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October 14, 2019

Ms. Gabriella Davis
Secretary, IAPMO Standards Council
International Association of Plumbing and Mechanical Officials (IAPMO)
4755 E. Philadelphia St.
Ontario, CA 91761

Re: PPFA Appeal to Standards Council

Dear Gaby:

In accordance with IAPMO Regulations Governing Committee Projects, Appeals to the Council, Section 1-6, I am submitting the attached appeal regarding the Uniform Mechanical Code Technical Committee and Association Technical Meeting decisions with respect to UMC 2021 Section 602.2, Table 1701.1, specifically Item #50.

Sincerely,

Richard Church
Executive Director

Attachment: Appeal

PLASTIC PIPE AND FITTINGS ASSOCIATION
APPEAL TO THE IAPMO STANDARDS COUNCIL (APPEAL)
October 14, 2019

The Plastic Pipe and Fittings Association (PPFA), founded in 1978, is a North American trade association comprised of member companies that manufacture plastic piping, fittings and solvent cements for plumbing and related applications, or supply raw materials, ingredients or machinery for the manufacturing process.

PPFA is the voice for the sustainable manufacture and use of plastic piping systems and works to provide the users of plastic piping products with relevant information needed to properly design, specify and install plastic piping systems.

PPFA monitors, analyzes and acts on proposed and existing codes, standards and regulations specifically effecting the use of plastic piping products covered by construction codes.

In accordance with Section 1-6 of the Regulations Governing Committee Projects Appeals to the Council, the following is provided.

Appellant:

Dick Church
Executive Director
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IAPMO Uniform Mechanical Code Technical Committee (TC) and Association Technical Committee Meeting Actions Subject to this Appeal:

1. TC Decision Item #50, Comment 1
   Date of Decision: May 2, 2019
   2021 Uniform Mechanical Code – Section 602.2, Table 1701.1
   Item #050

2. IAPMO Association Technical Committee Meeting (Decision of the Members):
   Item # 50, Comment 1
   Date of Decision: September 24, 2019
   2021 Uniform Mechanical Code – Section 602.2, Table 1701.1
   Item #050

Summary:
PPFA hereby appeals the decisions of the TC and Membership and respectfully requests that the Standards Council reverse such actions by declaring Item #50 Comment 1, appearing on page 109 of the RoC, "*Approved as Submitted*" and thereby including the UL 2846 testing standard (a valid, published, ANSI consensus standard already included in the IMC) in the UMC. In addition, PPFA requests an in-person hearing on its Appeal.

Arguments:

Procedural and Substantive Issues

Inappropriate Distribution of Anonymous and Factually Incorrect Document to TC Members

PPFA has been made aware that the document attached to this Appeal as *Attachment A* (Comparison of the ASTM E84 and UL2846 Testing Requirements and Procedures) was provided to some (or all) TC members on the second day of the TC meeting in 2019 just before the debate and vote on Item #50. This document was not, at any time, filed with the Council Secretary or Staff Liaison in accordance with IAPMO's procedures. Not only is Attachment A technically inaccurate (as more fully described below), but its existence created substantial confusion among members of the TC.

We believe that an unknown third-party introducing any material without submission to, or proper review by, IAPMO or time to review by TC members violates IAPMO procedures, specifically Regulations Governing Committee Projects, Sections 3-3.2.2, 3-3.3.3, and 3-3.5.3. It is clearly the intent of the Regulations Governing Committee Projects to assure due process and fairness in the ad hoc distribution of materials to TC members. Yet, in this instance, an anonymous document without attribution of any kind was inappropriately inserted into the process contrary to IAPMO's procedures and with damaging consequence.

Further, Attachment A contains the following factual errors which would have been misleading to members of the TC:

(a) Attachment A states: "*UL 2846 standard uses a metal ladder type tray, with metal bars of ladder separated every 9-in in test chamber with no wire mesh for support allowing the consumed product to fall to the floor of the test chamber below the chamber flame during the test….*"

This assertion is false. Here is what UL2846 actually says:

> "ANSI/UL2846 – Section 4.2 - The pipe specimen is to be placed on a mesh screen in the tray. The mesh screen is galvanized wire cloth with 0.047 inch (1.2 mm) wire diameter and having 3/4-inch (19-mm) openings. The two lengths of pipe are to be fastened to the screen with fasteners as described in 4.3."

(b) In the 2018 TC meeting, at the very end of discussion over Item #050, one of the TC members said, "I'm voting against this proposal because it allows liquid in the pipe being tested."

This statement is false. Here is what UL2846 says: "4. Test Specimens. 4.1…There shall be no water or any other liquid in the pipe during testing."

(c) There is a convoluted allegation in Attachment A that, somehow, the UL2846 test is less stringent than the E84 test because it (UL2846) runs twice as long as the E84 test (i.e., 20 minutes vs. 10 minutes).

This assertion is false. In fact, with actual time to study the differences the conclusion is the opposite:

(i) in the flame spread portion of the test, the length of accepted distance traveled is similar, but in UL2846, the maximum distance traveled cannot be exceeded in 20 MINUTES vs. 10 minutes in E84;

(ii) in both standards the smoke generated (during the period of time when smoke is actually generated – which can differ from the length of the test) cannot exceed a specific average level, but in UL 2846 the risk or potential of failing the test is as much as 20 minutes – again, vs. 10 minutes for E84; and

(iii) the UL 2846 test contains another component of smoke generation, namely that a maximum optical density level cannot be exceeded while no such requirement exists in E84.

Substantive Issues

(a) Existing Standards Already in the UMC Are Virtually Identical to UL2846. Section 602 of the Uniform Mechanical Code (UMC) already includes similar test methods using the Steiner Tunnel for 20 minute test duration to assess other products in plenums using the exact same pass fail criteria of 5 feet of flame spread distance, average optical density of 0.15 and peak optical density of 0.5 for the following products:

Wires and cables – NFPA 262
Fire Sprinkler Piping – UL1887
Pneumatic Tubing – UL1820

The origin of this method stems from research undertaken at UL where the performance of wires and cables in metallic conduit were compared to the performance of wires and cables not installed in conduit. This research resulted in tunnel test modifications to a 20-minute test duration. This work led to the development of UL910 for wires and cables, which ultimately became NFPA 262, the performance requirements of which are well-established within model codes such as the UMC. To argue against this basic test method and its performance criteria would call into question the very origin of the flammability performance that relates back to wires and cables in conduit, as well as the uniform testing protocol established for other materials such as plastic fire sprinkler pipe and pneumatic tubing that have been accepted in the code for many code cycles.

(b) Concerns were raised by one TC member that installers could not identify pipe that has been listed and labeled for water distribution pipe installed in a plenum. This should not be a concern because: The installer can see on the pipe marking that it has been "listed and labeled" for this application. The code change proposal requires such listing and labeling. The code generally requires products be installed in accordance with their listing, and in this case the listing will require marking to alleviate this supposed problem.

Procedural Issues

(a) Disapproving UL2846 for inclusion in the UMC conflicts with NFPA 262, UL1887 and UL1820 because all these standards, including UL2846, are American National Standards (ANS). In addition, NFPA 90, another ANS, references UL2846. This creates a direct conflict with another ANS. This direct conflict is entirely avoidable because UL2846 is identical in performance requirements to these standards which are already referenced in the UMC (as noted above).

(b) The TC failed to provide an adequate explanation or support for its decision to reject the inclusion of UL2846 in the UMC. The only reasons provided are as follows (TC language in italics):

(i) *…there are concerns for public health if UL2846 is followed and installation is done incorrectly."* This is faulty logic. In fact, if accurate, this statement would disqualify most materials or standards from the code and is irrelevant. Anything can be installed incorrectly. In addition, neither UL2846 nor ASTM E84 are installation standards. The published TC statement is simply not relevant to the test, the materials nor the portion of the code.

(ii) *UL 2846 is limited to testing and does not give clear direction for its application.* E84 also is limited to testing as are many standards in the UMC. The code change accompanying UL2846 requires listing and labeling, which means it will have to be installed in accordance with its listing. This would make it like all other products or processes in the code. Its' application, however, could not be clearer; the following is from the scope of UL2846:

a. "1.1 This is a test method for determining values of flame propagation distance and optical smoke density for individual pairs of plastic plumbing pipes for distribution of potable water that can be installed in ducts, plenums and other spaces for environmental air." See page 4 of the standard accessible in TC documents.

(iii) *"…this change will conflict with Sec. 602.2."* This is incorrect, because exceptions, like that for UL2846, are already a significant part of this section's content. The basic section 602.2 does not explicitly require listing and labeling, whereas the exception for UL2846 would require listing and labeling.

(iv) It is not possible to take any action based on these unfocused and incorrect reasons. This is in direct violation of IAPMO Regulations. UMC Item #50 should be ruled "accept as submitted" by the Standards Council.

(c) In addition to denying UL2846, the TC approved a related change to the same code section (UMC 2021 Section 602.2) that states: "Plastic piping installed in plenums shall be tested in accordance with all requirements of ASTM E84 or UL723. Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited."

This new requirement conflicts with another ANS, but the real reason for identifying it here is that the standards referenced in *Substantive Issues (a)* above are now included in the scope of E84/UL 723. Since these other product standards, with pass/fail criteria identical to UL2846, are not only referenced in the UMC but are now also referenced in E 84/UL 723, it appears keeping UL 2846 out of the market place is much more about sales and marketing than it is about protecting public health and safety.

<u>Relief Requested</u>:

I respectfully request that the Standards Council overturn the TC and Membership actions rejecting the amendments proposed by PPFA to UMC 2021, Section 602.2, Table 1701.1 as reflected on

UMC Item #050, Comment 1, and take action to approve Item #050 as proposed by PPFA and include the UL 2846 testing standard in the UMC.

Respectfully Submitted,

Richard Church
Executive Director, Plastic Pipe and Fittings Association

COMPARISON OF THE ASTM E84 AND UL 2846 TESTING REQUIREMNTS AND PROCEDURES

In a comparison of ASTM E84 and UL 2846 there are three significant differences which enable plastic piping to pass the 25/50 flame and smoke spread requirements for construction materials found in plenums off building construction found in the national model codes. We will review the three, 1.) size of test specimen, 2.) mounting procedure of specimen in test chamber and 3.) the testing procedure.

In review of the size of the test specimen required by ASTM E84 the test specimen is to be a flat sheet measuring 24-ft in length, 20-in wide and a maximum of 4-in thick. The UL 2846 specimen size is greatly reduced as compared to ASTM E84 requirements in that it allows the testing of a pair of 24-ft pipes separated by a minimum of 0.5-in with the use of a maximum of 4-in diameter pipe. Most testing is conducted using ¾" diameter piping. This is a significant difference in the width of product within the test chamber.

The second difference found the mounting procedure between the two standards is that ASTM E84 requires the flat sheet to be supported by the metal ledge at the sides of the chamber (see page 4 of ASTM E84) and if product is unable to be self-supported the use a 20-gage, 2-in hexagonal galvanized steel netting to support the test specimen. Whereas the UL 2846 standard uses a metal ladder type tray, with metal bars of ladder separated every 9-in in test chamber with no wire mesh for support allowing the consumed product to fall to the floor of the test chamber below the chamber flame during the test (see pages 8 and 10 of UL2846). No steel netting is used in the UL 2846 test allowing the consumed specimen to fall below the chamber test flame.

This is a significant difference given the test procedure requirements of UL 2846. The difference in test procedures between the standards is the most significant difference as ASTM E84 test is a 10 minute test with measurements being taken every 2 seconds with the average measurement over the 10 minutes as the final measurement result, however the test procedure states that if the specimen is completely consumed in the fire area, no further progressive burning is evident and the test readings return to the baseline established prior to the test is stopped and the final readings are the average over the length of time at where this occurs. Whereas the UL 2846 is a 20-minute test where the baseline is established immediately prior to the test and continuously during the 20-minute test. Continuously, is not defined and determined by the testing agency whereas E84 records every 2-seconds. Also, during the UL 2846 test if the specimen is consumed or reading returns to baseline output the readings are continued for the complete 20-minute test has elapsed. The final test result is the average reading over the 20-minute test period. If specimen is consumed in the chamber at 10 minutes the remaining 10 minutes at baseline readings are included in the average whereas the ASTM E84 test is stopped. This allows baseline readings to be included in the test data for the time after the specimen is consumed or falls below the flame in test chamber.