

SUMMARY OF TOPICS

The following changes in requirements to the Standard for Enclosures for Electrical Equipment, Non-Environmental Considerations, UL 50, are being proposed for preliminary review and comment only:

- 1. For Preliminary Review Only: Junction and Pull Boxes for Use in Air Handling Spaces***
- 2. For Preliminary Review Only: Adhesives Used to Secure Observation Windows***
- 3. For Preliminary Review Only: Add Definitions of Cabinet, Cutout Box, Junction Box, and Pull Box***
- 4. For Preliminary Review Only: Restrictions on Use of Sheet Metals Screws***
- 5. For Preliminary Review Only: Junction and Pull Boxes Less Than 100 Cubic Inches***
- 6. For Preliminary Review Only: Clarification of Annex C for Components***
- 7. For Preliminary Review Only: Clarification of Closure Opening for Polymeric Materials***
- 8. For Preliminary Review Only: Sealants Used with Enclosures***
- 9. For Preliminary Review Only: New Annex E for Adhesives, Enclosures, Non-mechanical Means of Securement***
- 10. For Preliminary Review Only: Requirements for Encapsulated Enclosures***
- 11. For Preliminary Review Only: Exemption of Crush and Impact Tests if Using Safety or Wire Mesh Glass in Large Openings***

COMMENTS DUE: December 14, 2017

This proposal is for review and comment only (no ballot at this time). Please note that comments on a preliminary review document will not receive a response from the proposal author through CSDS. Instead, the proposal author will be asked to review the comments and adjust the proposals and/or supporting rationale as the author determines to be appropriate. The preliminary review process is an informal mechanism that provides authors with the opportunity to refine their proposals before they advance to the next stage in UL's standards development process.

In some cases, the author of the proposals may choose to discontinue them. In this case, the author need not do anything after preliminary review has ended. Normally, the next step in the process is the more formal STP ballot and stakeholder review process. Only comments posted during the STP ballot and stakeholder review process will be provided with a response in CSDS.

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 50, UL is looking for participants in the following interest categories: Commercial/Industrial User, Supply Chain, Testing & Standards, AHJ, General and Consumer. 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 50 membership or are aware of potential candidates for this STP, please contact the STP Project Manager, Mitchell Gold at Mitchell.Gold@ul.com.

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

1. For Preliminary Review Only: Junction and Pull Boxes for Use in Air Handling Spaces

RATIONALE

Proposal submitted by: Seth Carlton, UL LLC

Section 300.22(C)(3) allows for electrical equipment in nonmetallic enclosures to be installed in air handling spaces only if they are determined to have adequate fire-resistant and low-smoke-producing characteristics. There is an informational note that specifies that an investigation to UL 2043 is a method to determine these characteristics. This proposal is to allow for junction and pull boxes to be optionally investigated to UL 2043 for use in air handling spaces, and if found to meet the proposed requirements, marked that they may be installed in air handling spaces.

It is important to consider that in most cases for non-metallic enclosures, the fire-resistant and low-smoke-producing characteristics are dependent not only on the enclosure, but also the devices used within the enclosure. However, junction and pull boxes installed in accordance with Article 314 are only allowed to contain wires, terminals, and barriers. These components would not contribute significantly to the fire and smoke characteristics, especially when compared to other components such as switches, printed wiring boards, semiconductors, etc, that are found in other end use enclosures. It is for this reason that empty non-metallic junction and pull boxes would be allowed to investigated to UL 2043 and still bear the mark for use in air handling space. However, this marking would specifically exclude the use of devices other than those allowed by 314.28 of the NEC. The reason for this is that a junction or pull box may be used as an enclosure for other end products which contain electrical components that would cause different smoke and fire characteristics.

Note that this proposal pertains only to non-metallic junction and pull boxes because 300.22(C)(3) allows metallic enclosures to be installed in air handling spaces without further consideration of fire and smoke characteristics.

PROPOSAL

10.1.1 In Mexico and the United States, the requirements in Clauses 10.1 to 10.7 ~~10.6~~ apply. In Canada, these requirements do not apply.

10.1.2 In addition to the requirements in Clauses 10.2 to 10.7 ~~10.6~~, a junction or pull box shall comply with the requirements for enclosures. However, the requirements in Clauses 10.2 to 10.7 ~~10.6~~ shall supersede equivalent requirements for enclosures.

10.7 Air handling spaces

10.7.1 General

10.7.1.1 Nonmetallic junction and pull boxes intended to enclose only wires, barriers, or terminals as allowed by Section 300.22(C) of the National Electrical Code, intended to be installed in air-handling spaces shall additionally comply with the requirements in the Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces, UL 2043.

Note: Products evaluated in accordance with these requirements are considered to comply with the fire retardant and low smoke producing requirements of Section 300.22(C)(3) of NFPA 70, Chapter 4 of NFPA 90A, Section 602 of the International Mechanical Code, and Section 602 of the Uniform Mechanical Code.

10.7.2 Markings

10.7.2.1 A junction or pull box intended for installation in air handling spaces and complying with 10.7.1 shall be marked as appropriate, "Suitable for Use In Air Handling Spaces Only When Containing Wiring Methods and Accessories as Allowed in Section 300.22(C) of the National Electrical Code", or equivalent wording.

2. For Preliminary Review Only: Adhesives Used to Secure Observation Windows

RATIONALE

Proposal submitted by: Seth Carlton, UL LLC

Clause 6.2.1 is very ambiguous in regards to the securement of observation windows. In order to create clear requirements, this proposal is to allow observation windows to be secured mechanically or by adhesive and, the adhesive shall be investigated to UL 746C or Annex E for the US or Annex E for Canada. An equivalent investigation for Mexico is not known.

PROPOSAL

6.2.1 A material used for an observation window and forming a part of the enclosure shall be reliably secured in such a manner that it cannot be readily displaced in service in accordance with 6.2.5 or 6.2.6 and shall provide mechanical protection of the enclosed parts, in accordance with Clause 6.2.2 or 6.2.3.

6.2.5 In the United States, a material used for an observation window shall be mechanically secured or shall be secured using an adhesive complying with the adhesive requirements specified in Annex B, Ref. No. 16, or Annex E.

6.2.6 In Canada, a material used for an observation window shall be mechanically secured or shall be secured using an adhesive complying with Annex E.

**Annex B - Reference Standards
(Table truncated for clarity)**

Ref. No.	Clause No.	Canada	Mexico	United States
16	6.2.4	No Equivalent	No Equivalent	Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C

3. For Preliminary Review Only: Add Definitions of Cabinet, Cutout Box, Junction Box, and Pull Box

RATIONALE

Proposal submitted by: Seth Carlton, UL LLC

Currently UL 50 and UL 50E do not contain definitions for they types of enclosures of which the standard contains specific requirements for, cutout boxes, junction boxes, pull boxes, and cabinets. This proposal is to add definitions for these enclosure types to the standards. The definition for cabinet comes from the US NEC and Canada CEC. The definition for cutout box comes from the US NEC. And the definition for junction or pull box comes from the UL guide card for category BGUZ. Also, the guidecard for BGUZ is not consistent with the scope of UL 50 13th Ed. The guidecard states that "All boxes in this category have volume of more than 100 cu in. (1640 cm³)". The scope of UL 50 13th Ed. paragraph 1.5 states that "Outlet boxes having a volume of not more than 1640 cm³ (100 in³) are covered by CSA C22.2 No. 18, NMX-J-023/1-ANCE, and the UL 514 series (see Annex B, Ref. No. 6 and 13) and are not covered by this standard." Therefore, based on the scope of UL 50 13th Ed., junction and pull boxes are allowed to be constructed at volumes less than 100 cu in, but outlet boxes (which are less than 100 cu in) are not allowed to be covered under this standard.

PROPOSAL

5.3.1 CABINET – In the United States and Mexico, a cabinet is an enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung.

In Canada, a cabinet is defined in the Canadian Electrical Code Part I.

5.4.1 CUTOUT BOX – An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure.

5.9.1 JUNCTION OR PULL BOX – An enclosure which is provided with a cover secured by fasteners other than hinges.

4. For Preliminary Review Only: Restrictions on Use of Sheet Metals Screws

RATIONALE

Proposal submitted by: Seth Carlton, UL LLC

The requirements of Article 250.8 of the NEC limit the use for certain types of screws used as wire binding screws for grounding terminals. To be consistent with the requirements for outlet boxes, this proposal proposes to add the same requirements from UL 514A to UL 50.

PROPOSAL

10.4.12 Wire binding screws of equipment grounding terminals shall comply with Annex B, Ref. No. 17.

**Annex B - Reference Standards
(Table truncated for clarity)**

Ref. No.	Clause No.	Canada	Mexico	United States
17	10.4.12	No Equivalent	No Equivalent	Metallic Outlet Boxes, UL 514A

5. For Preliminary Review Only: Junction and Pull Boxes Less Than 100 Cubic Inches

RATIONALE

Proposal submitted by: Seth Carlton, UL LLC

Currently clause 1.5 of the scope of UL 50 says "Outlet boxes having a volume of not more than 1640 cm³ (100 in³) are covered by CSA C22.2 No. 18, NMX-J-023/1-ANCE, and the UL 514 series (see Annex B, Ref. No. 6 and 12) and are not covered by this standard." This statement does allow junction and pull boxes with a volume less than 100 cubic inches. Junction and pull boxes with a volume less than 100 square inches are allowed by the NEC under Article 314. However, junction and pull boxes with a volume of less than 100 cubic inches must have the volume marked on them per 314.16.A2. This proposal is to add the marking requirement of 314.16.A2 to UL 50 for junction and pull boxes to be in compliance with the installation code.

Also, clause 1.5 does not exclude outlet boxes greater than 100 square inches from being investigated to UL 50. This is not appropriate, all outlet boxes should be investigated to the standards stated in clause 1.5. This proposal revises clause 1.5 to not allow any outlet box to be investigated to this standard.

PROPOSAL

1.5 Outlet boxes ~~having a volume of not more than 1640 cm³ (100 in³)~~ are covered by CSA C22.2 No. 18.1, NMX-J-023/1-ANCE, and the UL 514 series (see Annex B, Ref. No. 6 and 13) and are not covered by this standard.

10.6.5 Junction and pull boxes with a volume of less than 1640 cm³ (100 in³) shall be marked with the enclosure volume in accordance with 10.7.1.

10.8 Volume

10.8.1 A junction or pull box with an internal volume of less than 1640 cm³ (100 in³) shall be marked in accordance with 10.6.5 and the internal volume measured by test in accordance with 10.9 or by another equivalent means.

10.9 Performance

10.9.1 Volume measurement of boxes

10.9.1.1 Each box with an internal volume of less than 1640 cm³ (100 in³) shall hold a volume of water equal to or greater than the marked volume when three samples are tested in accordance with this section.

10.9.1.2 All separable cable clamps, fixture/luminaire studs, grounding conductors, internal screws, and other internal accessories shall be removed. Any projections that extend outside the plane of the open face of a box, such as ears for mounting a cover or a flush device, shall be ground flush with the face of the box.

10.9.1.3 All large openings shall be closed by flat, rigid plates clamped in place across the openings. One of the plates shall contain two small holes, one for the entrance of water and the other for venting air. See Figures 14 and 15.

10.9.1.4 Using modeling clay, putty, glazing compound, or similar material:

a) Holes through the side or bottom of the sample and a holes between the sample and the plate specified in Clause 10.9.1.3 shall be filled flush with the inside surface.

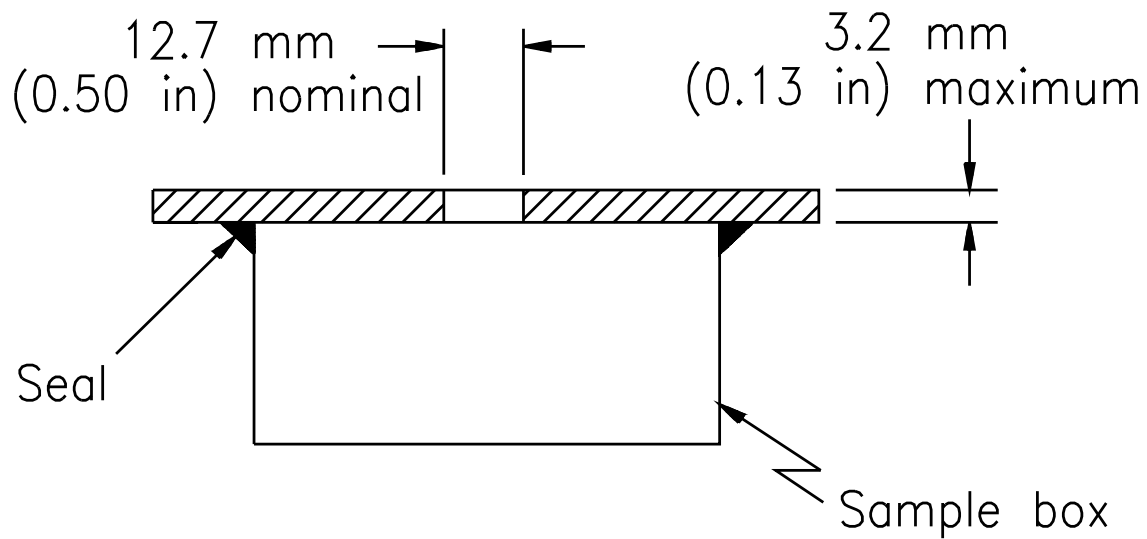
b) Internal hubs, when tapped through, shall be filled flush with the end of the hub.

c) Openings that are bushed shall be filled flush with the conduit stop.

10.9.1.5 A clean, graduated vessel, pipette, or the equivalent, having a volume equal to or greater than the marked volume of the test sample, shall be filled with water at room temperature, and the volume of the water shall be measured. The water shall then be transferred from the vessel to the test sample through the hole in the plate as specified in Clause 10.9.1.3 until the test sample is filled. The difference in the volume of water in the supply vessel, as measured before and after the filling of the test sample, indicates the volume of the test sample.

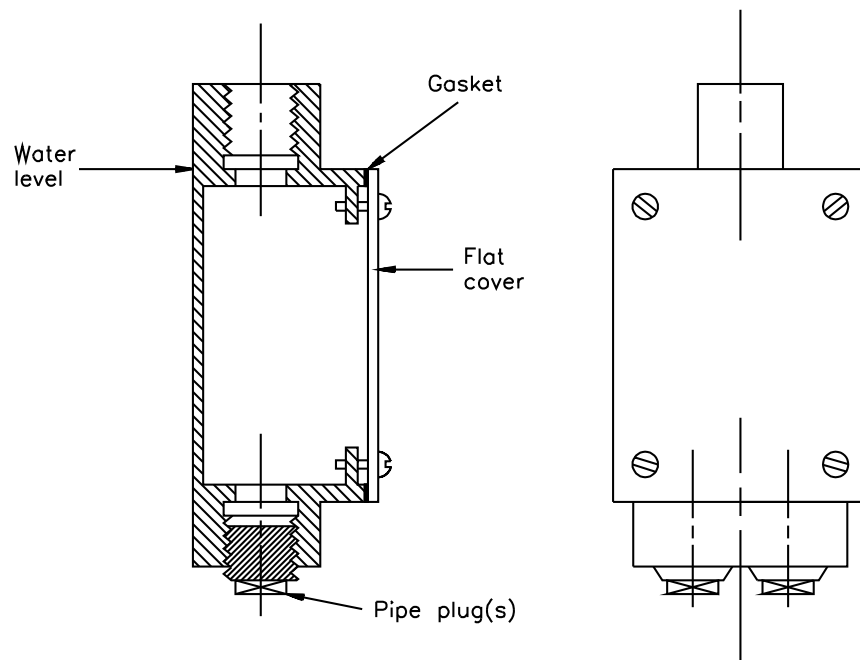
—

Figure 14
Volume measurement
 (See Clause 10.9.1.3)



S4234A

Figure 15
Volume measurement, cast-metal boxes
 (See Clause 10.9.1.3)



S5012

UL COPYRIGHTED MATERIAL –
 NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
 DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents
 Document Sharing Hub

6. For Preliminary Review Only: Clarification of Annex C for Components

RATIONALE

Proposal submitted by: Seth Carlton, UL LLC

The intent of Annex C is that there are requirements in the standard that are applicable to some components, i.e. grounding and bonding components, however these requirements are optional. Therefore the enclosure manufacturer is required to specify that these components were investigated to the requirements of this standard. If it is intended for these components to be investigated to the requirements of another end-product standard, then that end product needs to be identified. Also, components may be included in an enclosure where the standard does not address the components at all. In order to avoid confusion, the enclosure has to be marked that the Listing does not include an investigation of these components. This proposal is to clarify Appendix C to reflect this intent.

PROPOSAL