



**National Differences For**

**UL 60335-2-24**

**Safety Requirements for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers**

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Safety Requirements for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers

Edition: 1

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***The revisions dated February 27, 2015 are in regards to the effective date for the Standard for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers, UL 60335-2-24.***

**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 D1 Modification – National Difference in the U.S. Add the following text after “playing with the appliance by young children”:**

The articulate probe of figure 12DV of UL 60335-1 shall replace test probe B of IEC 61032 when the product is:

- a) A hand-held product;
- b) A hand-held part of a product;
- c) Used by children;
- d) Accessible to children while the product is operating; or
- e) One that has special concerns for the accessibility of live parts or mechanical hazards.

**1DV.2 D1 Modification – National Difference in the U.S. Add the following below note 1:**

This standard is applicable to household and similar electrical appliances and equipment which are designed to be installed in accordance with the National Electrical Code (NEC), ANSI/NFPA 70. Annex DVD of Part 1 provides examples of and references for regulatory requirements that may apply to appliances.

**1.101DV D1 Addition – National Difference in Canada, Mexico, and the U.S.:**

This part 2 is to be used in conjunction with the latest applicable country’s edition of 60335-1 and its amendments. It was established on the basis of:

- a) The fourth edition of IEC 60335-1;
- b) The sixth edition of IEC 60335-2-24;
- c) The fourth edition of UL 60335-1;
- d) The latest edition of NMX-J-521/1-ANCE; and
- e) CAN/CSA E60335-1/4E

**2DV D1 Addition – National Difference in Canada, Mexico, and the U.S.:**

**ANSI/ASHRAE 15,  
Safety Code for Mechanical Refrigeration**

**ANSI Z97.1:1984,  
Safety Performance Specifications and Methods of Test for Glazing Materials Used in Buildings**

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**ASTM E681:1998,**  
***Standard Test Method for Concentration Limits of Flammability of Chemicals (Vapors and Gases)***

**CSA B52-05,**  
***Mechanical Refrigeration Code***

**CSA C22.2 No. 0.3-01,**  
***Test Methods for Electrical Wires and Cables***

**CSA C22.2 No. 0.15-01,**  
***Adhesive Labels***

**CAN/CSA C22.2 No. 0.17-00,**  
***Evaluation of Properties of Polymeric Materials***

**CSA C22.2 No. 140.3-M1987 (R1999),**  
***Refrigerant Containing Components for Use in Electrical Equipment***

**CSA C22.2 No. 213-M1987 (R1999),**  
***Non-Incendive Electrical Equipment for Use in Class 1, Division 2 Hazardous Locations***

**NMX-J-521/2-24 ANCE,**  
***Safety of Household and Similar Electrical Appliances, Part 2-24, Particular Requirements for Refrigerators, Freezers, Ice Makers and Ice Cream Makers***

**NMX-J-521/2-34-ANCE,**  
***Safety of Household and Similar Electrical Appliances, Part 2-34, Particular Requirements for Motorcompressors***

***Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances,***  
**UL 94**

***Standard for Refrigerant-Containing Components,***  
**UL 207**

***Standard for Test for Surface Burning Characteristics of Building Materials,***  
**UL 723**

***Standard for Short Term Property Evaluations of Polymeric Materials,***  
**UL 746A**

***Standard for Polymeric Material, Use in Electrical Equipment Evaluations,***  
**UL 746C**

***Standard for Marking and Labelling Systems,***  
**UL 969**

***Standard for Electrical Wires, Cables, and Flexible Cords,***  
**UL 1581**

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***Standard for Electrical Equipment for Use in Class I and II, Division 2, and Class III Hazardous (Classified) Locations,  
UL 1604***

***2.101DV DC Addition – National Difference in Canada, Mexico, and the U.S.:***

Where reference is made to ANCE, CSA, or UL Standards, such reference shall be considered to refer to the latest edition and all amendments published to that edition up to the time when this Standard was approved.

***3.2.9.102DV D2 Modification – National Difference in Mexico:***

Replace “15°C ±2°C” with “15°C ±5°C.”

***3.2.9.103DV D2 Modification – National Difference in Mexico:***

Replace “15°C ±2°C” with “15°C ±5°C.”

***3.109DV DR Modification – National Difference in Mexico, Canada and the U.S.:***

For Canada and the U.S. replace “ISO 5149” with “ASHRAE 34 or CSA B52” and for Mexico replace “ISO 5149” with “Annex 24.DVD.”

***5.7DV D2 Modification – National Difference in Canada, Mexico, and the U.S.:***

Revise NOTE 101 to state that the readings may be “taken at the same point of any operating cycle.”

***6.1DV D1 Modification – National Difference in Canada, Mexico, and the U.S.:***

**6.1DV.1** In Canada and the U.S., Class 0 and Class 01 appliances do not apply.

**6.1DV.2** In Mexico, Class 0 appliances do not apply.

***6.101DV D2 Modification – National Difference in Canada and the U.S.:***

Appliances shall be of tropical Class (T).

***7.1DV D2 Modification – National Difference in Canada, Mexico, and the U.S.:***

**7.1DV.1** Refrigerators shall be marked with the manufacturing date identification for 3-consecutive month period and year. This information shall not repeat in less than 10 years and when coded shall appear on the serial plate.

**NOTE – 7.1DV.1 applies to the U.S. only.**

**7.1DV.2** An electrical accessory intended for field installation in or on a refrigerator shall be permanently marked with the name or identifying symbol of the manufacturer or private labeler, and with a catalog number or equivalent designation. The identification shall be on the accessory or the carton in which it is shipped. The associated refrigerator shall be marked to indicate the catalog number or equivalent designation of such an accessory and the name of the manufacturer or private labeler of that accessory when other than the refrigerator manufacturer.

**7.1DV.3** Climate class markings (SN), (N), (ST), and (T) are not required.

**7.1DV.4** Instructions for installing accessories shall be provided on or with each accessory. A statement shall be included in the instructions warning the installer that the refrigerator must be disconnected from the source of electrical supply before attempting the installation and that the accessory is intended for use only with a refrigerator that is marked to indicate such use.

**7.1DV.5** When the accessory is designed to be installed by means of receptacles and plug-in connectors that have been investigated to make and break circuits under load, and when such connection or disconnection does not result in exposure of uninsulated live parts, the statement that the appliance must be disconnected from the source of electrical supply is not required to be employed.

**7.1DV.6** Refrigerators shall have a permanent distinctive marking to identify it as the product of a particular factory.

**NOTE – 7.1DV.6 applies to the U.S. only.**

**7.1DV.7** The following markings, or the equivalent, shall be provided and shall be permanent when a **FLAMMABLE REFRIGERANT** is used:

- a) **“DANGER – Risk Of Fire Or Explosion. Flammable Refrigerant Used. Do Not Use Mechanical Devices To Defrost Refrigerator. Do Not Puncture Refrigerant Tubing.”**
- b) **“DANGER – Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.”**
- c) **“CAUTION – Risk Of Fire Or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner’s Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.”**
- d) **“CAUTION – Risk Of Fire Or Explosion. Dispose Of Properly In Accordance With The Applicable Federal Or Local Regulations. Flammable Refrigerant Used.”**
- e) **“CAUTION – Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.”**

**NOTE – 7.1DV.7 applies to the U.S. and Canada only.**

**7.1DV.8** The marking described in item (a) shall be provided on or near any evaporators that can be contacted by the consumer. The markings described in items (b) and (c) shall be provided near the machine compartment.

**NOTE** – 7.1DV.8 applies to the U.S. and Canada only.

**7.1DV.9** The marking described in item (d) shall be provided on the exterior of the refrigerator. The marking described in item (e) shall be provided near any and all exposed refrigerant tubing.

**NOTE** – 7.1DV.9 applies to the U.S. and Canada only.

**7.1DV.10** The markings shall be in letters no less than 3,2 mm (1/8 inch) high.

**NOTE** – 7.1DV.10 applies to the U.S. and Canada only.

**7.1DV.11** Permanently connected equipment shall be marked with the individual electrical loads, the minimum circuit ampacity, and the maximum current rating of the supply circuit overcurrent protection. The minimum circuit ampacity is equal to 125 percent of the highest motor, heater, or compressor current rating plus the sum of all other current ratings of concurrent loads. The maximum overcurrent protection is equal to 225 percent of the highest motor or compressor current rating plus the sum of all other current ratings of concurrent loads.

**NOTE** – Wherever the word “CAUTION” is required, it may be substituted with the word “WARNING.”

**7.1DV.12** The warning sign B.3.2, from ISO 3864 shall be replaced by the sign in Annex 24.DVB.

**7.6DV D2 Modification – National Difference in Canada, Mexico, and the U.S.:**

The warning sign B.3.2, from ISO 3864 shall be replaced by the sign in Annex 24.DVB.

**7.12DV D1 Modification – National Difference in Mexico, Canada and the U.S.:**

Instructions shall contain the substance of the following:

Do not use extension cords or ungrounded (two prong) adapters.

**7.15DV D2 Modification by replacing the second and third paragraphs with the following – National Difference in Canada, Mexico, and the U.S.:**

**7.15DV.1** For COMPRESSION-TYPE APPLIANCES the marking of the type of FLAMMABLE REFRIGERANT or of the flammable insulation blowing gas, as well as the warning sign from Annex 24.DVB, shall be 0,64 inches (16,2 mm) minimum in height and permanently marked or embossed on the back panel.

7.15DV.2 Where the above scheme is not feasible, the marking of the type of flammable insulation blowing gas shall be on the external enclosure and the lettering shall be 0,64 inches (16,2 mm) minimum in height.

NOTE – 7.15DV.2 applies to Canada and the U.S. only.

7.102DV D1 *Addition – National Difference in Canada and the U.S.:*

7.102DV.1 Caution, warning, and danger markings

7.102DV.1.1 Warning markings shall be located so as to be visible before or immediately upon removal of a cover, panel, or similar part, which encloses or protects uninsulated live parts.

7.102DV.1.2 A lock key shall be permanently marked with the word “CAUTION” and with the following or equivalent statement:

“To Prevent A Child From Being Entrapped, Keep Out Of Reach Of Children And Not In The Vicinity Of Freezer (Or Refrigerator).”

7.102DV.1.3 A marking calling attention to the notice above shall be placed over the key slot of the lock or immediately adjacent to it. This marking may be removable.

7.102DV.1.4 A child entrapment warning statement shall be included in either the operating instructions or in a use and care manual provided with each refrigerator and shall include the following or equivalent wording:

\* Take off the doors

\* Leave the shelves in place so that children may not easily climb inside.

NOTE – The appliance shall be visibly marked for proper operating clearances. This marking is not required when the unit has been evaluated and tested with zero clearances.

8.1.1DV D1 *Modification – National Difference in Canada and the U.S.:*

Protection against contact with LIVE PARTS of the lamp screw shell is not required.

8.1.2DV DE *Modification to UL 60335-1 – National Difference in the U.S.:*

The “in some country National Difference” of UL 60335-1 does not apply.

8.1.3DV DE *Modification to UL 60335-1 – National Difference in the U.S.:*

The “in some country National Difference” of UL 60335-1 does not apply.

8.1.5DV DE *Modification to UL 60335-1 – National Difference in the U.S.:*

The “in some country National Difference” of UL 60335-1 does not apply.

**10.1DV DE Modification – National Difference in the U.S**

The “in some country National Difference” of UL 60335-1 does not apply.

**10.2DV DE Modification – National Difference in the U.S.:**

The “in some country National Difference” of UL 60335-1 does not apply.

**10.103DV D2 Addition – National Difference in Canada, Mexico, and the U.S.:**

**10.103DV.1** For a cyclic ice maker, the marked current shall be based on the input current measured 5 min after the start of the third freezing cycle. With reference to the above, the harvest cycle of some types of ice makers imposes a load that is greater than the load measured during the freezing cycle. The harvest cycle load need not be indicated on the nameplate of the ice maker if it:

- a) Does not exceed 125% of the nameplate rating;
- b) Does not occur more than twice an h; and
- c) Is not more than 5 min in duration.

**10.103DV.2** The harvest cycle shall not exceed the rating of the attachment plug on a cord-connected unit or the minimum circuit ampacity required for a permanently connected unit. For a non-cyclic ice maker, the marked current shall be based on the input current measured after 1 h of continuous operation.

**11.1DV D2 Modification – National Difference in Canada, Mexico, and the U.S.:**

**11.1DV.1** Winding temperatures of motor compressors are not required to be measured when the case housing temperature (with a thermocouple at the most unfavorable location) does not exceed 150°C (302°F).

**NOTE – 11.1DV.1** applies to the U.S. and Canada only.

**11.1DV.2** Change reference from IEC 60335-2-34 to NMJ-J-521/2-34-ANCE.

**NOTE – 11.1DV.2** applies to Mexico only.

**11.3DV D2 Modification – National Difference in Canada and the U.S:**

**11.3DV.1** When the input to a resistance type heater wire, other than a defrost heater, exceeds 8 W/m, or the wire is rated less than 80°C (176°F), or the wires are less than 19,1 mm (3/4 inch) apart, or the wires are not in positive contact with a radiating surface, the heater shall be subjected to the heating test-condensate wiring, Clause 11.103.

**11.3DV.2** Pressures shall be monitored continuously. After stabilization, the unit shall be de-energized and pressures recorded to obtain maximum equalization values. Maximum pressures obtained shall be used to determine compliance with CSA B52, Mechanical Refrigeration Code, CSA C22.2 No. 140.3, Refrigerant Containing Components for Use in Electrical Equipment, as applicable, or the Standard for Refrigerant-Containing Components and Accessories, Nonelectrical, UL 207.

**11.8DV D2 Modification – National Difference in Mexico and the U.S.:**

**11.8DV.1** The “in some country National Difference” of UL 60335-1 does not apply.

**NOTE – 11.8DV.1 applies to the U.S. only.**

**11.8DV.2** Change reference from IEC 60335-2-34 to NMX-J-521/2-34-ANCE.

**NOTE – 11.8DV.2 applies to Mexico only.**

**11.101DV D2 Modification – National Difference in Mexico:**

Change reference from IEC 60335-2-34 to NMX-J-521/2-34-ANCE.

**13.1DV D1 Modification – National Difference in the U.S.:**

Protective impedance and radio interference filters shall not be disconnected before carrying out the leakage current test.

**13.2DV D1 Modification – National Difference in Canada and Mexico:**

– for CLASS 1 APPLIANCES 0,75 mA

**15.104DV D2 Modification – National Difference in the U.S.:**

**15.104DV.1** For ice-makers which are connected directly to the water supply, the container, or that part of the appliance that serves as the container, and its connecting lines shall be constructed and located so that overflow caused by an inlet valve blocked open, overflow caused by a blocked drain, or leakage from faulty water line connections do not wet uninsulated live parts in line voltage circuits. Compliance shall be checked by positioning the appliance as intended in use, connecting it to a source of water supply, and testing for the following conditions:

a) Blocked drain. The drain shall be blocked and water poured into it at the rate of 30 mL/s for a maximum period of 30 s.

b) Water line connection leakage. The water line connections shall be fully or partially disconnected and water allowed to flow for a period of 5 min. The leakage shall be directed toward electrical components where practicable. Water pressure shall be maintained at a gauge pressure of 275 kPa – 415 kPa.

15.104DV.2 Immediately after the test, the appliance shall withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on insulation which could result in a reduction of CLEARANCES and CREEPAGE DISTANCES below the values specified in Clause 29.

15.106DV D1 *Addition – National Difference in Canada, Mexico, and the U.S.:*

15.106DV.1 Component washing test

15.106DV.1.1 A lampholder, switch, or other electrical component shall be located so that leakage current resulting from cleaning in and around food storage compartments of a refrigerator does not exceed 0,5 mA.

15.106DV.1.2 The appliance shall be isolated from the earth ground circuit by disconnecting the protective earthing conductor. The appliance shall be connected so that the component to be tested is on the ungrounded side of the supply. Control knobs, guards, panels, food storage components, and similar components, that are located in the area shall be cleaned and components that are removable without the use of tools, shall be removed. Lamps shall be left in place.

15.106DV.1.3 The refrigerator shall be energized as indicated in Clause 5 and with the refrigeration system not operating. The measurement circuit for leakage current shall be as shown in Clause 13 except that the leakage current is only measured at normal polarity. The meter used for measurement of leakage current shall have the characteristics defined in Items (a) – (c) of Clause 13. The meter shall be connected between a metal backing on a cellulose sponge and the grounded conductor of the power supply.

15.106DV.1.4 The sponge shall be 40 mm by 75 mm by 125 mm (1-5/8 by 3 by 5 inches), capable of retaining from 75 g to 100 g of solution, and shall have a metal backing on one of the 75 mm by 125 mm (3 by 5 inch) faces.

15.106DV.1.5 The sponge shall be saturated in a solution consisting of 10 mL (2 tbsp) of sodium bicarbonate and 4,5 g of chip soap, in 0,95 L (1 quart) of water at 25°C (77°F).

15.106DV.1.6 The saturated sponge shall be wiped six times with a pressure of 8,9 N to 13,4 N (2 to 3 pounds force) applied to the metal-backed side, over the exposed mounting surfaces, including any operating devices of the electrical components. The sponge shall be resaturated in the test cleaning solution after the third wipe.

15.106DV.1.7 The test shall be conducted with manually-operable switch contacts, integral to the refrigerator, in the open and closed positions. An equal number of wipes shall be applied at each position of the switch or control such that the total is six (three wipes at each position for a 2-position switch; two wipes at each position for a 3-position switch).

16.1DV D1 *Modification – National Difference in Canada and the U.S.:*

Protective impedance and radio interference filters shall not be disconnected before carrying out the leakage current test.

16.2DV D1 *Modification – National Difference in Canada and Mexico:*

Class 1 refrigerators shall have a leakage current of 0,75 mA or less.