



SLOVENSKI STANDARD SIST EN 60335-2-35:1998

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Safety of household and similar electrical appliances - Part 2: Particular requirements for instantaneous water heaters (IEC 60335-2-35:1997)

Safety of household and similar electrical appliances -- Part 2-35: Particular requirements for instantaneous water heaters

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Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke -- Teil 2-35: Besondere Anforderungen für Durchflußerwärmer

SIST EN 60335-2-35:1998

Sécurité des appareils électrodomestiques et analogues -- Partie 2-35: Règles particulières pour les chauffe-eau instantanés

Ta slovenski standard je istoveten z: EN 60335-2-35:1998

ICS:

13.120	Varnost na domu	Domestic safety
91.140.65	Oprema za ogrevanje vode	Water heating equipment

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 60335-2-35

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Supersedes EN 60335-2-35:1994

Descriptors: Household electrical appliances, instant water heaters, safety requirements, protection against electric shock, fire protection, protection against mechanical hazard

English version

**Safety of household and similar electrical appliances
Part 2: Particular requirements for instantaneous water heaters
(IEC 60335-2-35:1997)**

Sécurité des appareils
électrodomestiques et analogues
Partie 2: Règles particulières
pour les chauffe-eau instantanés
(CEI 60335-2-35:1997)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke
Teil 2: Besondere Anforderungen
für Durchflußwärmer
(IEC 60335-2-35:1997)

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This European Standard was approved by CENELEC on 1998-01-01. 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, 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

Foreword

The text of document 61/1330/FDIS, future third edition of IEC 60335-2-35 prepared by the IEC Technical Committee 61, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60335-2-35 on 1998-01-01.

This European Standard replaces EN 60335-2-35:1994 and its amendment.

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) 1998-10-01
- date on which national standards conflicting with the EN have to be withdrawn (dow) 2005-01-01

This standard has to be used in conjunction with EN 60335-1, Safety of household and similar electrical appliances, Part 1: General requirements. It was established on the basis of the 1994 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 electric instantaneous water 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.

Subclauses and figures which are additional to those in part 1 are numbered starting with 101.

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.

NOTE - 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 2. When a definition of part 1 concerns an adjective, the adjective and the associated noun are also in bold.

Endorsement notice

The text of the International Standard IEC 60335-2-35:1997 was approved by CENELEC as a European Standard without any modification.



NORME
INTERNATIONALE
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STANDARD

CEI
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60335-2-35

Troisième édition
Third edition
1997-12

Sécurité des appareils électrodomestiques
et analogues –

Partie 2-35:
Règles particulières pour les chauffe-eau
instantanés

STANDARD PREVIEW
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Safety of household and similar electrical
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Part 2-35:
Particular requirements for instantaneous
water heaters

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –

Part 2-35: Particular requirements for
instantaneous water heaters

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.

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

It forms the third edition of IEC 60335-2-35 and replaces the second edition published in 1991.

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

FDIS	Report on voting
61/1330/FDIS	61/1377/RVD

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 2-35 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 third edition (1991) of that standard.

This part 2-35 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert it into the IEC standard: Safety requirements for electric instantaneous water heaters.

Where a particular subclause of part 1 is not mentioned in this part 2-35, that subclause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant text in part 1 is to be adapted accordingly.

NOTE 1 – 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 2. When a definition of part 1 concerns an adjective, the adjective and the associated noun are also in bold.

NOTE 2 – Subclauses and figures which are additional to those in part 1 are numbered starting from 101.

The following additional differences exist in some countries:

- 6.1: Bare-element water heaters are not allowed (Greece, Indonesia, Israel, Malaysia, Singapore and Turkey).
- 6.1: Class 0I appliances are allowed (Japan).
- 7.1: Closed water heaters having a rated pressure less than 1,0 MPa have to be marked with a statement that a pressure reducing valve is to be fitted in the installation (Sweden).
- 7.1: Markings of rated pressure are different and water resistivity is not required (USA).
- 7.12: Information concerning the removal of air from bare-element water heaters has to be given (Poland).
- 7.12.1: The installation of bare-element water heaters has to comply with particular conditions dependent on the supply system and which are to be included in the instructions (France and Poland).
- 19.4: Flow switches tested for reliability are not short-circuited (USA).
- 19.13: The water temperature in closed water heaters having a capacity in excess of 15 l is limited to 99 °C (Israel, Norway and United Kingdom).
- 19.13: Different outlet water temperatures are required (USA).
- 22.101: For closed water heaters, the minimum rated pressure is 1,0 MPa (Norway).
- 22.103: Closed water heaters having a capacity in excess of 15 l have to be provided with a pressure relief device (Israel).
- 22.103: Closed water heaters have to incorporate a temperature relief valve or a combined temperature and pressure relief valve which has to operate before the water temperature reaches 100 °C (United Kingdom).
- 22.103: The pressure relief valve is not required to be provided with the heater (USA).

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –

Part 2-35: Particular requirements for instantaneous water heaters

1 Scope

This clause of part 1 is replaced by:

This standard deals with the safety of electric **instantaneous water heaters** for household and similar purposes and intended for heating water below boiling temperature, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 1 – **Instantaneous water heaters** incorporating bare heating elements are 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 for use in shops, in light industry and on farms, are within the scope of this standard.

So far as is practicable, this standard deals with the common hazards presented by appliances which are encountered by all persons in and around the home.

This standard does not in general take into account (standards.iteh.ai)

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 2 – 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;
- for appliances intended to be used in tropical countries, special 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 and similar authorities;
- in many countries regulations exist for the installation of equipment connected to the water mains.

NOTE 3 – This standard does not apply to

- appliances for boiling water (IEC 60335-2-15);
- storage water heaters (IEC 60335-2-21);
- commercial electric water boilers and liquid heaters (IEC 60335-2-63);
- 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);
- **instantaneous water heaters** of the electrode type;
- commercial dispensing appliances and vending machines (IEC 60335-2-75).

2 Definitions

This clause of part 1 is applicable except as follows:

2.2.9 Replacement:

normal operation: Operation of the appliance under the following conditions:

The appliance is installed in accordance with the instructions and supplied with cold water, the flow being adjusted to obtain the highest outlet water temperature.

NOTE – The water flow is sufficient to prevent the operation of any **thermal cut-out**.

2.101 instantaneous water heater: Stationary appliance for heating water while it flows through the appliance.

NOTE – **Instantaneous water heaters** are referred to as water heaters.

2.102 closed water heater: Water heater intended to operate at the pressure of the water system, the flow of water being controlled by one or more valves in the outlet system.

NOTE – The operating pressure may be the output pressure of a reducing or boosting device.

2.103 open-outlet water heater: Water heater in which the flow of water is controlled by a valve in the inlet pipe, there being no valve in the outlet pipe.

2.104 bare-element water heater: Water heater in which uninsulated heating elements are immersed in the water.

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2.105 rated pressure: Water pressure assigned to the appliance by the manufacturer.

2.106 flow switch: Switch operated by an effective flow of water.

NOTE – For example, the switch is operated when water is drawn off from a tap.

3 General requirement

This clause of part 1 is applicable.

4 General conditions for the tests

This clause of part 1 is applicable except as follows:

4.2 Addition:

NOTE – Additional samples may be required for the tests of 22.109.

4.3 *Addition:*

If the tests are carried out on one appliance, the tests of 22.102, 22.107, 22.108 and 24.102 are made before the tests of clause 19.

4.7 *Addition:*

Water having a temperature of $15\text{ °C} \pm 5\text{ °C}$ is used for the tests.

5 **Void**6 **Classification**

This clause of part 1 is applicable except as follows:

6.1 *Modification:*

Bare-element water heaters shall be **class I** or **class III**.

Other water heaters shall be **class I**, **class II** or **class III**.

6.2 *Modification:*

Water heaters shall be at least IPX1.

NOTE – A higher degree of protection may be required according to IEC 60364 depending on the zone in which the water heater is installed.

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7 **Marking and instructions**

This clause of part 1 is applicable except as follows:

7.1 *Addition:*

NOTE 1 – The minimum **rated frequency** for **bare-element water heaters** is 50 Hz.

Appliances shall be marked with the **rated pressure** in pascals (bars).

Bare-element water heaters shall be marked with the substance of the following:

The water resistivity at a temperature of 15 °C must not be less than ... $\Omega\cdot\text{cm}$.

NOTE 2 – The value of the water resistivity is not to exceed $1\ 300\ \Omega\cdot\text{cm}$.

7.12 *Addition:*

The instructions for use for **open-outlet water heaters** to be used with a spray head shall state that the spray head must be descaled regularly.

The instructions for use shall include the substance of the following warning:

WARNING – Do not switch on if there is a possibility that the water in the heater is frozen.

NOTE – This warning is not required if the appliance incorporates a **flow switch**.