

Subject 1453

March 16, 2018

SUMMARY OF TOPICS

The following changes in requirements to the Standard for Electric Booster and Commercial Storage Tank Water Heaters, UL 1453, are being proposed:

1. Revision of Table 45.1 to provide for a maximum temperature rise for phenolic components used as electrical insulation

STP BALLOTS AND ALL COMMENTS DUE: APRIL 16, 2018

UL's goal is to have no interest category comprise more than one-third of the STP membership balance. To improve the current balance for STP 1453, UL is looking for participants in the AHJ, Commercial/Industrial User, General, Government, Supply Chain, and Testing & Standards interest categories. Definitions for these interest categories are available on the Standards STP Internet site:

<http://ulstandards.ul.com/develop-standards/participation/interest-categories/>

If you are interested in applying for STP 1453 membership or are aware of potential candidates for this STP, please contact the STP Project Manager, Marcia.M.Kawate@ul.com.

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

1. Revision of Table 45.1 to provide for a maximum temperature rise for phenolic components used as electrical insulation

RATIONALE

Proposal submitted by: Mark Skierkiewicz, UL LLC

Current requirements in UL 1453 do not provide for a maximum temperature rise for phenolic components used as electrical insulation. The addition of the limit for temperature rise in the standard will clarify the requirements and reduce ambiguity when applying the requirements in the standard.

Table 45.1 will be revised to indicate that components used as electric insulation will comply with a maximum temperature rise of 125°C (225°F). This is the same temperature rise requirement that is used for these components on the following standards: Standard for Electric Fans, UL 507; Standard for Electric Duct Heaters, UL 1996; Standard for Electric Boilers, UL 834; Standard for Household Electric Storage Water Heaters, UL 174; Standard for Room Air Conditioners, UL 484; Standard for Dehumidifiers, UL 474; and Standard for Portable Sun/Heat Lamps, UL 482. A reference to the existing footnote b is being added to indicate that if a material has been investigated and found suitable for a higher temperature then the temperature rise in Table 45.1 does not apply.

PROPOSAL

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Table 45.1
Maximum acceptable temperature rises

Material or component		°C	(°F)
1.	Any point within a terminal box or wiring compartment of a water heater in which field installed conductors are to be connected, including such conductors themselves, unless the water heater is marked in accordance with 57.14	35	(63)
2.	Any point on a surface adjacent to a water heater, including the surface on which the water heater is mounted or supported, and specified points on test surfaces and enclosures at designated clearances from the water heater; metal surfaces of a water heater at point of contact with the test surfaces and surfaces of a water heater that are recessed within the test enclosure	65	(117)
3.	Fuses other than Classes CC, G, J, T	65	(117)
4.	Classes CC, G, J, T fuses	85	(153)
5.	Fiber employed as electrical insulation	65	(117)
6.	Wood or other combustible material	65	(117)
7.	Class 105 insulation systems on a relay, a transformer, a solenoid, and the like		
	Thermocouple method	65 ^a	(117 ^a)
	Resistance method	85	(153)
8.	Class 130 insulation systems on a relay, a transformer, a solenoid, and the like		
	Thermocouple method	85 ^a	(153 ^a)
	Resistance method	105	(189)
9.	Phenolic components used as electrical insulation or where deterioration of the compound would result in a risk of fire, electric shock, or injury to persons ²	<u>125</u>	<u>225</u>
10.	Insulated wire or cord	25°C less than its established temperature rating ^c	(45°F) less than its established temperature rating ^c
11.	Sealing compound	d	d
12.	Copper or copper-base alloy conductors:		
	A. Tinned or bare strands having:		
	1. A diameter less than 0.015 inch (0.38 mm)	125	(225)
	2. A diameter of 0.015 inch or more	175	(315)
	B. Plated with nickel, gold, silver, or a combination of these metals	225	(405)
13.	Termination of copper conductors and pressure terminal connectors unless both are tinned, nickel coated, silver plated or otherwise protected	125	(225)
14.	Capacitor		
	A. Electrolytic type	65 ^e	(117 ^e)
	B. Other types	65 ^f	(117 ^f)
^a At a point on the surface of a coil where the temperature is affected by an external source of heat, the temperature rise measured by means of a thermocouple may be higher than the maximum indicated by the following amount:			
Item		Additional Temperature Rise	
7		15°C	(27°F)
8		20°C	(36°F)
provided that the temperature rise of the coil, as measured by the resistance method, is not more than that specified in the table.			

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