

SLOVENSKI STANDARD

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SIST EN 60335-1:1997/A6:1997

SIST EN 60335-1:1997/A6:1997

**Varnost električnih gospodinskih in podobnih aparatov - 1. del: Splošne zahteve
(IEC 60335-1:1991; spremenjen)**

Safety of household and similar electrical appliances -- Part 1: General requirements

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke -- Teil 1:
Allgemeine Anforderungen

Sécurité des appareils électrodomestiques et analogues -- Partie 1: Prescriptions générales

Ta slovenski standard je istoveten z: EN 60335-1:1994

ICS:

13.120	Varnost na domu	Domestic safety
97.030	Električni aparati za dom na splošno	Domestic electrical appliances in general

SIST EN 60335-1:1998 **en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60335-1

September 1994

ICS 97.020

Supersedes EN 60335-1:1988 and its amendments

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

English version

Safety of household and similar electrical appliances
Part 1: General requirements
(IEC 335-1:1991, modified)

Sécurité des appareils
électrodomestiques et analogues
Partie 1: Prescriptions générales
(CEI 335-1:1991, modifiée)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke
Teil 1: Allgemeine Anforderungen
(IEC 335-1:1991, modifiziert)

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This European Standard was approved by CENELEC on 5 July 1994. 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, 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 335-1:1991, document CLC/TC 61 (SEC) 795, was circulated under the enquiry procedure in July 1991. This proposal was discussed during the Valadares meeting in April 1992 and the Pettenasco meeting in September 1992, when it was decided to submit a draft for EN 60335-1 to the unique acceptance procedure (UAP). This procedure started in February 1993 but the draft did not receive sufficient support.

The comments were discussed during the El Campello meeting in October 1993 when it was decided to submit a second draft of EN 60335-1 to the voting procedure. This draft was circulated in February 1994 and was ratified by CENELEC on 1994-07-05.

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

The following date is applicable:

- latest date of publication of an identical national standard (dop) 1995-04-01

This European Standard replaces EN 60335-1:1988 and its amendments. However, EN 60335-1:1988 remains valid until all the part 2's which are used in conjunction with it have been withdrawn. No date of withdrawal of conflicting national standards (dow) has therefore been fixed.

NOTE - In appliances covered by this standard, components which have been tested and found to comply with the relevant standard quoted in EN 60335-1:1988 are allowed until the latest date of application for production stated in the new component standard. However, components have to comply with clause 30.

This part 1 is to be used in conjunction with the appropriate part 2, which contains clauses to supplement or modify the corresponding clauses in part 1, to provide the relevant requirements for each type of product.

NOTE - Part 1 may be applied, as far as is reasonable, to appliances not covered by a part 2, in which case EN 60335-1:1988 is not to be used after 1997-04-01.

If the functions of an appliance are covered by different part 2's of EN 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.

The reference of subclauses, notes, figures and annexes which are in addition to those in IEC 335-1 is prefixed with the letter Z.

Special national conditions causing a deviation from this European Standard are listed in the normative annex ZA.

National deviations from this European Standard are listed in the informative annex ZB.

Normative references to International Standards are given in annex A with the reference of the corresponding European Standard.

All annexes are normative except annexes H, ZB and ZF.

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.

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 335-1:1991 was approved by CENELEC as a European Standard with agreed common modifications as given below.

- p When preparing the printed version of this European Standard, the second impression of
p IEC 335-1:1991 has to be used.

COMMON MODIFICATIONS**Contents**

- p Add:
- ZA Special national conditions
 - ZB A-deviations
 - ZC Capacitors
 - ZD Safety isolating transformers
 - ZE Switches
 - ZF IEC and CENELEC code designations for flexible cords

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Foreword

- p Delete.

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Introduction

- p Delete the last paragraph.
p Add:

The essential safety requirements of the following European directives, which could be applicable to household and similar appliances, are covered by this standard:

- 73/23/EEC — Low voltage directive;
- 89/392/EEC — Machinery directive;
- 89/106/EEC — Construction products directive.

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

2 Definitions

- p 2.7.2 Add the following note:

Z1 A part is not considered to be detachable if, according to the instructions, it has to be removed with the aid of a tool in order to discard batteries before scrapping the appliance.

3 General requirements

- p Delete notes 1 and 2.

COMMON MODIFICATIONS (continued)

4 General conditions for the tests

- p 4.2 Add to note 1:
If the tests of 24.1.3 are carried out, three switches or three additional appliances are needed.
- p 4.8.1 Replace the second paragraph by:
*Appliances which are not marked with **rated frequency** are tested with 50 Hz. Appliances which are marked with a frequency range of 50 Hz to 60 Hz are tested with 50 Hz or 60 Hz, whichever is more unfavourable.*

6 Classification

- p 6.1 Delete "Class 0, Class 0I,".

7 Marking and instructions

- p 7.1 Add to the requirement:
The marking of the **rated voltage** or **rated voltage range** shall cover
- 230 V for single-phase appliances;
- 400 V for multi-phase appliances.
- p 7.12 Add: <https://standards.iteh.ai/catalog/standards/sist/11e85fb9-ccc2-4ba9-9e3e-ac8ee260f945/sist-en-60335-1-1998>
The instructions for appliances incorporating batteries which contain materials which are hazardous to the environment, shall state that the batteries must be removed from the appliance before it is scrapped and that they are disposed of safely. The instructions shall state that the appliance must be disconnected from the supply and give details how to remove the batteries.
NOTE Z1 - Refer to annex ZA.
- p 7.12.2 Add:
If a **stationary appliance** is provided with a **supply cord** and a plug, the instructions shall state that the appliance must be positioned so that the plug is accessible.
NOTE Z1 - This requirement does not apply if the appliance incorporates other means for disconnection from the supply.

8 Protection against access to live parts

- p 8.1.2 Add.
NOTE Z1 - Appliance outlets are not considered to be socket-outlets.
- p 8.1.5 Replace the test specification by:
Compliance is checked by inspection and by the test of 8.1.1.

COMMON MODIFICATIONS (continued)

- p 8.2 Add:

Appliances having batteries which, according to the instructions for use, may be replaced by the user need only have **basic insulation** between **live parts** and the inner surface of the battery compartment. If the appliance can be operated without the batteries, **double insulation** or **reinforced insulation** is required.

11 Heating

- p 11.8 Add a third note after the table:

Z1 The temperature rise limit for metal applies to parts having a metal coating at least 0,1 mm thick and to metal parts having a plastic coating less than 0,3 mm thick.

15 Moisture resistance

- p 15.1 Add:

NOTE Z1 - Before inspection, the enclosure of the appliance is dried and care has to be taken when dismantling to avoid displacing any water.

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19 Abnormal operation

- p 19.5 Add the following note:

Z1 Refer to annex ZA. [SIST EN 60335-1:1998](https://standards.iteh.ai/catalog/standards/sist/11e85fb9-ccc2-4ba9-9e3e-ac8ee260f945/sist-en-60335-1-1998)

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- p 19.7 Delete note 2.

- p 19.9 Delete note 2.

- p 19.10 Replace the second paragraph by:

During the test, parts shall not be ejected from the appliance.

- p 19.11.2 Add:

NOTE Z1 - Refer to annex ZA.

22 Construction

- p 22.2 Add:

NOTE Z1 - Refer to annex ZA.

- p 22.32 Add the following note:

Z1 Refer to the footnote*.

* The following interpretation has been published by the IEC and accepted by CENELEC:

NOTE - In case of doubt the following test is carried out to determine if ceramic material is tightly sintered.

The ceramic material is broken into pieces which are immersed in a solution containing 1 g of fuchsin in each 100 g of methylated spirit. The solution is maintained at a pressure not less than 15 MPa for a period so that the product of the test duration in hours and the test pressure in MPa is not less than 180.

The pieces are removed from the solution, rinsed, dried and broken into smaller pieces.

The freshly broken surfaces are examined and are not to show any trace of dye.

COMMON MODIFICATIONS (continued)

- p 22.40 Replace the requirement by:

Motor-operated appliances and **combined appliances** which are intended to be moved while in operation or which have accessible moving parts, shall be fitted with a switch to control the motor. The actuating member of this switch shall be easily visible and accessible.

- p Add:

- 22.Z1 Appliances are not allowed to have an enclosure which is shaped and decorated so that the appliance is likely to be treated as a toy by children.

Compliance is checked by inspection.

NOTE - Examples are enclosures representing animals or persons or resembling scale models.

- 22.Z2 Fully halogenated chlorofluorocarbons (CFC's) shall not be used.

Compliance is checked by inspection.

23 Internal wiring

- p 23.5 In the first paragraph of the test specification replace "insulation" by "**basic insulation**" (in two places).

- p Add the following note:

Z1 For Class II constructions, the requirements for supplementary insulation and reinforced insulation apply except that the sheath of a cord complying with IEC 227 or IEC 245 may provide supplementary insulation.

24 Components

- p 24.1 Add:

NOTE Z1 - Unless otherwise specified, the requirements of clause 29 apply between live parts of components and accessible parts of the appliance.

- p 24.1.1 Replace the first paragraph by:

Capacitors likely to be permanently subjected to the supply mains voltage and used for radio interference suppression or for voltage dividing, shall comply with annex ZC.

- p Replace the third paragraph by:

Safety isolating transformers shall comply with IEC 742, unless they are tested with the appliance in which case they shall comply with annex ZD.

- p Replace "IEC 328" by "IEC 1058".

- p 24.1.2 Add to the list of controls:

- | | |
|---------------------|--------|
| - energy regulators | 3 000 |
| - timers | 10 000 |

COMMON MODIFICATIONS (continued)

- p 24.1.3 Replace by:

For switches, the test of subclause 17.2.7 of IEC 1058-1 is carried out for 10 000 cycles of operation.

Switches which have not been separately tested and found to comply with IEC 1058-1 under conditions covering those occurring in the appliance, shall comply with annex ZE.

*Switches intended for operation under no load and which can be operated only with the aid of a **tool** are not subjected to the tests of clause 17 of IEC 1058-1. This applies also for such switches operated by hand which are interlocked so that they cannot be operated under load but switches without this interlock are subjected to the test of subclause 17.2.7 for 100 cycles of operation.*

NOTE - The test of subclause 17.2.7 of IEC 1058-1 is only carried out on switches required by this standard.

25 Supply connection and external flexible cords

- p 25.3 Delete the third dashed item.

- p 25.4 Delete from table 8 the note with its reference and the values in parentheses.

- p 25.6 Add:

Supply cords of single-phase **portable appliances** having a **rated current** not exceeding 16 A shall be provided with a plug complying with the following standard sheets of IEC 83:

- for **class I appliances** standard sheet C2b, C3b or C4;
- for **class II appliances** standard sheet C5 or C6.

NOTE Z1 - Refer to annex ZA.

- p 25.7 Add after the second dashed item:

- ordinary polychloroprene sheathed flexible cord (code designation 245 IEC 57);

- p Add to the notes:

Z1 The harmonized code designations corresponding to the IEC cord types are given in annex ZF.

- p 25.8 Add:

NOTE Z1 - Refer to annex ZA.

27 Provision for earthing

- p 27.2 Replace "IEC 685-2-1" by "IEC 998-2-2" (in two places).

COMMON MODIFICATIONS (continued)

- p Add:
- 27.Z1 The printed conductors of printed circuit boards shall not be used to provide earthing continuity in **hand-held appliances**. They may be used to provide earthing continuity in other appliances if
- at least two tracks are used with independent soldering points and the appliance complies with the requirement of 27.5 for each circuit;
 - the material of the printed circuit board complies with IEC 249-2-4 or IEC 249-2-5.
- Compliance is checked by inspection and by the relevant tests.*

28 Screws and connections

- p 28.1 Add:
- The test is not carried out on screws and nuts transmitting contact pressure for earthing continuity provided at least two screws or nuts are used.*
- p 28.2 Add:
- This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0,5 A.

29 Creepage distances, clearances and distances through insulation

- p 29.1 Add after note 6:
- Z1 The values specified in the table do not apply to **creepage distances** and **clearances** over **reinforced insulation** of appliance outlets, provided that the distance is at least 5,7 mm.
- p Add:
- NOTE Z2 - Refer to the footnote*.

30 Resistance to heat, fire and tracking

- p Delete the first paragraph of the note.
- p 30.2.3 In the first paragraph, replace "750 °C" by "850 °C".
- p Delete the text after note 2.

* The following Interpretation has been published by the IEC and accepted by CENELEC:

Notes to table 13; add the following text to notes 4 and 5:

The distance of 1,0 mm is allowed if the following two conditions are met:

- the insulating material at the end of the tubular sheathed element is track resistant (CTI > 250). This material could be the magnesium oxide powder or sealing material;
- the environment at the end of the tubular sheathed element is protected against the deposition of dirt by a cover. This cover is to be close to the end of the element but not necessarily in contact with it.

. In general the enclosure of the appliance does not provide sufficient protection.

. If a cap or a plug of ceramic or silicon rubber is fitted to the end of the element, the normal creepage distances and clearances apply to the outer surface of the cap or plug.

Annexes**Annex A - Normative references**

Replace by:

Annex A**Normative references****International publications with their relevant European publication**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>IEC standard</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
51-2	1984	Direct acting indicating analogue electrical measuring instruments and their accessories Part 2: Special requirements for ammeters and voltmeters	EN 60051-2	1989
61-1 (mod)	1969	Lamp caps and holders together with gauges for the control of interchangeability and safety Part 1: Lamp caps	EN 60061-1 ¹⁾	1993
65 (mod)	1985	Safety requirements for mains operated electronic and related apparatus for household and similar general use	EN 60065 ²⁾	1993
68-2-63	1991	Environmental testing - Part 2: Test methods Test Eg: Impact, spring hammer	EN 60068-2-63	1994
83	1975	Plugs and socket-outlets for domestic and similar general use — Standards	—	—
85	1984	Thermal evaluation and classification of electrical insulation	HD 566 S1	1990

1) EN 60061-1 includes supplements A:1970 to N:1992 to IEC 61-1.

2) EN 60065 includes A1:1987 + A2:1989 + A3:1992 to IEC 65.

COMMON MODIFICATIONS (continued)

<u>IEC standard</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
112	1979	Method for determining the comparative and proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
127	Series	Cartridge fuse-links for miniature fuses	EN 60127	Series
227 (mod)	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	HD 21	Series
245 (mod)	Series	Rubber insulated cables of rated voltages up to and including 450/750 V	HD 22	Series
249-2-4	1987	Base materials for printed circuits Part 2: Specifications Specification No. 4: Epoxide woven glass fabric copper-clad laminated sheet, general purpose grade	EN 60249-2-4 ³⁾	1994
249-2-5	1987	Specification No. 5: Epoxide woven glass fabric copper-clad laminated sheet of defined flammability (vertical burning test)	EN 60249-2-5 ⁴⁾	1994
252	1975	A.C. motor capacitors	—	—
309 (mod)	Series	Plugs, socket-outlets and couplers for industrial purposes	EN 60309	Series
320 (mod)	Series	Appliance couplers for household and similar general purposes	EN 60320	Series
384-14	1981	Fixed capacitors for use in electronic equipment — Part 14: Sectional specification: Fixed capacitors for radio interference suppression — Selection of methods of test and general requirements	—	—
417	1973	Graphical symbols for use on equipment - Index, survey and compilation of the single sheets	HD 243 S10 ⁵⁾	1993
529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991

3) EN 60249-2-4 includes A2:1992 to IEC 249-2-4.

4) EN 60249-2-5 includes A2:1992 to IEC 249-2-5.

5) HD 243 S10 includes IEC 417A:1974 up to IEC 417K:1991.

COMMON MODIFICATIONS (end)

<u>IEC standard</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
695-2-1	1980	Fire hazard testing — Part 2: Test methods Glow-wire test and guidance	HD 444.2.1 S1	1983
695-2-2	1980	Needle-flame test	HD 444.2.2 S1	1983
695-2-3	1984	Bad-connection test with heaters	HD 444.2.3 S1	1987
707	1981	Methods of test for the determination of the flammability of solid electrical insulating materials when exposed to an igniting source	HD 441 S1	1983
730 (mod)	Series	Automatic controls for household and similar use	EN 60730	Series
742 (mod)	1983	Isolating transformers and safety isolating transformers — Requirements	EN 60742	1989
998-2-2	1991	Connecting devices for low voltage circuits for household and similar purposes Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units	EN 60998-2-2	1993
999 (mod)	1990	Connecting devices — Safety requirements for screw-type and screwless-type clamping units for electrical copper conductors	EN 60999	1993
1058	—	Switches for appliances	EN 61058	—
1058-1	1990	Part 1: General requirements	EN 61058-1	1992
<u>ISO standard</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
1463	1982	Metallic and oxide coatings — Measurements of coating thickness — Microscopic method	—	—
2178	1982	Non-magnetic coatings on magnetic substrates Measurement of coating thickness — Magnetic method	—	—

Annex D

p Delete the text and replace by “ - Void -”.

Annex H

p In the box “glow-wire test, 750 °C annex K”, replace “750 °C” by “850 °C”.

Annex ZA (normative)**Special national conditions**

Special national condition: National characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions. If it affects harmonization, it forms part of the European Standard.

For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.

<u>Clause</u>	<u>Special national condition</u>
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7.12 Denmark

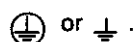
Supply cords of class I appliances, which are supplied without a plug, shall be provided with a visible tag containing the following text:

Vigtigt!
Lederen med grøn/gul isolation
må kun tilsluttes en klemme mærket



Important!

The conductor having green/yellow insulation shall only be connected to a terminal marked



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If it is essential for the safety of the appliance, the tag shall be provided either with a wiring diagram showing the connection of the other conductors or with the following text:

For tilslutning af de øvrige ledere,
se medfølgende installationsvejledning.

For the connection of the other conductors, see the enclosed instructions for installation.

19.5 Norway

The test is also applicable to appliances intended to be permanently connected to fixed wiring.

19.11.2 Austria

An appliance having circuits which may cause, under fault conditions, an earth-leakage current exceeding 5 mA and having a d.c. component exceeding 20 % of the total earth-leakage current shall be

- constructed so that this current can arise only when an insulation fault equivalent to failure of double insulation or reinforced insulation occurs, or
- provided with instructions giving the necessary information with regard to the required type of residual current device.