

Subject 1082

July 21, 2017

SUMMARY OF TOPICS

The following changes in requirements to the Standard for Household Electric Coffee Makers and Brewing-Type Appliances, UL 1082, are being proposed:

1. Pressurized brewing

STP BALLOTS AND ALL COMMENTS DUE: SEPTEMBER 4, 2017

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

1. Pressurized brewing

RATIONALE

Proposal submitted by: Matt Williams, Association of Home Appliance Manufacturers

The current Standard for Safety for Household Electric Coffee Makers and Brewing-Type Appliances, UL 1082, contains requirements for pressurized brewing appliances that are primarily espresso machines. The AHAM Task Force, including the UL PDE, Mr. Hawk, considered how to include specific requirements for capsule [aka "pod"] coffeemakers. These products are currently not included with specific tests or design considerations in the existing UL 1082 standard. Originally, the Task Force considered separate sections for espresso and other larger pressurized brewing appliances that operate above 10 psi and a section for capsule coffee makers that operate at less than 10 psi. Finding a specific value to identify or define capsule coffeemakers by just pressure alone is very difficult. In the end, the Task Force believes that the tests outlined are better than using a design definition. Note the pressure definition in the exception to 27.19.

The Task Force has relied on the experiences of a number of manufacturers of capsule coffeemakers and the information on safety aspects of the products. The Task Force believes that it is more appropriate to include these requirements in the body of UL 1082 than to create a specific new addendum.

PROPOSAL

5.1.3.1 CAPSULE-TYPE BREWING APPLIANCE – An appliance intended to be used with open capsules or sealed capsules.

5.3.1.1 OPEN CAPSULE – A capsule that is able to receive the brewing media or provides a permeable container for brewing media that can operate in a pressure brewing appliance.



5.3.1.2 PRESSURE BREWING APPLIANCE – A heated appliance intended to make a brewed beverage such as coffee or tea, and with a water reservoir separate from the brewed beverage container; the brewed beverage container is not required to be provided with the appliance. A pressure brewing appliance has either an integrated sealed brewing chamber or is capable of using a sealed capsule as brewing material.

5.3.3 PUMP – A device which has as its primary function to move fluid by mechanical action.

5.3.4 SEALED CAPSULE – Prepackaged brewing media in a non-permeable container that must be punctured for brewing.

5.7 THERMOSTAT – A temperature-sensing device or system, the operating temperature of which may be either fixed or adjustable, and which keeps the temperature of the controlled part between certain limits by automatically opening and/or closing a circuit.

18.2 If an appliance is provided with a thermal cutoff, it shall be capable of opening the circuit in the intended manner without causing the short-circuiting of live parts and without causing live parts to become grounded to the enclosure when the appliance is connected to a circuit of voltage in accordance with 33.1.11, and operated in a normal position to cause abnormal heating in accordance with 47.4.

18.3 *18.3 Revised and Relocated as 47.4 47.4.1*

18.4 A pressure brewing appliance provided with a function to keep water heated above room temperature before brewing, or to keep brewed beverage heated after the cycle is complete shall be provided with limiting-type devices in accordance with 22C.3.

22C Capsule-Type Brewing Appliance Controls

22C.1 General

22C.1.1 A capsule-type brewing appliance provided with an automatic reset temperature regulating thermostat that operates more than once during a function to keep water heated before the brew cycle, and/or to keep brewed beverage heated after the brew cycle shall comply with 22C.2 and 22C.3.

22C.1.2 A separate temperature limiting-type device is required if the short-circuiting of a temperature-regulating control during abnormal operation (see Abnormal Operation Tests, Section 47) increases the risk of fire or electric shock. A single combination regulating-limiting control is unacceptable for this purpose.

22C.2 Temperature regulating

22C.2.1 An automatic reset temperature-regulating thermostat that operates more than once during a complete cycle of brewing and warming shall comply with the applicable requirements for drip-type coffee maker thermostats in the Standard for Temperature-Indicating and -Regulating Equipment, UL 873. Compliance with the Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1, and the Standard for Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Temperature Sensing Controls, UL 60730-2-9, fulfills these requirements.

22C.2.2 The insulating material of a temperature regulating control shall have a Comparative Tracking Index of 175 or more. The Comparative Tracking Index (CTI) is referenced in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.

22C.2.3 A temperature sensing positive temperature coefficient (PTC) or a negative temperature coefficient (NTC) thermistor, that performs the same function as an operating or protective control shall comply with the following:

- a) Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1; and the Standard for Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Temperature Sensing Controls, UL 60730-2-9, with Annex J; or
- b) The Standard for Thermistor-Type Devices, UL 1434.

22C.3 Limiting-type devices

22C.3.1 A limiting-type device shall consist of one of the following:

- a) A single thermal cutoff with an established TH-100 rating (which includes having a Conductive Heat (CH) rating) as described in the Standard for Thermal-Links – Requirements and Application Guide, UL 60691, and as tested per 33.2.5.8 and 33.2.5.10;
- b) Two thermal cutoffs such that one of the following conditions is met:
 - 1) Each of the thermal cutoffs has a Conductive Heat (CH) rating as described in UL 60691; or
 - 2) One thermal cutoff has a Conductive Heat (CH) rating:
 - i) and temperature on the stationary contact lead of the thermal cutoff without a CH rating is greater than or equal to the temperature on its case, as tested per 33.2.5.10; or
 - ii) the CH rated thermal cutoff has a set-point temperature equal to or higher than the thermal cutoff without a CH rating; or
 - 3) The temperature on the stationary contact lead of both thermal cutoffs without a CH rating is greater than or equal to the temperature on their respective cases as tested per 33.2.5.10.
- c) A single-operation thermostat; or

d) A manual-reset thermostat that is inaccessible to the user without the use of tools.

22C.3.2 A single-operation thermostat or a manual-reset thermostat that is provided as the thermal limiting device shall comply with the applicable requirements in the Standard for Temperature-Indicating and -Regulating Equipment, UL 873, for limiting controls. Compliance with the Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1; and the Standard for Automatic Electrical Controls for Household and Similar Use, Part 2: Particular Requirements for Temperature Sensing Controls, UL 60730-2-9, fulfills these requirements.

22C.3.3 A thermal cutoff shall comply with the applicable requirements in the Standard for Thermal-Links – Requirements and Application Guide, UL 60691.

22C.3.4 If a grounding-type attachment plug is provided or the enclosure of the appliance has metal parts that are likely to become grounded, such as a metal bottom with bumped-out metal feet, the limiting-type device shall be located in the ungrounded supply conductor (if it can be identified) and the temperature-regulating control shall be in the other conductor. If the ungrounded supply conductor cannot be identified, the limiting-type device shall be located in one supply conductor and the temperature-regulating control shall be located in the other supply conductor.

26.11 A pressure brewing appliance shall be provided with a brewer operation indicator that is readily visible and distinguishable from the "off" position. The brewer operation indicator shall be "on" starting when the user initiates the cycle, and shall turn off when the dispensing stops.

26.12 A pressure brewing appliance shall be constructed so that the brewing chamber cannot be opened by a simple or unintentional operation when the chamber is pressurized.

Note 1: An espresso coffee filter that can only be removed after having been rotated through an angle of at least 30 degrees is considered to comply with this requirement. For other brewing appliances, a brewing material holder provided with two separate and distinct means for securement, accomplished either manually or by an automatic process, is also acceptable.

Note 2: A brewing chamber that cannot be opened while under pressure by exerting a force of less than 2.25 pounds (10 Newtons) is considered to comply with this requirement.

Exception: An appliance that meets the requirements of the Open Brew Chamber Test – Pressure Brewing Appliances, Section 46B is not required to comply with this requirement.

27 Pressure Vessels and Parts Subject to Pressure

27.1 Revised and relocated as 26.12. Espresso coffee makers shall be constructed so that the coffee filter cannot be removed by a simple or unintentional operation when the vessel is pressurized. A coffee filter that can only be removed after having been rotated through an angle of at least 30 degrees is considered to comply with this requirement. A coffee filter holder provided with two separate and distinct means for securement onto the machine, accomplished either manually or by an automatic process, is also acceptable.

27.2 *Revised and relocated as 54.14.* An espresso maker shall include a distinctive marking, such as an arrow, vertical bar, dot, or other equivalent marking, or the word "lock", which clearly indicates the proper position to secure the coffee filter holder during the brewing cycle. This marking shall be located directly above the position of the filter holder handle when the filter holder is properly secured.

27.3 Except as noted in 27.4, a pressure vessel having an inside diameter of more than 6 inches (152 mm) and subject to a gauge pressure of more than 15 lbf/in² (103 kN/cm² or 10.5 gf/mm²) shall be certified by the National Board of Boiler and Pressure-Vessel Inspectors and marked in accordance with the appropriate boiler and pressure vessel code symbol of the American Society of Mechanical Engineers (ASME) ("H", "M", "S", or "U") for a working pressure not less than the pressure determined by applying 27.5.

27.4 If a pressure vessel, because of its application, is not covered under the inspection procedures of the ASME code, it shall be so designed and constructed that it complies with the requirements in 27.4 – 27.8 46A.1 – 46A.4.

27.5 *Revised and relocated as 46A.1.* The espresso-coffee maker is to be operated until maximum pressure is attained, by any combination of functional controls, at rated voltage or at the upper limit of a rated voltage range, with the coffee filter both un-blocked and blocked and the steam valve, if provided, closed, except that, during the period that steam is produced, the supply voltage shall be such that the input is equal to the maximum rated input. If the steam valve is linked to the switch used for starting the production of steam, this link must not be disturbed during determination of maximum pressure. The maximum pressures are to be noted.

27.6 *Revised and relocated as 46A.2.* The espresso-coffee maker is then to be subjected for five minutes, to a pressure equal to twice the maximum pressure noted with the coffee filter blocked. The over pressure may be supplied from an external source, care being taken to ensure that the espresso-coffee maker is at its intended operating temperature for starting the brewing period.

27.7 *Revised and relocated as 46A.3.* The steam system of an espresso-coffee maker, which is normally open to ambient pressures, shall be subjected for five minutes, to a pressure equal to twice the maximum pressure noted with the coffee filter not blocked. During the test, the system under test (pressure system) is not to be altered or modified, the steam outlet tube is to be blocked, and the steam valve is to be opened. The over pressure may be supplied from an external source, care being taken to ensure that the espresso-coffee maker is at its intended operating temperature for starting the steaming period.

27.8 *Revised and relocated as 46A.4.* During the tests described in 27.6 and 27.7, the espresso maker shall not rupture and there shall be no leakage other than at places intended for that purpose. Leakage is only acceptable through a self-resetting overpressure relief. At the conclusion of the tests described in 27.6 and 27.7 the coffee-maker shall perform in its intended manner.

27.9 *Revised and relocated as 46A.5.* Following the test specified in 27.6, the coffee-maker is to be subjected to the same pressure as described in 27.6 except with any means for limiting the pressure during determination of the maximum pressure made inoperative. During this test the steam outlet is blocked, as it is regarded as the limiting device during determining the maximum pressure. The coffee-maker shall withstand this test without exploding or emitting hazardous jets of fluid.