# STANDARDS UPDATE NOTICE (SUN)
# ISSUED: May 30, 2019

## STANDARD INFORMATION

**Standard Number:** UL 399
**Standard Name:** Drinking Water Coolers
**Standard Edition and Issue Date:** 8th Edition Dated March 30, 2017
**Date of Revision:** August 29, 2018
**Date of Previous Revision of Standard:** May 17, 2017

## EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

**Effective Date:** **February 28, 2020**

## IMPACT, OVERVIEW, AND ACTION REQUIRED

**Impact Statement:** A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

**Overview of Changes:**

- Revisions to Controls Requirements
- Revisions to Include Switch Mode Power Supply Units
- Water Coolers Having Two Supply Cords
- Nonmetallic Materials Used as Water Pressurized Parts

Specific details of new/revised requirements are found in table 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 Required:**

**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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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

| CLAUSE | VERDICT | COMMENT |
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| | | *Additions to existing requirements are <u>underlined</u> and deletions are shown ~~lined out~~ below.* |
| 6 | Info | **Installation And Operating Instructions** |
| 6.8 | | ***New clause added;***<br><br>The instructions for a water cooler, and any intended accessory(ies), having two power supply cords:<br><br>a) Shall indicate that the water cooler uses two cords and caution against unplugging only one cord during movement, testing or repair of the product; and,<br>b) That may have different attachment plug caps shall state that different attachment plugs are used and shall specify the electrical rating of each plug. If individual branch circuits are involved, the instructions shall state that individual branch circuits are to be employed to supply the product and electrical ratings of each branch circuit shall be specified. |
| 11 | Info | **Accessories** |
| 11.8 | | ***New clause added;***<br><br>Accessories intended for connection to a source of field power supply independent of that of the equipment shall comply with the requirements in:<br><br>a) Section 13 if intended to be a permanently connected accessory. A permanently connected accessory shall not be used with any supply cord connected equipment.<br>b) Section 14 if intended to be a cord-connected accessory. |
| 11.9 | | ***New clause added;***<br><br>If an accessory is powered from a source of supply separate from that supplying the water cooler:<br><br>a) The water cooler power supply source shall not provide power to the same control box or electrical panel as the power source supplying the accessory and the water cooler shall be marked as specified in 98.3; or<br>b) Disconnection of any one supply shall automatically cause de-energization of all circuits within the water cooler and accessory(ies). |
| 14 | Info | **Supply Connections – Cord Connected Equipment** |
| 14.15 | | ***New clause added;***<br><br>A cord connected water cooler and any intended accessory(ies) provided with more than one power supply cord shall comply with all of the following: |

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| | | a) The equipment shall consist of two separate units joined together;<br>b) Not more than two cords shall be provided;<br>c) Each cord shall be of the type and rating specified in 14.6 and provided with an equipment grounding conductor in accordance with 14.12;<br>d) Each attachment plug shall be as specified in 14.3 – 14.5;<br>f) The markings specified in 100.4 (a) and (c) shall be provided; and,<br>g) The instructions shall contain the information specified in 6.8. |
| 14.16 | | ***New clause added;***<br><br>In reference to 14.15, if the combined rated current input to both supply cords exceeds 80 percent of the branch circuit to which the equipment will be connected, then the unit or cord with the highest rated current input shall be marked adjacent to the supply cord in accordance with 100.4(b). |
| 21 | Info | **Switches And Controllers** |
| 21.13 | | A protective control, other than a motor or motor-compressor overload protective device (covered in Section 24), shall comply with one of the following:<br><br>a) ~~Standard for Temperature-Indicating and Regulating Equipment, UL 873. The control shall comply with the endurance cycle requirements for safety controls in Table 46.1 of UL 873.~~<br>b) Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1 and the Standard for Automatic Electrical Controls – Part 2-6: Particular Requirements for Automatic Electrical Pressure Sensing Controls Including Mechanical Requirements, UL 60730-2-6. The endurance cycle requirements in Table AA.1DV of UL 60730-2-6 for cut-outs shall be applied.<br>c) Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1 and the Standard for Automatic Electrical Controls – Part 2-9: Particular Requirements for Temperature Sensing Controls, UL 60730-2-9. The endurance cycle requirements in Table CC.2 of UL 60730-2-9 for cut-outs shall be applied.<br>d) ~~Standard for Limit Controls, UL 353.~~<br>e) Standard for Industrial Control Equipment, UL 508.<br>f) Standard for Switches for Appliances – Part 1 General Requirements, UL 61058-1; or<br>g) Paragraph 21.32 and the protective electronic circuits tests in Section 83. |
| 21.19 | | A water heater temperature protective control shall comply with the calibration requirements specified by one of the following:<br><br>a) ~~Section 44 (Calibration-Verification Test) of UL 873 with the water heater temperature limiting control requirements being applied;~~<br>b) Table AADV.1 of UL 60730-2-9 with the storage water heater thermal cut-out requirements being applied; or<br>c) Water Heating Protective Controls Calibration Test in 73.2 such that the protective control:<br>1) Opens within ±5°F (±3°C) of the control set-point temperature as declared by the manufacturer; and |

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| | | 2) Does not vary from the control initial (as-received) opening temperature by more than 10°F (6°C) or 5 percent, whichever is greater, following the Water Heating Protective Controls Endurance Tests in 73.1. |
| 21.25 | | An operating control complying with 21.23 shall also comply with the following:<br><br>a) For electronic controls – Installation class 2 for electromagnetic compatibility (EMC) shall be in accordance with ~~IEC 61000-4-5~~ the voltage surge testing in 83.3.6 and comply with the results specified in 83.3.2; |
| 21.26 | | If an operating control complying with 21.23 indirectly controls a load through a switching device, the switching device endurance cycle requirements shall be as specified in:<br><br>a) 21.24(b) if the switching device controls a motor-compressor; or<br>b) 21.25(e) if the switching device controls a load other than a motor-compressor. |
| 21.26.1 | | ***New clause added;***<br><br>If an operating control referenced by 21.24 indirectly controls a motor-compressor through a switching device, the switching device endurance cycle requirements shall comply with 21.24(b). |
| 24 | Info | **Motor Overload Protection** |
| 24.5 | Info | **Protective electronic circuits** |
| 24.5.1 | | A protective electronic circuit providing motor protection in accordance with 24.2, 24.3 or 24.4 shall comply with one of the following:<br><br>~~a) Standard for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991;~~<br>a) Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1 as well as the specific applicable Part 2;<br>c) Paragraph 21.32 and the protective electronic circuits tests in Section 83; or<br>b) Not create any risk of fire, electric shock or injury to persons under abnormal conditions with the protective electronic circuit rendered ineffective (open or short-circuited), e.g. use of a redundant circuit or control. |
| 24.5.2 | | In reference to 24.5.1, software in a protective electronic circuit required as part of a motor protective device or system shall comply with one of the following:<br><br>a) ~~Standard for Software in Programmable Components, UL 1998 and be software Class 1;~~<br>b) Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1 as well as the specific applicable Part 2 and be software Class B;<br>c) Annex R of the Standard for Safety of Household and Similar Electrical Appliances, Part 1: General Requirements, UL 60335-1 and be software Class B; or<br>d) Not create any risk of fire, electric shock or injury to persons under abnormal conditions with the software rendered ineffective, e.g. use of independent redundant protective devices. |

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| | | **Factors for judging protective electronic circuits** |
| Table 24.2 | | 6 Radio-frequency electromagnetic field immunity:<br>A. To conducted disturbances – test level 3<br>B. To radiated electromagnetic fields – ~~strength of 3 V/m~~ Evaluate in accordance with 83.3.4 and 83.3.2.<br>11 Voltage Dips and Interruptions: Evaluate in accordance with 83.3.8 and 83.3.2.<br>12 Harmonics and Interharmonics: Evaluate in accordance with 83.3.9 and 83.3.2.<br>13 Calibration (deviation and drift): Evaluate in accordance with 21.21 for a temperature protective control or 21.22 for a pressure protective control. |
| 27 | Info | **Capacitors** |
| 27.8 | | ***New clause added;***<br><br>In reference to 27.6, a capacitor shall consist of a single Class Y1 capacitor or two Class Y2 capacitors connected in series if it is connected between:<br><br>a) Two line conductors in a primary circuit;<br>b) One line conductor and the neutral conductor;<br>c) Primary and accessible secondary circuits; or,<br>d) The primary circuit and protective earth (equipment grounding conductor connection). |
| 37 | Info | **Optical Isolators and Semiconductor Devices** |
| 37.1.1 | | ***New clause added;***<br><br>In addition to complying with 37.1, an optical isolator relied upon to provide feedback between primary and secondary circuits of a switch mode power supply unit shall have a minimum isolation voltage of 1500V. |
| 37.2 | | A power switching semiconductor device that is relied upon to provide isolation to ground shall comply with the Standard for Electrically Isolated Semiconductor Devices, UL 1557. If the switching semiconductor is used as part of a switch mode power supply unit, it shall have a minimum isolation voltage of 1500V. |
| 39 | Info | **Power Supplies** |
| 39.1 | | A power supply shall comply with one of the following:<br><br>a) For a Class 2 Power Supply:<br>1) Standard for Class 2 Power Units, UL 1310; or<br>2) Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1 and with the Class 2 or limited power source requirements.<br><br>b) For a power supply that is other than Class 2:<br>1) Standard for Power Units Other Than Class 2, UL 1012; or<br>2) Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1. |

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| | | c) For a switch mode power supply unit not complying with (a) or (b), the relevant requirements in this Standard, including the Switch Mode Power Supply Units – Overload Test, Section 79A, shall be applied. |
| 53 | Info | **Pressure-Limiting Device** |
| 53.1 | | A pressure-limiting device designed to automatically stop the operation of the compressor shall:<br><br>a) Be installed on all water coolers with a system containing more than 22 pounds-mass (10 kg) of refrigerant; and<br>b) Comply with 21.13, 21.14 ~~and 21.22 able to withstand not less than 100,000 cycles of operation under load; and~~<br>c) ~~Comply with the refrigeration pressure-limiting controls requirements in the Standard for Temperature-Indicating and Regulating Equipment, UL 873 pertaining to the calibration of pressure-limiting controls.~~<br><br>~~Exception: In reference to 53.1(c), pressure-limiting controls are not required to comply with UL 873 if they comply with the Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1 as well as the specific applicable Part 2.~~ |
| | Info | **WATER SYSTEM** |
| 56 | Info | **General** |
| 56.2 | | ***New clause added;***<br><br>Parts of a pressure type water cooler that are exposed to water pressure shall be:<br>a) Made of copper or steel tubing complying with the wall thickness requirements of Table 51.1; or<br>b) Tested in accordance with 81.7. |
| 74 | Info | **Overload and Endurance Test for Operating Controls** |
| 74.6 | | A switching device shall be subjected to an endurance test at the ambient temperature for which it is intended. The endurance test voltage shall be as specified in 59.1 and the current shall be 100 percent of the total connected load current. The endurance test cycling shall consist of making and breaking the connected load for:<br><br>a) 6000 cycles of operation with 1 second ON and 9 seconds OFF <u>for a switching device other than one used to control a motor-compressor; or,</u><br><u>b) 24,000 cycles of operation with 1 second ON and 9 seconds OFF followed by 6,000 cycles of operation with 1 second ON and 59 seconds OFF for a switching device used to control a motor-compressor.</u> |

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| 79A | Info | ***New section added;***<br><br>**Switch Mode Power Supply Units – Overload Test**<br><br>The test applies to switch mode power supply units as specified in 39.1(c) (see standard for details). |
| 81 | Info | **Strength Tests – Pressure Containing Components** |
| 81.7 | Info | **Water-containing parts for pressure-type water coolers** |
| 81.7.1 | | ***New clause added;***<br><br>Parts of a pressure type water cooler that are exposed to water pressure shall be subjected to the higher of either 150 psig (1035 kPa) or two times the maximum water supply line pressure as specified in the installation and/or operating instructions in accordance with 6.1(d). |
| 83 | Info | **Protective Electronic Circuit Tests** |
| 83.3 | Info | **Electromagnetic compatibility (EMC) tests** |
| 83.3.4 | | Radiated fields shall be applied in accordance with IEC 61000-4-3, the Standard for Electromagnetic compatibility (EMC) – Part 4-3: Testing and Measurement Techniques – Radiated, Radio-Frequency, Electromagnetic Field Immunity Test. The frequency ranges tested shall be 80 MHz to 1000 MHz, test level 3; 1.4 GHz to 2.0 GHz, test level 3; and 2.0 GHz to 2.7 GHz, test level 2. The dwell time for each frequency shall be sufficient to observe a possible malfunction of the protective electronic circuit. |
| 98 | Info | **Accessories** |
| 98.3 | | ***New clause added;***<br><br>In reference to 11.9, accessories that are provided with a separate power supply source shall be marked with the word “CAUTION” and with the following or equivalent wording: “Risk of electric shock. More than one power-supply. Disconnect all power-supplies before servicing.” |
| 99 | Info | **Permanently Connected Water Coolers** |
| 99.19 | | ***New clause added;***<br><br>For a permanently-connected water cooler, if more than one disconnect switch is used to disconnect all power within a control panel or compartment, the panel or compartment shall be marked with the word “DANGER” and the following or equivalent wording: “Risk of Electric Shock. Disconnect All Power. May Have More Than One Disconnect Switch.” The marking shall be visible before or immediately upon removal of the cover over the panel or compartment. The marking shall not be on the back of a removable cover. |
| 100 | Info | **Cord Connected Water Coolers** |

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| 100.4 | | ***New clause added;***<br><br>The following or equivalently worded markings shall be provided on water coolers having two power supply cords. Each marking shall be visible after installation.<br><br>a) "CAUTION – Risk of Electric Shock. This water cooler has two power supply cords. Unplug all cords before moving or servicing this water cooler." This marking applies as specified in 14.15(f).<br>b) "CAUTION – Risk of Electric Shock. This water cooler has two power supply cords. Connect this plug to a single outlet circuit." This marking applies as specified in 14.16.<br>c) The water cooler nameplate electrical rating shall be specified separately for each supply cord. This marking applies as specified in 14.15(f).<br>d) "CAUTION – This water cooler has more than one disconnect switch." or the equivalent, on cord-connected water coolers with more than one disconnect switch. This marking shall be provided adjacent to each disconnect switch or control. |

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| | 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. |