SLOVENSKI STANDARD
SIST EN 60335-2-40:1998

01-junij-1998

Nadomešča:
SIST EN 60335-2-40:1997

Varnost gospodinjskih in podobnih električnih aparatov - 2-40. del: Posebne zahteve za električne toplotne črpalke, klimatske naprave in razvlažilnike zraka (IEC 60335-2-40:1995; spremenjen)

Safety of household and similar electrical appliances -- Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke -- Teil 2-40: Besondere Anforderungen für elektrisch betriebene Wärmepumpen, Klimageräte und Raumluft-Entfeuchter

Sécurité des appareils électrodomestiques et analogues -- Partie 2-40: Règles particulières pour les pompes à chaleur électriques, les climatiseurs et les déshumidificateurs

Ta slovenski standard je istoveten z: **EN 60335-2-40:1997**

ICS:

23.120	Zračniki. Vetrniki. Klimatske naprave	Ventilators. Fans. Air-conditioners
27.080	Toplotne črpalke	Heat pumps

SIST EN 60335-2-40:1998 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60335-2-40

November 1997

ICS 27.080; 91.140.30

Supersedes EN 60335-2-40:1993 and its amendment

Descriptors: Household electrical appliances, heat pumps, air conditioners, 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 electrical heat pumps, air-conditioners and dehumidifiers (IEC 60335-2-40:1995, modified)

Sécurité des appareils électrodomestiques et analogues Partie 2: Règles particulières pour les pompes à chaleur électriques, les climatiseurs et les déshumidificateurs (CEI 60335-2-40:1995, modifiée)

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke Teil 2: Besondere Anforderungen für elektrisch betriebene Wärmepumpen, Klimageräte und Raumluft-Entfeuchter (IEC 60335-2-40:1995, modifiziert)

This European Standard was approved by CENELEC on 1997-10-01. 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 proposal to endorse IEC 60335-2-40:1995, document CLC/TC 61 (SEC) 1025, was circulated under the enquiry procedure in June 1995. This proposal was discussed during the Athens meeting in November 1996 when it was decided to submit a draft for EN 60335-2-40 to the formal vote.

This draft was circulated in May 1997 and was approved by CENELEC as EN 60335-2-40 on 1997-10-01.

This European Standard has been prepared by the secretariat of CENELEC Technical Committee TC 61.

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) 1998-02-01
- date on which national standards conflicting with the EN have to be withdrawn (dow) 2000-02-01

For products which have complied with EN 60335-2-40:1993 and its amendment A51:1996 before 2000-02-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2005-02-01.

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 heat pumps, air-conditioners and dehumidifiers.

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, tables and figures which are additional to those in part 1 are numbered starting with 101. Annexes which are additional to those in part 1 are lettered AA, BB, etc.

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.

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

Endorsement notice

The text of the International Standard IEC 60335-2-40:1995 was approved by CENELEC as a European Standard with agreed modifications as given below.

COMMON MODIFICATIONS

7 Marking and instructions

p 7.12.1 Add:

For appliances which are intended to be permanently connected to fixed wiring and which may have leakage currents exceeding 10 mA, the instructions for installation shall specify the rating of the residual current device (RCD) to be installed.

13 Leakage current and electric strength at operating temperature

p 13.2 Replace "*the leakage current shall not exceed*" by "*the leakage current may exceed 3,5 mA but shall not exceed*".

15 Moisture resistance

p Replace the first paragraph by: This clause of part 1 is applicable except as follows:

p Delete subclauses 15.1 and 15.2.

p Replace the reference "15.3" by "15.2 *Addition*."

16 Leakage current and electric strength

p 16.2 Replace "*the leakage current shall not exceed*" by "*the leakage current may exceed 3,5 mA but shall not exceed*".

NORME INTERNATIONALE
INTERNATIONAL STANDARD

CEI
IEC
335-2-40

Troisième édition
Third edition
1995-04

Sécurité des appareils électrodomestiques et analogues

Partie 2:
Règles particulières pour les pompes à chaleur électriques, les climatiseurs et les déshumidificateurs

Safety of household and similar electrical appliances

Part 2:
Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES

Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

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.

This part of International Standard IEC 335 has been prepared by sub-committee 61D: Appliances for air-conditioning for household and similar purposes, of IEC technical committee 61: Safety of household and similar electrical appliances.

It forms the third edition of IEC 335-2-40 and replaces the second edition.

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

DIS	Report on voting
61D/30/DIS	61D/36/RVD

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

This part 2 is to be used in conjunction with the latest edition of IEC 335-1 and its amendments. It was established on the basis of the third edition (1991) of that publication.

This part 2 supplements or modifies the corresponding clauses in IEC 335-1 in order to convert it into IEC Standard: Safety requirements for electrical heat pumps, air-conditioners and dehumidifiers.

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

NOTES

1 The following print types are used:

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

Words **in bold** in the text are defined in clause 2.

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

Annex AA is for information only.

The following difference exist in some countries:

- Clause 3: The d.c. component in the appliance neutral is limited (Australia).
- 6.1: Class 0I appliances are allowed (Japan).
- 11.8: The temperature of the wooden walls in the test casing is limited to 85 °C (Sweden).

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES

Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

1 Scope

This clause of part 1 is replaced by:

This part of IEC 335 applies to the safety of electric **heat pumps**, including **sanitary hot water heat pumps**, **air-conditioners**, and **dehumidifiers** incorporating sealed motor-compressors, their maximum **rated voltages** being not more than 250 V for single phase appliances and 600 V for all other appliances.

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.

The appliances referenced above may consist of one or more factory made assemblies. If provided in more than one assembly, the separate assemblies are to be used together, and the requirements are based on the use of matched assemblies.

NOTES

1 A definition of "sealed motor-compressor" is given in IEC 335-2-34.

2 Requirements for refrigeration safety are covered by ISO 5149, and requirements for containers intended for storage of the heated water included in **sanitary hot water heat pumps** are, in addition, covered by IEC 335-2-21.

3 For appliances using flammable refrigerants, additional requirements are under consideration.

Supplementary heaters, or a provision for their separate installation, are within the scope of this standard, but only heaters which are designed as a part of the appliance package, the controls being incorporated in the appliance.

NOTES

4 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;

– for appliances subjected to pressure, additionnal 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. In the case of appliances for permanent connection to the water supply system, all relevant requirements need to be observed.

5 This standard does not apply to

– humidifiers intended for use with heating and cooling equipment (IEC 335-2-88);

– appliances designed exclusively for industrial processing;

– 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).

2 Definitions

This clause of part 1 is applicable except as follows:

2.2.4 *Addition:*

NOTE – If the appliance comprises electrical accessories, including fans, the **rated power input** is based upon the total maximum **electrical power input** with all accessories energized, when operating continuously under the appropriate environmental conditions. If the **heat pump** can be operated in the heating or cooling mode, the **rated power input** is based upon the input in the heating or in the cooling mode, whichever is the greater.

2.2.9 *Replacement:*

normal operation: Conditions that apply when the appliance is mounted as in normal use and is operating under the most severe operating conditions specified by the manufacturer.

2.101 **heat pump:** Appliance which takes up heat at a certain temperature and releases heat at a higher temperature.

NOTE - When operated to provide heat (e.g., for space heating or water heating), the appliance is said to operate in the heating mode; when operated to remove heat (for example, for space cooling), it is said to operate in the cooling mode.

2.102 **sanitary hot water heat pump:** Heat pump intended to transfer heat to water suitable for human consumption.

2.103 **air conditioner**: Encased assembly or assemblies designed as an appliance to provide delivery of conditioned air to an enclosed space, room or zone. It includes an electrically operated refrigeration system for cooling and possibly dehumidifying the air. It may have means for heating, circulating, cleaning and humidifying the air.

2.104 **dehumidifier:** Encased assembly designed to remove moisture from its surrounding atmosphere. It includes an electrically operated refrigeration system and the means to circulate air. It also includes a drain arrangement for collecting and storing and/or disposing of the condensate.

2.105 **dehumidification - comfort:** Dehumidification to reduce the humidity within a space to a level to satisfy the requirements of the occupants.

2.106 **dehumidification - process:** Dehumidification to reduce the humidity within a space to a level necessary for the process or the storage of goods and/or materials or the drying out of the building fabric.

2.107 **dehumidification - heat recovery:** Dehumidification where the latent and sensitive heat removed from the space together with the compressor heat is reused in another application rather than rejected outside to waste.

2.108 **wet-bulb temperature (WB):** Temperature indicated when the temperature-sensitive element in a wetted wick has reached a state of constant temperature (evaporative equilibrium).

2.109 **dry-bulb temperature (DB):** Temperature indicated by a dry, temperature-sensitive element shielded from the effects of radiation.

2.110 **evaporator: Heat exchanger** in which refrigerant liquid is vaporized by absorption of heat.

2.111 **heat exchanger:** Device specifically designed to transfer heat between two physically separated fluids.

2.112 **indoor heat exchanger: Heat exchanger** designed to transfer heat to the indoor parts of the building or to the indoor hot water supplies (e.g., **sanitary water**) or to remove heat there from.

2.113 **outdoor heat exchanger: Heat exchanger** designed to remove or release heat from the heat source, (for example, ground water, outdoor air, exhaust air, water or brine).

2.114 **supplementary heater:** Electric heater provided as part of the appliance to supplement or replace the output of the refrigerant circuit of the appliance by operation in conjunction with, or instead of, the refrigeration circuit.

2.115 **pressure-limiting device:** Mechanism that automatically responds to a pre-determined pressure by stopping the operation of the pressure imposing element.

2.116 **pressure-relief device:** Pressure actuated valve or rupture member which functions to relieve excessive pressure automatically.

2.117 **self-contained unit:** Complete appliance, in suitable frames or enclosures, that is fabricated and shipped in one or more sections, and has no refrigerant containing parts connected in the field other than by companion or block valves.

NOTES

1 A **self-contained unit** in a single frame or enclosure is called a single package unit.

2 A **self-contained unit** in more than one frame enclosure is called a split package unit.

2.118 **appliances accessible to the general public:** Appliances intended to be located in residential buildings, or in commercial buildings.

2.119 **appliances not accessible to the general public:** Appliances which are intended to be maintained by qualified service personnel and located either in machine rooms and the like or at a level not less than 2,5 m or in secured rooftop areas.