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**Surface Burning Characteristics for Materials Used in Plenums -
ASTM E84 (UL 723) vs. ULC S102.2: What's the difference?**

You may be aware of discussions comparing flame spread and smoke developed values for products tested in accordance with UL 723 (ASTM E84) Test for Surface Burning Characteristics of Building Materials and ULC S102.2 Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials. While both methods generate flame spread and smoke developed indices, the sample mounting procedures are quite different and therefore the results will not be the same. With some products, ULC S102.2 yields higher surface burning values. With other products, UL 723 (ASTM E84) yields higher values.

UL 723 (ASTM E84) and ULC S102.2 utilize the same basic Steiner Tunnel apparatus. The apparatus was originally designed to test products mounted in a ceiling position. However, ULC S102.2 adapts the apparatus to test certain products in the floor position depending on the sample composition or the intended application. Both methods provide meaningful test data.

U.S. building codes require that certain materials installed in a plenum or air-handling space have a flame spread index of 0-25 and a smoke developed index of 0-50 (25/50 rating) when tested in accordance with ASTM E84. These codes make no reference to ULCS102.2 for these applications.

Recently, we reviewed product literature that indicates CPVC pipe samples, when tested in accordance with ULC S102.2, result in flame spread and smoke developed indices of less than 25 and less than 50, respectively. In addition, we have reviewed product literature that indicates such products, when tested in accordance with ASTM E84 (UL723) in both pipe and flat-sheet presentations, generate smoke developed values of over 300 and 400, respectively. Accordingly, we do not believe that it is correct to assume that products tested in accordance with ULC S102.2, yielding flame spread and smoke developed values of <25 and <50, respectively, are compliant with the U.S. electrical, building or mechanical code surface burning requirements for materials intended for installation in plenums or air-handling spaces. Such products should only be considered acceptable if the material meets the 25/50 rating when tested in accordance with UL 723 (ASTM E84).

For more information on UL 723 (ASTM E84) and ULC S102.2, contact Randy Laymon in Northbrook, Ill., by phone at +1-847-664-2687; or by e-mail at Randall.K.Laymon@us.ul.com