

STANDARD INFORMATION

Standard Number: UL 749 / CSA C22.2 No. 167

Standard Name: Household Dishwashers

Standard Edition and Issue Date: 11th / 8th Edition Date November 30, 2018

Date of Revision: November 30, 2018

Date of Previous Revision of Standard: 10th / 7th Edition Dated March 16, 2017

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **March 18, 2022**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revise 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requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revise requirements.

Overview of Changes:

- revision of switch requirements
- revision of control requirements
- revision of flammability requirements for functional parts
- revision of heating elements requirements
- addition of the dishwasher controls washing test
- addition of the resistance to overvoltage test
- addition of the dishwasher lampholder endurance test

Specific details of new/revise 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).

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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



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CLAUSE	VERDICT	COMMENT
		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i>
7	Info	Marking
7.2	Info	Appliance markings
7.2.17		<p>An appliance that is shipped from the factory with its side panels <u>any of its outer enclosure panels uninstalled or omitted</u> (e.g., <u>kick or toe panel, side panels, or back</u>) shall be plainly and permanently marked, at such a location that the marking will be visible when connections to the power-supply circuit are made, with the following or equivalent:</p> <p>“WARNING: To reduce the risk of electric shock, fire, or injury to persons, the installer must ensure that the dishwasher is completely enclosed at the time of installation.”</p>
8	Info	Instructions
8.1	Info	General
8.1.1		Instructions providing information equivalent to the marking required by Clause 7.2.17 shall be packed with an appliance that is shipped from the factory with its side panels or back <u>any of its outer enclosure panels uninstalled or omitted</u> (e.g., <u>kick or toe panel, side panels, or back</u>).
15	Info	Moisture Resistance
15.11		<p><i>New section added;</i></p> <p>Washing test</p> <p>An appliance shall be tested as specified in Clauses 15.11.1.2 – 15.11.2.6 to determine if cleaning the area of a dishwasher door that encloses line-voltage circuits, results in an increased risk of electric shock. This requirement is also applicable for unique exposure conditions on portable or free-standing models that could result in an increased risk of electric shock (see standard for details).</p>
17	Info	Abnormal Operation
17.5		<p><i>New section added;</i></p> <p>Resistance to overvoltage</p> <p>The appliance shall be tested as specified in Clauses 17.5.2 and 17.5.5. As a result of the test there shall be no evidence of the following:</p> <ul style="list-style-type: none">a) Severe charring or burning of the cheesecloth specified in Clause 17.5.2; orb) Opening of the 3 A ground fuse. <p>(See standard for details).</p>



CLAUSE	VERDICT	COMMENT
		<i>New section added;</i>
17.6		<p>Lampholder endurance</p> <p>A dishwasher that is provided with a lamp(s) for the purpose of illuminating the washing compartment shall be tested as specified in Clauses 17.6.3 and 17.6.4 with lamps on (see standard for details).</p>
18	Info	Stability and Mechanical Hazards
18.6	Info	<p>Guards, interlocks, and the like</p> <p><i>New clause added;</i></p>
18.6.4		With reference to Clause 18.6.3(a), an interlock shall be recessed or guarded to reduce the likelihood of inadvertent operation. An interlock shall not be actuated when the articulated probe shown in Figure 2 is inserted into an external interlock actuator opening per the requirements in Clause 9.4.2.
19	Info	Mechanical Strength
19.2	Info	<p>Frame and enclosure</p> <p><i>New clause added;</i></p> <p>The glass portion of the enclosure:</p>
19.2.10		<p>a) Shall be mechanically secured in a manner that requires a tool for removal, or shall be secured using an adhesive that complies with Clause 22.19.1 so that the glass cannot be readily displaced during normal use; and</p> <p>b) Shall not be used for the support of any electrical component.</p>
19.2.11		<p><i>New clause added;</i></p> <p>The glass portion of the enclosure shall:</p> <p>a) be a non-shattering or tempered type that complies with the requirements in ANSI Z97.1 Class A; or</p> <p>b) withstand the impact described in Clause 19.2.12.</p>
19.2.12		<p><i>New clause added;</i></p> <p>The glass portion of an enclosure shall be tested as described in Clause 19.2.13. As a result of the impact test:</p> <p>a) Spacings shall not be reduced to less than those specified in Table 8;</p> <p>b) Current-carrying parts or internal wiring shall not be exposed, as determined in accordance with Clause 9;</p> <p>c) There shall be no damage that could result in a risk of fire, electric shock, or injury to persons. (See Clause 18.5.3); and</p> <p>d) There shall be no cracking or breaking of the glass to the extent that glass pieces are released or dropped from their normal position.</p>



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		<i>New clause added;</i>
19.2.13		The glass portion of an enclosure shall be subjected to the resistance to impact test for floor-supported appliances described in UL 746C, except using an impact value of 3.4 J (2.5 ft-lb), and CAN/CSA-C22.2 No. 0.17, except using a vertical distance of 690 mm.
		<i>New clause added;</i>
19.2.14		With reference to Clause 19.2.13, the location of the impacts shall be at least 1 inch away from edges and at least 2 inches away from corners or through-holes (handle area, etc.).
22	Info	Components
22.5	Info	Heating elements
		<i>New clause added;</i>
22.5.2		Sheathed and non-sheathed heating elements that are not immersed in water in normal use shall comply with the following standards: a) CSA C22.2 No. 72 and UL 499, and the Thermal Endurance Test of UL 1030; or b) CSA C22.2 No. 72 and UL 1030.
		<i>New clause added;</i>
22.5.3		In reference to Clause 22.5.2(a), if requested by the manufacturer, for a heating element designed to operate in a water-cooled condition (e.g. with continuous water circulation), then the Thermal Endurance Test of UL 1030 shall be conducted with the heating element subjected to the water-cooled condition that simulates its intended end-use application.
22.10	Info	Switches
22.10.1	Info	General
		<i>New clause added;</i>
22.10.1.6		Switches that comply with C22.2 No. 61058-1 and UL 61058-1 shall be rated as specified in Clauses 22.10.1.7 – 22.10.1.9.
		<i>New clause added;</i>
		Power switches shall be rated as follows:
22.10.1.7		a) For a voltage not less than the rated voltage of the appliance; b) For a current not less than the rated current of the appliance; c) For Continuous Duty; d) With respect to load: 1) Switches for motor-operated appliances: for resistance and motor load if the switch would encounter this load in normal use; or



CLAUSE	VERDICT	COMMENT
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2) Switches may be regarded as switches for a declared specific load and may be classified based upon the load conditions encountered in the appliance under normal load.

e) For AC if the appliance is rated for AC; and
 f) For DC if the appliance is rated for DC.

New clause added;

22.10.1.8

Unless otherwise specified in this standard, switches shall also be rated with respect to endurance as follows:

a) Power switches: 6,000 cycles;
 b) Power switches provided with series electronics shall be subjected to an additional 1,000 cycles of operation with the electronics bypassed;
 c) Switches other than power switches, such as speed selector switches, that might be switched under electrical load: 1,000 cycles; and
 d) The following non-power switches are not required to be rated for endurance:

- 1) Switches not intended for operation without electrical load, and which can be operated only with the aid of a tool or are interlocked so that they cannot be operated under electrical load; or
- 2) Switches for 20 mA load as classified in C22.2 No. 61058-1 and UL 61058-1.

New clause added;

22.10.1.9

Ratings and load classifications for switches other than power switches shall be based on the conditions encountered in the appliance under normal load.

Operating control correlation table

Table 4

Information	Operating control requirement
FMEA	Conduct a failure-mode and effect analysis (FMEA) to identify components the failure of which might result in a risk of fire or electric shock.
Operating ambient	Determined via Heating Test, Clause 12, of the appliance
Endurance Testing (for electro-mechanical switching devices)	Except as indicated in Clause 22.11.4.1 and Clause 22.11.7.3: a) 30,000 cycles for automatic, self-resetting temperature-regulating controls b) 6,000 cycles for manual, non-self-resetting temperature-regulating controls <u>c) 6,000 cycles for relays and automatic self-resetting operating controls</u>
Overvoltage Category	Overvoltage Category II
Pollution Degree	See Clause 28.4
Enclosure Flammability	Minimum V-1, except as indicated in Clause 30.3



CLAUSE	VERDICT	COMMENT
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New figure added;

Component washing current measurement circuits

Figure 8

