

Subject 1993

May 25, 2018

SUMMARY OF TOPICS

The following change in requirements to the Standard For Safety For Self-Ballasted Lamps and Lamp Adapters, UL 1993, are being proposed:

1. Addition Of Risk Of Electric Shock Re-Lamping Test To Supplement SC

STP BALLOTS AND ALL COMMENTS DUE: June 24, 2018

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If you are interested in applying for STP 1993 membership or are aware of potential candidates for this STP, please contact the STP Project Manager, wilbert.fletcher@ul.com.

For your convenience in review, proposed additions to existing requirements are shown underlined and proposed deletions are shown ~~lined-out~~.

1. Addition Of Risk Of Electric Shock Re-Lamping Test To Supplement SC

RATIONALE

Proposal submitted by: Juan Caamano, UL LLC

This proposal adds the risk of shock – relamping test to Supplement SE for double-ended and U-bend direct replacement (Type A) LED lamps. This test uses the same shock hazard measurement meter circuit and MIU limit as the existing test in clause SA8.19, but includes an expanded test method to measure compliance during the two most likely risk scenarios: contact during lamp insertion into a live circuit, and contact during lamp removal from a live circuit.

This test was not included when Supplement SC was originally adopted since all commercial fluorescent ballasts are all subject to this test when they are certified to UL 935. However, it was recently brought to our attention that there may be a potential electric shock risk when Type A lamps are inserted into energized magnetic ballasts originally intended only for 4 foot 40W lamps (e.g.: F40T12 and F40T12ES). Because of U.S. energy regulations these ballasts have been unavailable in the marketplace for several years, but it is possible that 40W magnetic ballasts are still in use in older installations. This proposal is intended to address this potential shock risk.

The ANSI 60 Hz reference ballast is used to represent the “worst-case” magnetic fluorescent ballast because of its very low impedance. An isolating transformer is used to supply power to the reference ballast so that one test can represent both grounded and ungrounded branch circuits.

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The test method in SA8.19 was revised and clarified for ease of testing. Also, since it is expected that a user will only be in contact with the free end of a lamp for a short period of time during its installation or removal, 30 seconds was chosen to represent reasonably long contact duration.

PROPOSAL

SA8.19.1 ~~As specified in Clause 6.13.2, Devices substituting for linear double-ended or U-bend~~ fluorescent lamps shall be evaluated for a possible risk of electric shock while installing, removing, or replacing the LED lamp device.

NOTE: LED lamps replacing U-bend T8 - T12 fluorescent lamps are included here because, due to the distance between their lamp bases, one base can be seated in a lampholder while the other base is accessible to contact.

SA8.19.2 One end (lamp base) of the device under test shall be connected to its intended source of supply while the other end (lamp base) of the device shall be considered accessible and shall be connected to the shock hazard measurement meter circuit and, in turn, to earth ground as shown in Figure 8.1. The current shall not exceed 5 M.I.U. (7.07 peak M.I.U.). The test shall be conducted using two methods, in turn, that simulate likely contact scenarios. Each lamp device end (base) shall also be tested in turn. In all cases, the highest measurement shall not exceed 5 M.I.U. RMS:

a) Method A – Contact during insertion into a live circuit. The supply source shall be energized with no lamp in the circuit. One end (base) of the device shall then be connected to the supply source while the other end (base) is connected to the shock hazard measurement meter circuit. Readings shall be monitored for 30 seconds, starting immediately after device connection (insertion). The highest reading shall be recorded.

b) Method B - Contact during removal from a live circuit. The supply source shall be energized with the device in the circuit. One end (base) of the device shall then be disconnected from its lampholder and connected to the shock hazard measurement meter circuit. Readings shall be monitored for 30 seconds, starting at 1 second after disconnection (removal) from the lampholder. The highest reading shall be recorded.

NOTE: A test may be terminated before 30 seconds if non-compliant measurements are recorded.

SA8.19.3 The construction of the shock hazard measurement meter circuit, meter, and the explanation of M.I.U. measurement unit are described in UL 935. The shock hazard measurement meter circuit is the let-go response network shown in Figure SA8.1A.

SA8.19.4 During the measurement, any externally accessible mechanical interlock mechanism intended to prevent current from flowing through the lamp during its insertion or removal shall be defeated. However, an interlock mechanism located on the free end of the lamp under test is allowed to operate normally if it meets all the following criteria:

- a) Actuators shall be located only on the face of the lamp bases and have a normally-open, momentary-type action so that they automatically engage and disengage when the lamp is inserted or removed from the luminaire, respectively;
- b) Actuators shall require a force of no more than 4.45 N (1 lbf) to recess completely into the lamp base so that they are flush with the lamp base surface;
- c) The actuator shall be made from or externally encapsulated by an insulating material that complies with the requirements for at least basic insulation;

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