

Subject 8750

September 14, 2018

SUMMARY OF TOPICS

The following topics for the Standard for Light Emitting Diode (LED) Equipment For Use In Lighting Products, UL 8750, are being recirculated:

10. Insulation systems of insulating transformers interacting with NIM (Non-Electrical Insulating Material)

COMMENTS DUE: OCTOBER 15, 2018

For your convenience in review, proposed additions to the previously proposed requirements dated 2018-05-04 are shown underlined and proposed deletions are shown ~~lined-out~~.

10. Insulation systems of insulating transformers interacting with NIM (Non-Electrical Insulating Material)

RATIONALE

Responses to comments have been posted within the UL 8750 Proposal Review Work Area dated 2018-05-04.

Proposal submitted by: Armando Lobascio, Efore Spa

Potting compounds are extensively used inside LED power supplies for several reasons as NIM (Non-Electrical Insulating Material as defined in the Standard for Systems of Insulating Materials – General, UL 1446. The potting material gives benefits against moisture and improve thermal dissipation of electronics circuits inside LED power supplies. Where insulating transformers, including transformers used inside SMPS, are used for reducing the risk of shock hazard or to be it part of a Class 2 or of a LVLE circuit the necessary investigation of chemical compatibility of the potting with the insulation system of the transformer should be assessed. In particular those potting that are dispensed in two liquid parts, like silicones but not just this type of material, before it is polymerized it can enter inside the transformer and touch its internal components which are parts of insulation system.

UL 1446 provides clarification on encapsulant and potting compound and its substitution or addition. If the affected insulation system is of temperature class ~~120(E)~~ 130(B) or of a superior temperature class the addition of a NIM must be assessed with a chemical compatibility investigation. There is the risk from a NIM to modify the original characteristics of an insulation system and there is the risk of dielectric failure of the separation from hazardous parts and Class 2 or LVLE circuits.

This proposal is to suggest additional requirements for potting used at high temperature inside the enclosure.



PROPOSAL

6.7 Potting compound

6.7.1 Potting compound shall not leak, drip, or be released from a unit during any test conducted in accordance with this standard.

6.7.2 During the Temperature Test of 8.3, a potting compound shall comply with (a) or (b) as applicable:

a) Unless the material is thermosetting, a polymeric potting compound shall not exceed its Relative Thermal Index (RTI).

Exception No. 1: A thermoplastic polymeric potting compound may be used if the maximum potting compound temperature doesn't exceed 90°C (194°F) during the Temperature Test of 8.3.

Exception No. 2: A thermoplastic polymeric potting compound may be used if the maximum potting compound temperature is at least 15°C (27°F) less than the softening point of the compound as determined by the Standard Test Methods for Softening Point of Resins Derived from Pine Chemicals and Hydrocarbons, by Ring-and-Ball Apparatus, ASTM E28.

Exception No. 3: A thermoplastic polymeric potting compound may be used if the maximum potting compound temperature is at least 25°C (77°F) less than the softening point of the compound as determined by the Standard Test Methods for Vicat Softening Temperature of Plastics, ASTM D1525.

b) An asphalt potting compound shall remain at least 15°C (27°F) below its softening point as determined by the Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus), ASTM D36/D36M.

c) Potting compound, resin, asphalt, encapsulant or any other material dispensed inside the enclosure of a unit in one aggregation status that it is not solid and can touch any part of the insulation system of a transformer shall be tested in accordance with Supplement SA – Substitutions or Modification to an Electrical Insulation System in the Standard for Systems of Insulating Materials - General, UL 1446.

Exception No. 1: This test does not apply if the transformer is not used for the mitigation of the risk of electric shock or is not used to separate Class 2 circuits or LVLE circuits from hazardous circuits.

Exception No. 2: This test does not apply if the transformer insulation system already includes the potting.

Exception No. 3: This test does not apply if the insulation system is used up to the at temperature ~~with respect to~~ permitted for class 105 (A) according to Table 8.1 of this standard.

Exception No. 4: This test does not apply to the use of asphalt if a physical tape barrier is utilized to separate from the transformer coils.

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