

Subject 1030

December 29, 2017

SUMMARY OF TOPICS

The following changes in requirements to the Standard for Sheathed Heating Elements, UL 1030, are being proposed:

1. Changes Regarding Electrical Insulation Requirements

STP BALLOTS AND ALL COMMENTS DUE: JANUARY 29th, 2018

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

1. Changes Regarding Electrical Insulation Requirements

RATIONALE

Proposal submitted by: Robert DellaValle, Underwriters Laboratories

Supplement SA was recently added to cover industrial-use medium voltage metal-sheathed heating elements rated between 601 and 15,000 V that are intended for use in appliances and equipment. As a result a number of editorial revisions were required and are part of this proposal.

This Proposal is intended to document electrical insulation requirements in Supplement SA. These requirements are based on similar requirements for Medium Voltage Equipment which have already been adopted and utilized across other Medium Voltage Component Standards, such as UL 347 and UL 1004-9. Additional information was obtained from these Medium Voltage Standards to further address electrical insulation requirements at medium voltages, where the material's service life experience or test may be taken into account to determine if the material has suitable electrical, dielectric, moisture resistant, and thermal aging properties.

PROPOSAL

~~1.2 These requirements~~ The main body of this standard covers requirements for sheathed heating elements rated 600 volts or less. Supplement SA covers cartridge-type sheathed heating elements that do not incorporate a bend in the sheath, rated between 601 and 15,000 V.

SA1.1 These requirements cover industrial-use medium voltage metal-sheathed heating elements intended for use in appliances and equipment that comply with the requirements for such appliances and equipment. ~~The requirements in this Supplement are applied in addition to the requirements specified in this standard.~~ These requirements supplement those specified in this standard unless otherwise noted.

SA1.2 These requirements cover cartridge-type sheathed heating elements that do not incorporate a bend in the sheath, rated between 601 and 15,000 V. These requirements cover between the cold terminal pin of the element and the end cap.

SA1.5 The suitability of the medium in which these elements will be used ~~is to~~ shall be determined by the end product.

SA5 Internal Insulation

Table SA6.1
Spacings

Voltage rating, V	Minimum spacings					
	Spacings through air and over surface				Minimum MgO thickness	
	Clearance through		Creepage along			
	in	(mm)	in	(mm)	in	(mm)
2500 max ^a	1.0	(25.4)	2.0	(50.8)	0.11	(2.7)
7200 max ^a	2.0	(50.8)	3.5	(88.9)	0.20	(5.0)
15,000 max ^a	4.0	(102)	7.0	(178)	0.50	(12.8)
^a Because of the effect of configuration, spacings in excess of those indicated may be required to meet performance requirements of this standard.						
^b See SA7.1 for electrical insulation used in lieu of spacings.						

SA7 ~~Components~~ Electrical Insulation

SA7.1 ~~Wiring shall comply with the Standard for Appliance Wiring Material, UL 758, or the Standard for Medium-Voltage Power Cables, UL 1072, and be suitable for the particular application when considered with respect to the temperature and voltage, and conditions of service to which the wiring is likely to be subjected.~~

Electrical insulation shall be composed of materials that have been shown by service life experience or test to have suitable electrical, dielectric, moisture resistant, and thermal aging properties. Compliance shall be demonstrated by conducting the Dielectric Voltage-Withstand Test, SA10, on the material alone or as part of the element assembly. Compliance shall also be determined by one or more of the following:

- a) Materials have been evaluated and found acceptable in accordance with the applicable requirements covering electrical property considerations in the Standard for Polymeric Materials - Use in Electrical Equipment Evaluations, UL 746C;
- b) Phenolic, ceramic, porcelain, and cycloaliphatic epoxies are able to be used for the purpose of supporting live parts without additional evaluation; and/or
- c) The manufacturer's declaration with supporting documents such as test reports to established standards or documentation of elements using the materials with service life experience reports.

SA7.2 ~~Supplemental Insulation – Where the requirements for supplemental insulation (e.g. tape, sleeving or tubing) are not specified, the insulation or device is required to fulfill SA7.3 or a performance requirement of this Standard. In such cases:~~

- ~~a) Sleeving shall comply with the Standard for Coated Electrical Sleeving, UL 1441;~~
- ~~b) Tubing shall comply with the Standard for Extruded Insulating Tubing, UL 224.~~