

STANDARD INFORMATION

Addendum 1: See updated effective dates in blue below.

This SUN establishes Continued Certification for currently listed UL 412, UL 427, UL 471, and CSA C22.2#120 Listing Reports and introduces UL 60335-2-89 / CSA C22.2 No. 60335-2-89 as the Superseding Standard.

Superseded Standard: UL 412 Refrigeration Unit Coolers

Superseded Standard: UL 427 Refrigerating Units

Superseded Standard: UL 471 Commercial Refrigerators and Freezers

Superseded Standard: CSA C22.2 No. 120 Refrigeration Equipment

Superseding Standard: UL 60335-2-89 / CSA C22.2 No. 60335-2-89 Household and Similar Electrical Appliances - Safety - Part 2-89: Particular Requirements for Commercial Refrigerating Appliances with an Incorporated or Remote Refrigerant Unit or Compressor

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: ~~September 29, 2022~~ [September 29, 2024](#)

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement:

Appliances certified to UL 412, UL 427, UL 471, and CSA C22.2#120 are transitioning to UL 60335-2-89 / CSA C22.2 No. 60335-2-89. This change was driven by the need for harmonization rather than driven by safety issued. Due to this, Intertek is implementing a Continuing Certification Process for existing products to UL 412, UL 427, UL 471, or CSA C22.2#120. No action is needed, and the certification will remain active under the previous UL 412, UL 427, UL 471, or CSA C22.2#120 as long as the appliance is not modified.

After ~~September 29, 2022~~ [September 24, 2024](#), any modifications to the product will require evaluation to UL 60335-2-89 / CSA C22.2 No. 60335-2-89 unless the modification meets the requirements specified during the period from ~~September 29, 2022 to September 29, 2024~~ [September 29, 2024 to September 29, 2026](#).

Between ~~September 29, 2022 and September 29, 2024~~ [September 29, 2024 and September 29, 2026](#), any modification that includes a change in model number, nameplate ratings, compressor, or is determined to require testing of the product will require evaluation to UL 60335-2-89 / CSA C22.2 No. 60335-2-89. All other modifications to a product, such as a **component change with equivalent ratings**, may be excluded from updating to UL 60335-2-89 / CSA C22.2 No. 60335-2-89.

If the appliance is modified, an attempt has been made to minimize the steps necessary to transition an already certified UL 412, UL 427, UL 471, or CSA C22.2#120 product to a 60335-2-89 product. The Impact Table below will aid in determining if a limited or full evaluation to UL 60335-2-89 / CSA C22.2 No. 60335-2-89 is required. Please note requests for new products, making revisions to existing compressors, or the addition of alternate compressors, will require full evaluation to UL 60335-2-89 / CSA C22.2 No. 60335-2-89.



Impact Table

Modification or Addition to an existing product certified to UL 412, UL 427, UL 471, or CSA C22.2#120	Required Evaluation to UL 60335-2-89 / CSA C22.2 No. 60335-2-89
Modification of model or addition of a similar model in existing product family	Follow Limited Evaluation - Page 3
Modification of construction	
Modification or addition to a component	
Modification of technical specifications such as appliance input rating, temperature ratings, or component ratings.	
Modification or change in compressor	Follow Limited Evaluation - Page 5
Addition of alternate compressor	
New product	

Overview of Changes: Specific details of new/revised requirements are found in the standard information tables below.

If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).

Client Action:

Information – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements do not apply to your product (s).

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.



STANDARD INFORMATION

SECTION PARAGRAPH CLAUSE	LIMITED EVALUATION (PER IMPACT TABLE) - SUMMARY OF REQUIREMENTS	ACTION
All	For revised products with a change other than a compressor , only the requirements indicated need to be considered. For new products and alternate compressors, move to the section titled Full Evaluation on page 6.	Action Not Required
Note	The 1st edition of UL 60335-2-89 is to be used in conjunction with the 6th edition of UL 60335-1.	Note
7	<p>Marking and Instructions</p> <p>7.14 and 7.15 – Refrigerators having insulation using a flammable blowing agent are marked with the refrigerant type, lettering 40 mm high.</p>	New requirement (when flammable refrigerant is used)
15	<p>Moisture Resistance</p> <p>15.102 – Conduct internal spillage test. Acid-rinse agent may make test more onerous. But not if there are no electrical components on walls.</p>	New requirement
16	<p>Leakage Current</p> <p>These tests are conducted after the 93% humidity and other moisture conditionings.</p>	New requirement
19	<p>Abnormal Operation</p> <p>19.4, 19.5 – May have to run the shorted heater test on refrigerators with defrost heaters.</p> <p>19.11.3 – Protective Electronic Circuits. Need not review if PEC evaluated to 60730, 873, 991, etc. However, 508C protection is no longer an option.</p>	New requirement
22	<p>Construction</p> <p>22.5 (Pt 1) – Plug shock test, appliances with capacitors 22.11 (Pt 1) – Non detachable snap fit parts test 22.46 (Pt 1) – Software in Protective Circuits, Class B or C 22.47 (Pt 1) – Water pressure test for ice makers and drinking water systems 22.48 (Pt 1) – Back-siphonage requirements 22.101 – Torque test on lampholders 22.102 – Moisture test on insulated wire heaters 22.104 – Accessible glass breakage test 22.111, 22.113 – Door and Drawer opening force test</p>	New requirement



SECTION PARAGRAPH CLAUSE	LIMITED EVALUATION (PER IMPACT TABLE) - SUMMARY OF REQUIREMENTS	ACTION
23	<p>Internal Wiring</p> <p>23.7 (Pt 1) – Use green/yellow wire for earthing conductors.</p>	New requirement
24	<p>Components</p> <p>24DV (Pt 1) – Component requirements replaced by standards listed in Annex DVA. However;</p> <p>24.1DV.4 (Part 1) – Creepages and Clearances evaluated on all components, even those that are UL Certified.</p> <p>24.1DV.5 (Part 1) – Resistance to Fire (30.2) evaluated on all components, even those that are UL Certified.</p>	New requirement
30	<p>Resistance to Heat, Fire, and Tracking</p> <p>This clause is applicable, so we would be looking at traditional IEC glow wire (or V materials) for certain non-metallic parts of the appliance. Since UL 60335-2-89 specifically references the 6th edition of UL 60335-1, non-metallic parts of UL Certified components have to be evaluated to clause 30 (see 24.1DV.5).</p> <p>30.101DV – Polymeric enclosures of uninsulated live parts shall be 5V (no change).</p>	New requirement



SECTION PARAGRAPH CLAUSE	LIMITED EVALUATION (PER IMPACT TABLE) - SUMMARY OF REQUIREMENTS	ACTION
All	For new products, modification of compressors or addition of alternate compressors , all of the following impact requirements need to be considered.	Action Not Required
Note	The 1st edition of UL 60335-2-89 is to be used in conjunction with the 6th edition of UL 60335-1.	Note
5.3	General Conditions for Tests Run-in (operate) for 24 hours before any tests are conducted.	New requirement
5.7	Test ambient(s) different. 32 or 43C for some input and heating tests.	New requirement
6.101	Classification Same except for climate classes 0-8.	New requirement
7	Marking and Instructions Essentially the same as UL 427 and 471 due to DVs. However; 7.14 and 7.15 – Refrigerators having insulation using a flammable blowing agent are marked with the refrigerant type, lettering 40 mm high.	New requirement (when flammable refrigerant is used)
10	Power Input and Current Similar test, obtaining current at rated voltage; ambient different. Climatic Class 0, 1, 2, 3, 4, 6, or 8 – test at 32 C. Climatic Class 5 or 7 – test at 43 C. Thermostat short-circuited (3.109). Slightly different % limitations, depending if refrigerator is combined or motor-operated.	New requirement
11	Heating Per 5.7 and 6.101DV, the test is conducted at 32 or 43 C. May want to look at previous test data to verify there aren't any temperatures approaching failure, but probably don't need to re-test if previously Listed to UL 427 or 471. Temperature limits slightly different. Be careful as casual contact limits can be a little less. For example, the IEC temperature rise limit for bare metal is 41 C (48-7 if tested at 43 C) rather than 45 (85-40) in UL 471.	New requirement



SECTION PARAGRAPH CLAUSE	LIMITED EVALUATION (PER IMPACT TABLE) - SUMMARY OF REQUIREMENTS	ACTION
13	<p>Leakage Current and Electric Strength at Operating Temperature</p> <p>13.2DV.1 (Pt 1) – Limit for cord-connected stationary = 0.75mA (3.5 mA exception if L-15 plug).</p> <p>Circuit is different, no S1/S2, 1.06V. Meter is different but shouldn't make a difference in results. Simpson 229 (UL) vs. 228 (IEC).</p> <p>13.3 - Electric Strength – see Table 4. Basic = 1000, Supplementary = 1250, Reinforced = 2500 UL is typically 1250 V, so acceptable.</p>	New requirement
15	<p>Moisture Resistance</p> <p>15.102 – Conduct internal spillage test. Acid-rinse agent may make test more onerous. But not if there are no electrical components on walls.</p>	New requirement
15	<p>Moisture Resistance</p> <p>15.3 – Humidity conditioning at 93%.</p> <p>15.103 – External Spill Test (similar to UL 471 except for the use of an acid-rinse agent).</p>	New requirement
16	<p>Leakage Current</p> <p>(essentially a dielectric test while measuring amperage. Just an ammeter, not Simpson 228) and Electric Strength.</p> <p>These tests are conducted after the 93% humidity and other moisture conditionings.</p>	New requirement
19	<p>Abnormal Operation</p> <p>19.4, 19.5 – May have to run the shorted heater test on refrigerators with defrost heaters.</p> <p>19.11.3 – Protective Electronic Circuits. Need not review if PEC evaluated to 60730, 873, 991, etc. However, 508C protection is no longer an option.</p>	New requirement
19	<p>Abnormal Operation</p> <p>19.11.2 – Review electronic circuits to see if fault tested.</p>	New requirement



SECTION PARAGRAPH CLAUSE	LIMITED EVALUATION (PER IMPACT TABLE) - SUMMARY OF REQUIREMENTS	ACTION
21	<p>Mechanical Strength</p> <p>21.101 – Lamps to be protected/guarded if 75 mm diameter sphere can contact them.</p> <p>21.102 – New shelf strength test.</p>	New requirement
22	<p>Construction</p> <p>22.5 (Pt 1) – Plug shock test, appliances with capacitors</p> <p>22.11 (Pt 1) – Non detachable snap fit parts test</p> <p>22.46 (Pt 1) – Software in Protective Circuits, Class B or C</p> <p>22.47 (Pt 1) – Water pressure test for ice makers and drinking water systems</p> <p>22.48 (Pt 1) – Back-siphonage requirements</p> <p>22.101 – Torque test on lampholders</p> <p>22.102 – Moisture test on insulated wire heaters</p> <p>22.104 – Accessible glass breakage test</p> <p>22.111, 22.113 – Door and Drawer opening force test</p>	New requirement
23	<p>Internal Wiring</p> <p>23.7 (Pt 1) – Use green/yellow wire for earthing conductors.</p>	New requirement
24	<p>Components</p> <p>24DV (Pt 1) – Component requirements replaced by standards listed in Annex DVA. However;</p> <p>24.1DV.4 (Part 1) – Creepages and Clearances evaluated on all components, even those that are UL Certified.</p> <p>24.1DV.5 (Part 1) – Resistance to Fire (30.2) evaluated on all components, even those that are UL Certified.</p>	New Requirement
24	<p>Components</p> <p>24.1.3, 24.1.4 – Might need to look at switch and control endurance. For example, 24.1.3 of 2-24 requires 50,000 cycles for door switches. Note per 3rd paragraph of 24.1.4 (Pt 1), automatic controls need not be endurance tested if the appliance meets the standard with the component short-circuited. Also, the note in 24.1.3 indicates the declared number of operating cycles is only applicable for switches required for compliance with this standard.</p>	New requirement
26	<p>Terminals for External Conductors</p> <p>If the product complied with UL 471, it will comply with UL 60335-2-89. Many U.S. style cords are considered to be “Type X with specially prepared cord” or Type Y.</p>	New requirement



SECTION PARAGRAPH CLAUSE	LIMITED EVALUATION (PER IMPACT TABLE) - SUMMARY OF REQUIREMENTS	ACTION
27	<p>Provision for Earthing</p> <p>27.5 (Pt 1) – Bonding path resistance. New test.</p>	New requirement
28	<p>Screws and Connections</p> <p>Essentially the same, but per 28.3 (Pt 1), thread-cutting (self-tapping) screws should not be used if they are likely to be operated by the user or installer. Also, when using space-threaded (sheet metal) screws, two shall be used if used for earthing continuity.</p>	New requirement
29	<p>Clearances, Creepage Distances, and Solid Insulation</p> <p>In general, spacing requirements of UL 471 are more onerous than the creepage/clearance requirements of UL 60335-2-89. However, per 24.1DV.4, need to apply creepages and clearances to individual components, even if Certified.</p> <p>Separation of Circuits requirements are different.</p>	New requirement
30	<p>Resistance to Heat, Fire, and Tracking</p> <p>This clause is applicable, so we would be looking at traditional IEC glow wire (or V materials) for certain non-metallic parts of the appliance. Since UL 60335-2-89 specifically references the 6th edition of UL 60335-1, non-metallic parts of UL Certified components have to be evaluated to clause 30 (see 24.1DV.5).</p> <p>30.101DV – Polymeric enclosures of uninsulated live parts shall be 5V (no change).</p>	New requirement
<p>CUSTOMERS PLEASE NOTE: This Table and column “Verdict” can be used in determining how your current or future production is or will be in compliance with new/revised requirements.</p>		