



National Differences For

Safety of Household and Similar Electrical Appliances, Part 1: General Requirements

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National Differences For

Safety of Household and Similar Electrical Appliances, Part 1: General Requirements

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UL 60335-1 is an adoption of IEC 60335-1, Safety Standard for of Household and Similar Electrical Appliances, Part 1: General Requirements, (Edition 5.1, Issued by the IEC April, 2014). Please note that the national difference document incorporates all of the U.S. national differences for UL 60335-1.

This document provides a single listing of the National Differences included in the UL adoption of the corresponding IEC standard.

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Preface

This document provides a single listing of the technical National Differences included in the UL adoption of the corresponding IEC standard.

In its IEC-based standards, UL uses the notations indicated below to identify national difference type, and these types are additionally noted in this document. The standard may not use all types of these deviations.

D1 - These are deviations which are based on basic safety principles and requirements, elimination of which would compromise safety for U.S. consumers and users of products.

D2 - These are deviations based on safety practices. These are deviations for IEC requirements that may be acceptable, but adopting the IEC requirements would require considerable retesting or redesign on the manufacturer's part.

DC - These are deviations based on the component standards and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE - These are deviations based on editorial comments or corrections.

DR - These are deviations based on the national regulatory requirements.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

National Differences

1DV.1 DR Modification to add after the first paragraph:

This standard covers the above-noted products that are intended to be installed or used in accordance with:

- CSA C22.1, Canadian Electrical Code (CEC) Part I,
- NFPA 70, National Electrical Code (NEC), in the United States.

1DV.2 DE Modification to add the following note:

NOTE 5 This Part 1 may be employed for investigation of components and sub-assemblies for the purpose of their pre-selection for use in appliances. If the component or sub-assembly used complies with this standard, the tests for the component or sub-assembly specified in the particular appliance standard in some cases will not need to be made in the particular appliance or assembly. Additional testing on a component or subassembly may be required. For example, if a control system is associated with the particular appliance control system, additional tests could potentially be necessary on the final appliance.

2DV.1 DR Modification to add the following to Clause 2 (Canada only):

CAN/CSA-C22.2 No. 0, General Requirements – Canadian Electrical Code, Part II.

2DV.2 DC Modification to add the following:

IEC component standard requirements are replaced by the relevant requirements of Canada and United States component standards, as cited in Annex DVA.

3.3.7DV D2 Modification to add the following after the last sentence of the definition:

CLASS 0 appliances shall not exceed 150 V (rms) to ground.

3.4.1DV DR Modification to replace the definition with the following:

EXTRA-LOW VOLTAGE: voltage that does not exceed 30 V rms or 42,4 V peak ac or dc.

3.4.2DV DR Modification to replace the first paragraph with the following:

SAFETY EXTRA-LOW VOLTAGE: voltage not exceeding 30 V rms or 42,4 V peak or 30 V dc between conductors and between conductors and earth. Where wet contact with the appliance is likely to occur, SAFETY EXTRA-LOW VOLTAGE is 15 V rms or 21,2 V peak or 15 V dc.

NOTE Appliances where wet contact is assumed to occur such as a wet shaver are specified in the part 2 standard.

3.6.3DV D2 Modification to replace the first sentence with the following:

ACCESSIBLE PART : part or surface that can be touched by means of either test probe B of IEC 61032 or, when required in clause 8, 20.2 or the applicable part 2, Figure 13DV and if the part or surface is metal, any conductive part connected to it

3.6.4DV DE Modification to add the following note:

NOTE 3 A LIMITED POWER SOURCE is not considered to be LIVE PARTS.

3.10DV D2 Addition:

LIMITED POWER SOURCE: a power source whose output voltage is SELV and the maximum output current and other parameters are limited in accordance with Table 3DV.1

Table 3DV.1 - Limits for inherently LIMITED POWER SOURCES

Output voltage ¹⁾ (U _{OC})		Output current ²⁾ (I _{SC}) A	Apparent power ³⁾ (S) VA
V a.c.	V d.c.		
≤ 20	≤ 20	≤ 8,0	≤ 5 × U _{OC}
20 < U _{OC} ≤ 30	20 < U _{OC} ≤ 30	≤ 8,0	≤ 100
–	30 < U _{OC} ≤ 42,4	≤ 150 / U _{OC}	≤ 100
¹⁾ U _{OC} : Output voltage measured with all load circuits disconnected. Voltages are for substantially sinusoidal a.c. and ripple free d.c. For non-sinusoidal a.c. and d.c. with ripple greater than 10% of the peak, the peak voltage shall not exceed 42,4 V. ²⁾ I _{SC} : Maximum output current with any non-capacitive load, including a short circuit measured 5 s after application of the load if the limited power circuit is protected by an ELECTRONIC CIRCUIT or a PTC and 60 s if protected by an impedance. ³⁾ S (VA): Maximum output VA with any load. Initial transients lasting less than 5 s are permitted to exceed the limit if the limited power circuit is protected by an ELECTRONIC CIRCUIT or a PTC and 60 s if protected by an impedance.			

3.11DV D2 Addition:

PROTECTIVE EARTHING CONDUCTOR: a conductor connecting the main protective earthing terminal or lead in the equipment to the building earth, or in the power SUPPLY CORD, connecting a main protective earthing terminal in the equipment to an earth point in the building installation

3.12DV D2 Addition:

PROTECTIVE BONDING CONDUCTOR: a conductor in the equipment, or a combination of conductive parts in the equipment, connecting a main protective earthing terminal to a part of the equipment that is required to be earthed

4DV.1 DE Modification of the first paragraph:

Replace "cause no danger to persons or surroundings." with "reduce the risk of fire, electric shock, and/or injury to persons."

4DV.2 DR Modification to add the following to Clause 4 (Canada only):

CAN/CSA-C22.2 No. 0 shall form a part of, and be read in conjunction with, this standard as far as the requirements apply, except that, where this standard contains requirements that are at variance with those of CAN/CSA-C22.2 No. 0, the requirements of this standard shall take precedence.

5.2DV DE Modification to replace last sentence of first paragraph to the following:

The test of 22.3 and 22.55DV is carried out on a new appliance.

6.1DV DR Modification to add the following:

CLASS 0I appliances are not allowed.

7.1DV.1 D2 Modification to add a paragraph after the seventh dashed item of Clause 7.1:

Ingress protection markings in addition to the IP ratings are acceptable. If marked, the appliance shall also comply with the referenced standards of Annex DVA (Boxes, Conduit and Fittings). Additional markings, where used, shall be as specified in the applicable Part 2.

7.1DV.2 DR Modification to add the following after the compliance statement of Clause 7.1:

If the temperature rise of the insulation of the fixed wiring supplying an appliance for permanent connection to the supply mains exceeds the temperature rise specified in Table 3 during the test of Clause 11, the equipment shall be marked with the substance of the following:

"Use supply wires suitable for ____ °C"

NOTE 5 The temperature specified in the marking will be 75°C or 90°C except where another rating is permitted by national electrical installation code wiring rules.

NOTE 6 Additional information (e.g. AWG size) may be provided as part of the marking where appropriate to facilitate installation in accordance with the national electrical installation code wiring rules.

Compliance is checked by inspection and during the test of Clause 11.

7.1DV.3 DR Modification to add the following (Canada Only):

In Canada, warnings shall be written in English and French.

7.8DV DR Modification to revise first dashed item as follows:

– terminals used for type X attachment, intended exclusively for the neutral conductor shall be indicated by the letter N;

7.12.3DV DR Deletion:

Delete Clause 7.12.3.

7.13DV DR Modification to add the following (Canada Only):

In Canada the French translation of the warning of Clause 7.2 is as follows:

Avertissement: Avant d'accéder aux bornes de raccordement, tous les circuits d'alimentation doivent être déconnectés.

7.17DV DR Addition:

Appliances requiring the usage of time delay overcurrent PROTECTIVE DEVICES in accordance with 9DV.2 shall be so marked to indicate the use of time delay fuses only.

7.18DV DR Addition:

Appliances equipped with output terminals supplied from a LIMITED POWER SOURCE and intended for connection to a fixed wiring method shall be marked to indicate Class 2 wiring.

8.1.1DV.1 D2 Modification to replace the second paragraph with the following:

Lamps located behind a DETACHABLE COVER are not removed, provided that a screwshell type lampholder, if any, is connected to a circuit with a potential less than 150 V-to-ground and the screwshell is connected to the grounded (neutral) conductor, and the appliance can be isolated from the supply mains by means of a plug or an all-pole switch. However, during insertion or removal of lamps that are located behind a detachable cover, protection against contact with LIVE PARTS of the lamp cap shall be ensured.

8.1.1DV.2 D1 Modification to add the following after the third paragraph:

In addition, the articulated probe of Figure 13DV shall be applied as described for test probe B (IEC 61032) when the product is:

- a) A hand-held product, or a hand-held part of a product; or
- b) Accessible to children while the product is operating.

8.1.4DV D2 Modification to replace second bullet in first paragraph to read as follows:

- for d.c., the voltage does not exceed 30 V;

9DV DR Addition of 9DV.1 – 9DV.4:

9DV.1 An appliance shall start and operate on a circuit protected by a non-time delay fuse having a current rating corresponding to the supply mains to which the appliance would normally be connected.

9DV.2 The use of time delay fuses is acceptable for STATIONARY APPLIANCES marked as indicated in Clause 7.17DV.

9DV.3 Compliance is checked by the test specified in 9DV.4

9DV.4 The appliance shall be capable of starting 3 times at the conditions of Clause 11 at the RATED VOLTAGE. The appliance shall start under conditions representing the beginning of NORMAL OPERATION and the beginning of the normal operating cycle. The performance is unacceptable if the fuse opens or an overload protector provided as part of the appliance operates.

11.1DV DC Modification to add to the compliance statement:

In addition, the polymeric materials that enclose or support LIVE PARTS shall not exceed their relative thermal index determined in accordance with the standards in Annex DVA.

Table 3DV DC Modification to revise Table 3:

Revise Table 3 as follows:

- a) Change temperature rise for "Points where the insulation of the wires can come into contact with parts of the terminal block or compartment for fixed wiring, for a STATIONARY APPLIANCE not provided with a SUPPLY CORD" from 50 K to 35 K.
- b) Change temperature rise for "Material used as insulation, other than that specified for wires and windings^e: impregnated or varnished textile, paper or press-board" from 70 K to 65 K.
- c) Replace the requirement for "– silicone rubber" with the following:

– silicone rubber	145
– RTV silicone rubber	105

- d) Change temperature rise for "– polytetrafluoroethylene" from 265 K to 180 K.
- e) Add a reference to footnote o to " Parts in contact with oil having a flash-point of t °C" and add the following footnote:

“^o The maximum temperature rise of parts in contact with oil should be considered in the applicable part 2.”
- f) Add following to Table 3 preceding the Notes section.

Surface where adhesive is used to secure *NON-DETACHABLE PARTS* used to protect against access to LIVE PARTS, moisture or contact with moving parts.

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g) Replace footnote c with the following: “^c This limit may be exceeded if the marking specified in 7.1DV.1 is supplied.”

h) Delete footnote f. (US only)

13.1DV D1 Modification to add the following note:

NOTE At operating temperature includes warm-up and cool-down periods.

13.2DV.1 D1 Modification to replace all dashed items of the sixth paragraph with the following dashed items:

– for CLASS II APPLIANCES and for parts of CLASS II CONSTRUCTION	0,35 mA peak
– for CLASS 0 and CLASS III APPLIANCES	0,7 mA peak
– for PORTABLE CLASS I APPLIANCES	0,5 mA
– for all cord connected STATIONARY CLASS I APPLIANCES	0,75mA
– for other CLASS I MOTOR-OPERATED APPLIANCES	3,5mA
– for other CLASS I HEATING APPLIANCES	0,75 mA or 0,75 mA per kW RATED POWER INPUT of the appliance with a maximum of 5 mA, whichever is higher

13.2DV.2 D2 Modification to add the following 9th paragraph:

For a CLASS 0 or CLASS I cord connected appliance employing a sheathed type heating element, the leakage current may exceed 0,7 mA peak or 0,75 mA, as applicable, but shall not exceed 2,5 mA during a period of 5 minutes beginning when the 0,7 mA peak or 0,75 mA value was exceeded. At the end of the 5 minute period, the leakage current shall not exceed 0,7 mA peak or 0,75 mA, as applicable.

13.2DV.3 D1 Modification to add the following 10th paragraph:

For HEATING APPLIANCES incorporating a user adjustable heater control, the control shall be additionally adjusted, if necessary, so that it interrupts operation while the final measurements are taken.

13.3DV.1 D1 Modification to add the following Clause:

For the test of 13.3, varistors connected from live to accessible metal parts of CLASS I appliances may be disconnected.

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Table 4DV D1 Modification to revise Table 4:

Revise Table 4 as follows:

- a) Replace footnote a with the following: “^a Appliances rated more than 250 V are tested at $2 U + 1000 V$.”
- b) Add superscript “c” after “BASIC INSULATION” and add footnote c: “^c For wet and moist applications, special test voltages could be considered in the applicable part 2.”

16.2DV.1 D1 Modification to replace all dashed items of the fourth paragraph with the following dashed items:

– for CLASS II APPLIANCES and for parts of CLASS II CONSTRUCTION	0,25 mA
– for CLASS 0, CLASS 0I and CLASS III APPLIANCES	0,5 mA
– for PORTABLE CLASS I APPLIANCES	0,5 mA
– for all cord connected STATIONARY CLASS I APPLIANCES	0,75mA
– for other CLASS I MOTOR-OPERATED APPLIANCES	3,5mA
– for other CLASS I HEATING APPLIANCES	0,75 mA or 0,75 mA per kW RATED POWER INPUT of the appliance with a maximum of 5 mA, whichever is higher

16.2DV.2 D2 Modification to replace the fifth paragraph and dashed items starting with “The values specified above are doubled” with the following:

Higher leakage current values, not exceeding 3,5 mA, may be allowed by applicable part 2 standards for cord connected, STATIONARY CLASS I APPLIANCES employing radio interference filters.

16.3DV.1 D1 Modification to add the following Clause:

For the test of 16.3, varistors connected from live to accessible metal parts of CLASS I appliances may be disconnected.

Table 7DV D1 Modification to revise Table 7:

Revise Table 7 as follows:

- a) Replace footnote a with the following: “^a Appliances rated more than 250 V are tested at $2 U + 1000 V$.”
- b) Add superscript “d” after “BASIC INSULATION” and add footnote d: “^d For wet and moist applications, special test voltages could be considered in the applicable part 2.”

19.11.2DV D2 Modification to add the following note:

NOTE 3 For the test of 19.11.2(d), the terminals of a varistor complying with the relevant standard for surge suppressors are not short circuited.

19.11.4DV D2 Modification to replace the text of the third paragraph with the following:

The tests are carried out with surge PROTECTIVE DEVICES disconnected, unless they incorporate spark gaps or are varistors complying with the relevant standard for surge suppressors.

19.12DV DC Modification to add the following to note 3:

See Annex DVA (Fuses – Branch Circuit and Supplementary) for additional performance requirements applicable to those fuses. This applies only to fuses provided as an integral part of the appliance.

20.2DV D1 Modification to add the following after the fourth paragraph:

The articulated probe of Figure 13DV shall be applied with a force not exceeding 1 N when the product is:

- a) A hand-held product, or a hand-held part of a product; or
- b) Accessible to children while the product is operating.

Through openings, the test probe is applied to any depth that the probe will permit and is rotated or angled before, during and after insertion to any position.

21.1DV D2 Modification to replace the first, second and third paragraphs of 21.1 with 21.1DV.1 – 21.1DV.4:

21.1DV.1 Appliances shall have adequate mechanical strength and be constructed to withstand thermal conditioning and such rough handling that may be expected in normal use.

21.1DV.2 Compliance is checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, the spring hammer test or the ball impact test.

21.1DV.3 For both, the spring hammer test and ball impact test, the appliance is rigidly supported, and three blows having impact energy of 2,0 J are applied to every point of the enclosure that is likely to be weak.

21.1DV.4 For the ball impact test, force is applied by a solid, smooth, steel sphere 50 ± 1 mm in diameter, weighing approximately 0,53 kg.

- a) For top surfaces, the steel sphere shall be allowed to fall freely from rest through the distance required to cause it to strike the enclosure when the sphere has the specified energy.

b) For surfaces other than the top, the steel sphere shall be suspended by a fine wire and allowed to fall as a pendulum through the distance required to cause it to strike the surface with the specified impact, and the enclosure shall be so placed that the surface to be tested is vertical and in the same vertical plane as the point of support of the pendulum.

22.2DV D2 Modification to add the following:

Disconnection of the neutral is not required for all single-phase STATIONARY APPLIANCES.

22.3DV DC Modification to replace the 2nd and 3rd paragraph, and the Note, with the following:

Compliance is checked in accordance with the tipping moment requirements of Annex DVC.

22.11DV DC Modification to add the following (US only):

Adhesives securing NON-DETACHABLE PARTS shall additionally have adequate bonding properties. Compliance is checked by the application of the Structural Adhesive standard of Annex DVA.

22.12DV D1 Modification to add the following sentence to the note:

Friction fits are not considered reliable with respect to protection against a hazard.

22.33DV D2 Modification to replace first sentence with the following:

Conductive liquids that are or could possibly become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts shall not be in direct contact with LIVE PARTS.

22.35DV D2 Modification to add the following note:

NOTE Accessible metal parts separated from LIVE PARTS by earthed metal parts are not regarded as likely to become live in the event of an insulation fault.

22.39DV D2 Modification to add the following:

The screwshell of a mains-connected Edison-base lampholder shall be reliably connected to the identified (neutral) conductor.

22.40DV D2 Modification to add the following:

A cord-connected product with a motor having a rated output of more than 249 W (1/3 hp) shall be provided with a manually operated motor-control switch.