

Subject 444

August 3, 2018

SUMMARY OF TOPICS

The following topics for the Standard for Communication Cables, UL 444, are being recirculated:

1. Addition of Jackets of Expanded Material

COMMENTS DUE: September, 3, 2018

For your convenience in review, proposed additions to the previously proposed requirements dated (2018-03-23) are shown underlined and proposed deletions are shown ~~lined-out~~.

1. Addition of Jackets of Expanded Material

RATIONALE

Proposal submitted by: Tom Guida, TJG Services Inc

The technology needed to create jackets of expanded material has been available for some time. There are several very positive advantages attached to the use of expanded material jackets on Communications Cables. As frequencies move upwards the cable jacket has an effect on transmission. The use of expanded material jackets lowers the dielectric constant, changing the loss tangent, thus, signals move faster. The reduced amount of material used for these jackets lowers the combustible footprint and environmental impact for buildings.

Unlike the clear definition of solid and expanded materials for insulation, UL 444 is vague on the use of expanded materials for jackets. Acceptance of this proposal will rectify this problem.

Specifically, paragraph 5.10.1 provides a broad definition of a cable jacket. It is not clear as to whether the jacket material is solid or expanded. To this point, modifying paragraph 5.10.1 clearly states that a jacket may be either solid or expanded.

Paragraph 5.10.2 defines defects as, “bubbles, open spots, rips, tears, cuts or foreign materials” These defects are non-uniform conditions that can make the jacket less able to protect the insulated conductors within the cable. Expanded materials have voids in the material which are consistent within the material and should not be confused with the term “bubbles” in the definition of defects. Adding to this paragraph to state that “Voids or bubbles with-in expanded materials are not considered defects” clearly defines defects for both solid and expanded materials.

Paragraph 5.10.6A is proposed to define requirements for cables with expanded material jackets similarly to paragraph 5.10.5 for jackets with thicknesses other than in Tables 7 and 8.

PROPOSAL

5.10 Jackets

5.10.1 A jacket consisting of a continuous nonmetallic outer covering ~~consisting of a solid and/or expanded~~ material complying with the requirements of Clauses 5.10.2 – 5.10.8 shall be applied over the cable construction.

5.10.2 The jacket shall be uniform and shall not have any defects (~~bubbles~~, open spots, rips, tears, cuts, or foreign material) that are visible without magnification to normal or corrected-to-normal vision. Voids or bubbles within expanded material are not considered defects. Open voids or bubbles visible on the surface of a jacket of expanded material are considered defects.

5.10.6A Jackets of expanded materials are acceptable if the finished cable complies with the tests described in the Standard. Evaluation of jackets of expanded material shall include crush, impact and abrasion tests.

Table 9
Minimum unaged properties of insulations and jackets
(See Clauses 5.10.8, 7.3.2.1, and 7.8.1.)

Material	Ultimate elongation percent	Tensile strength	
		MPa	lbf/in ²
ECTFE ETFE	100	34.5	5000
FEP	200	17.2	2500
FRPE, FRPP	100	8.3	1200
HDPE	300	16.5	2400
LDPE	350	9.7	1400
MFA, PFA	200	17.2	2500
PP	150	20.7	3000
PTFE	175	27.6	4000
PVC	100	13.8	2000
PVDF	100	24.1	3500
SRPVC	100	20.7	3000
TPE	300	9.65	1400
XL	150	10.3	1500
XLPO	150	13.8	2000

Notes:

1) All materials shall be tested at 500 ±25 mm/min (20 ±1 in/min) except ECTFE, ETFE, FRPE, FRPP, HDPE, PP, PVDF, and SRPVC. These materials shall be tested at 50 ±5 mm/min (2.0 ±0.2 in/min).

2) An insulation or a jacket of a material other than one of those mentioned in the first column of this table may be used, provided that it has been evaluated to verify acceptability for use in the intended application.

3) The tensile strength of expanded jacket material meeting the requirements of 5.10.6A shall be determined using a measured cross-sectional area that has been reduced by the percent expansion of the material.

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