SLOVENSKI STANDARD

SIST EN 60335-1:1997/A2:1997

prva izdaja
junij 1997

Varnost gospodinjskih in podobnih električnih aparatov - 1. del: Splošne zahteve (IEC 60335-1:1976/A4:1984, spremenjen)

Safety of household and similar electrical appliances - Part 1: General requirements - Amendment A2 (IEC 335-1:1976/A4:1984, modified)

ICS 97.030

Referenčna številka
SIST EN 60335-1:1997/A2:1997(en)

EUROPEAN STANDARD
NORME EUROPEENNE
EUROPÄISCHE NORM

EN 60 335-1
Amendment 2
AC
1988-08

Amends the Amendment 2 to EN 60 335-1 August 1988

ENGLISH VERSION

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES
PART 1: GENERAL REQUIREMENTS
(Amendment No. 4 (1984) to IEC 335-1 (1976), modified)

Sécurité des appareils électrodomestiques et analogues Première partie: Règles générales (Modification no. 4 (1984) à la CEI 335-1 (1976), modifiée)	Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke Teil 1: Allgemeine Anforderungen (Nachtrag 4 (1984) zur IEC 335-1 (1976), modifiziert)

This Amendment becomes effective on 15 March 1989 for incorporation in the official English version of the EN and for incorporation in corresponding CENELEC members' national versions of the EN before its publication.

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

Central Secretariat: rue Bréderode 2, B-1000 Brussels

Ref. No. EN 60 335-1:1988/A2:1988 E

ERRATUM TO AMENDMENT 2
TO EN 60 335-1
August 1988 edition
English version

Page 2

Delete in the first line of the last paragraph "approved and".

January 1989

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

NORME DE LA CEI

INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC STANDARD

Modification nº 4

Décembre 1984
à la

Amendment No. 4

December 1984
to

Publication 335-1
Deuxième édition — Second edition
1976

Sécurité des appareils électrodomestiques et analogues

Première partie: Règles générales

Safety of household and similar electrical appliances

Part 1: General requirements

Les modifications contenues dans le présent document ont été approuvées suivant la Règle des Six Mois.

Les projets de modifications à la deuxième édition de la Publication 335-1 (1976) de la CEI, discutés par le Comité d'Etudes nº 61, furent diffusés pour approbation suivant la Règle des Six Mois, sous forme de documents 61(Bureau Central)311 en mai 1982, 61(Bureau Central)330 en octobre 1982, 61(Bureau Central)342 en août 1983 et 61(Bureau Central)346 en août 1983. Pour de plus amples renseignements, consulter les rapports de vote suivants: 61(Bureau Central)337, 61(Bureau Central)349, 61(Bureau Central)388 et 61(Bureau Central)390.

The amendments contained in this document have been approved under the Six Months' Rule.

The draft amendments to the second edition of IEC Publication 335-1 (1976), discussed by Technical Committee No. 61, were circulated for approval under the Six Months' Rule as Documents 61(Central Office)311 in May 1982, 61(Central Office)330 in October 1982, 61(Central Office)342 in August 1983 and 61(Central Office)346 in August 1983. Further information can be found in the Reports on Voting: 61(Central Office)337, 61(Central Office)349, 61(Central Office)388 and 61(Central Office)390.

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Prix
Price Fr. s. 44.—

CONTENTS

Add the following after APPENDIX G:

PREFACE

Add the following to the list of notes regarding differing national practices:

Sub-clause 23.9: consolidation of the ends of stranded conductors by lead-tin soldering is allowed.

Sub-clause 30.3: the glow-wire test referred to in Appendix K is made at a higher temperature. In some other countries, the material of the enclosure of certain appliances may be required to be classified in accordance with IEC Publication 707. Moreover, if there is no evidence with regard to the classification of the material, the enclosure may be required to withstand the needle-flame test referred to in Appendix M and additional tests with regard to the resistance to ignition may be necessary.

Add the following to the list of other IEC publications quoted:

112 (1979):	Method for Determining the Comparative and the Proof Tracking Indices of Solid Insulating Materials under Moist Conditions.
695-2-1 (1980):	Fire Hazard Testing. Part 2: Test Methods. Glow-wire Test and Guidance.
695-2-2 (1980):	Needle-flame Test.
695-2-3 (1984):	Bad-connection Test with Heaters.
707 (1981):	Methods of Test for the Determination of the Flammability of Solid Electrical Insulating Materials when Exposed to an Igniting Source.
817 (1984):	Spring-operated Impact-test Apparatus and its Calibration.

Addition:

This amendment replaces IEC Publication 553: Report on Evaluation of Non-metallic Enclosures and Other Parts of Household and Similar Appliances with Regard to Resistance to Fire.

7. Marking

7.14 *Addition:*

If compliance with this standard depends upon the operation of a replaceable thermal link, the reference number or other means for identifying the link shall be marked on the link or at a place such that it is clearly visible when the appliance has been dismantled to the extent necessary for replacing the link.

15. **Moisture resistance**

15.1 *Modification:*

Instead of the particular reference to traces of water on insulation, the following applies:

in particular, there shall be no trace of water on insulation which could result in a reduction of creepage distances and clearances below the values specified in Sub-clause 29.1.

Addition:

For the tests of Sub-clauses 15.2 and 15.3, appliances for building-in are built in in accordance with the manufacturer's instructions.

15.3 *Modification:*

Instead of the particular reference to traces of water on insulation, the following applies:

in particular, there shall be no trace of water on insulation which could result in a reduction of creepage distances and clearances below the values specified in Sub-clause 29.1.

21. **Mechanical strength**

21.1 *Modification:*

Instead of the description how to support the sample, the following applies:

The sample as a whole is rigidly supported against a plane surface and three blows are applied to every point of the enclosure that is likely to be weak.

Addition:

For the calibration of the spring-operated impact-test apparatus, see IEC Publication 817: Spring-operated Impact-test Apparatus and its Calibration.

22. **Construction**

22.15 *Delete this sub-clause.*

23. **Internal wiring**

Additional sub-clause:

23.9 Stranded conductors shall not be consolidated by lead-tin soldering where they are subject to contact pressure, unless the clamping means is so designed that there is no risk of bad contact due to cold flow of the solder.

25.11 *Replace the paragraph preceding the table by the following:*

Immediately afterwards, the cable or cord, other than that of an automatic cord reel, is subjected for 1 min to a torque of the value shown in the following table.

26. Terminals for external conductors

26.2 *Replace the text preceding the table by the following:*

Terminals for the connection to fixed wiring and those for type X attachment shall allow the connection of conductors having nominal cross-sectional areas as shown in the following table, unless the appliance is so designed that only one type of cable or cord can be fitted, in which case the terminals shall be suitable for the connection of that cable or cord.

26.3 *Addition:*

Terminals with screw clamping and screwless terminals shall not be used for the connection of the conductors of flat twin tinsel cords.

28. Screws and connections

28.5 *Addition:*

The second requirement does not imply that more than one rivet is necessary for providing earthing continuity.

29. Creepage distances, clearances and distances through insulation

29.1 *Replace the seventh paragraph of the test specification by the following:*

If necessary, a force is applied to any point on bare conductors other than those of heating elements, to any point on uninsulated metal capillary tubes of thermostats and similar devices and to the outside of metal enclosures, in an endeavour to reduce the creepage distances and clearances while taking the measurements.

30. Resistance to heat, fire and tracking

Replace this clause by the following[1]*:*

30.1 External parts of non-metallic material and parts of insulating material retaining live parts in position, the deterioration of which might cause the appliance to fail to comply with this standard, shall be sufficiently resistant to heat.

Compliance is checked by subjecting a specimen of the relevant parts to a ball-pressure test, which is made by means of the apparatus shown in Figure 14, page 131.

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[1] The tests specified in this clause are based on the present IEC standards dealing with this subject. Other concepts for determining the resistance to fire, such as preselection testing, are under consideration by the IEC and will be studied when available.
Appendix H shows the selection and sequence of the tests of this clause.

Compliance is checked by inspection.

Consolidation of stranded conductors by lead-tin soldering is allowed if spring terminals are used: securing the clamping screws alone is not considered adequate.

Soldering of the tip of a stranded conductor is allowed.

25. Supply connection and external flexible cables and cords

25.4 *Addition:*

Type X attachment shall not be used for flat twin tinsel cords.

25.6 *Modification:*

Instead of the types of power supply cord specified, the following applies:

Power supply cords shall be not lighter than:

- braided flexible cord (code designation 245 IEC 51), if specifically allowed in the relevant Part 2;
- ordinary tough rubber sheathed flexible cord (code designation 245 IEC 53);
- flat twin tinsel cord (code designation 227 IEC 41), if specifically allowed in the relevant Part 2;
- light polyvinyl chloride sheathed flexible cord (code designation 227 IEC 52), for appliances having a mass not exceeding 3 kg;
- ordinary polyvinyl chloride sheathed flexible cord (code designation 227 IEC 53), for appliances having a mass exceeding 3 kg.

Replace the table by the following:

Rated current of appliance (A)	Nominal cross-sectional area (mm^2)
Up to and including 0.2	tinsel cord [1]
over 0.2 up to and including 3	0.5 [2]
over 3 up to and including 6	0.75
over 6 up to and including 10	1
over 10 up to and including 16	1.5
over 16 up to and including 25	2.5
over 25 up to and including 32	4
over 32 up to and including 40	6
over 40 up to and including 63	10

[1] This type of cord is only allowed if specifically stated in the relevant Part 2 and if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug, does not exceed 2 m.

[2] This nominal cross-sectional area is only allowed if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug, does not exceed 2 m.

25.10 *Add the following sentence to the first paragraph:*

The curvature shall extend over an angle of at least 60°, as shown in Figure 19.

Before starting the test, the specimen is kept for 24 h in an atmosphere having a temperature between 15 °C and 35 °C and a relative humidity between 45% and 75%.

The specimen is placed on a support in such a way that its upper surface is horizontal and a steel ball having a diameter of 5 mm is pressed against this surface with a force of 20 N. The thickness of the specimen is at least 2.5 mm, this thickness being obtained, if necessary, by placing two or more specimens together.

The test is made in a heating cabinet at a temperature the value of which is the higher of 40 °C (40 K) plus the maximum temperature rise determined during the test of Clause 11, with a tolerance of ± 2 °C (± 2 K), and:

75 ± 2 °C for external parts.

125 ± 2 °C for parts retaining live parts in position.

However, for parts of thermoplastic material providing supplementary insulation or reinforced insulation, the test is made at a temperature which is 25 °C (25 K) in excess of the maximum temperature rise determined during the tests of Clause 19, with a tolerance of ± 2 °C (2 K), if this will lead to a higher temperature.

Before the test is started, the ball and the support on which the specimen is placed are brought to the temperature specified.

After 1 h, the ball is removed from the specimen, which is then cooled, within 10 s, to approximately room temperature by immersion in cold water. The diameter of the impression caused by the ball is then measured and shall not exceed 2 mm.

For coil formers, only those parts which support or retain in position terminals or terminations are subjected to the test.

The test is not made on parts of ceramic material.

30.2 Parts of non-metallic material shall be adequately resistant to ignition and to spread of fire.

This requirement does not apply to decorative trims, knobs and other parts not likely to be ignited or to propagate flames originating from inside the appliance.

Compliance is checked by the tests of Sub-clauses 30.3 and 30.4.

30.3 *Separately moulded specimens of the relevant parts are subjected to the burning test referred to in Appendix J.*

If separately moulded specimens are not available, or if there is no evidence that the material withstands the burning test, or if the separately moulded specimens do not withstand that test, the glow-wire test referred to in Appendix K is made on the relevant parts of the appliance, the test being made at a temperature of 550 °C, unless a higher temperature is specified in the relevant Part 2.

30.4 *For appliances which are operated while attended, parts of insulating material retaining in position connections carrying a current exceeding 0.5 A and which, in the event of a failure, might give rise to fire hazard, are subjected to the glow-wire test referred to in Appendix K,*

— *the test being made at a temperature of 750 °C.*

This test is, however, not made on hand-held appliances, on appliances which have to be kept switched on by hand and on appliances which are continuously loaded by hand.

For appliances liable to be operated while unattended, connections retained in position by parts of insulating material and carrying a current exceeding 0.5 A and which, in the event of a failure, might give rise to fire hazard, are subjected to the bad-connection test with heaters referred to in Appendix L or, if this test cannot be made due to the design of the connection, the parts of insulating material retaining the connection in position are subjected to the glow-wire test referred to in Appendix K, the test being made at a temperature of 850 °C.

If the parts do not withstand the glow-wire test or the bad-connection test with heaters, the needle-flame test referred to in Appendix M is made on all other parts of non-metallic material which are positioned within a distance of 50 mm from those parts, unless these other parts are shielded by a separate barrier or enclosure from the parts originally tested, in which case the barrier or enclosure is subjected to the needle-flame test.

Examples of connections which, in the event of a failure, might give rise to fire hazard are screw connections which may be made or remade during installation or user servicing of the appliance.

30.5 Insulating material across which a tracking path may occur between live parts of different polarity or between live parts and earthed metal parts, and insulating material of commutators and brush-caps, shall have adequate resistance to tracking, taking into account the severity of its duty conditions, as specified in the relevant Part 2.

For parts of insulating material other than ceramic, compliance is checked by the proof tracking test referred to in Appendix N.

For parts of insulating material used under severe duty conditions, the test voltage is 175 V. If the specimens do not withstand this test and there is no hazard other than fire, surrounding parts are subjected to the needle-flame test referred to in Appendix M.

For parts of insulating material used under extra-severe duty conditions, the test voltage is 250 V. If the specimens do not withstand this test, but withstand the test made with a test voltage of 175 V, and there is no hazard other than fire, surrounding parts are subjected to the needle-flame test referred to in Appendix M.

The needle-flame test is made on all parts of non-metallic material positioned within a distance of 50 mm from any place where a tracking path may occur, unless these parts are shielded by a separate barrier or enclosure from that tracking path, in which case the barrier or enclosure is subjected to the needle-flame test.

For the severity of the duty conditions of insulating material, see Appendix O.

Figure 15

Delete this figure.

After Figure 18 add the new Figure 19.