solid insulation 10

30 Resistance to heat and fire 10

31 Resistance to rusting..... 11

32 Radiation, toxicity and similar hazards..... 11

Annexes 12

Bibliography..... 12

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –**

Part 2-73: Particular requirements for fixed immersion heaters

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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.

This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60335-2-73 consists of the second edition (2002) [documents 61/2176/FDIS and 61/2257/RVD], its amendment 1 (2006) [documents 61/2957/FDIS and 61/2987/RVD] and its amendment 2 (2009) [documents 61/3866/FDIS and 61/3912A/RVD].

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 2.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

The French version of this standard has not been voted upon.

This bilingual version (2005-04) replaces the English version.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fourth edition (2001) of that standard.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for fixed electric immersion heaters.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification", or "replacement", the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The following differences exist in the countries indicated below.

- 3.1.9: Normal operation is different (USA).
- 6.1: Class 0I appliances are allowed (Japan).
- 24.101: The requirement is not applicable (USA).

The committee has decided that the contents of the base publication and its amendments 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.

2 | NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of the amendment 2 be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

I.S. EN 60335-2-73:2003

60335-2-73 © IEC:2002+A1:2006
+A2:2009

– 5 –

INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

2] When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-73: Particular requirements for fixed immersion heaters

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of **fixed electric immersion heaters** for household and similar purposes that are intended for installation in a water tank open to the atmosphere for heating water to a temperature below its boiling point. The **rated voltage** is not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 101 The water tank may have alternative means for heating water, such as the circulation of hot water supplied from a separate boiler.

NOTE 102 Immersion heaters having a **rated power input** up to 25 kW for incorporation as an alternative heating source in central heating boilers are also within the scope of this standard.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- 2 – persons (including children) whose
 - physical, sensory or mental capabilities; or
 - lack of experience and knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

NOTE 103 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

NOTE 104 This standard does not apply to

- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- heating elements incorporated in appliances such as
 - appliances for heating liquids (IEC 60335-2-15);
 - storage water heaters (IEC 60335-2-21);
 - instantaneous water heaters (IEC 60335-2-35);
- aquarium heaters (IEC 60335-2-55);
- portable immersion heaters (IEC 60335-2-74);
- engine preheaters such as those for cars and buses.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-