602.2.1.8

Pipe and Duct Insulation Within Plenums

CHANGE TYPE: Modification

CHANGE SUMMARY: The revision addresses the practice of using pipe insulation materials to protect piping that does not meet the required fire performance requirements.

2021 CODE: **602.2.1.8 Pipe and duct insulation within plenums.** Pipe and duct insulation contained within plenums, including insulation adhesives, shall have a flame spread index of not more than 25 and a smoke developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723, using the specimen preparation and mounting procedures of ASTM E2231. Pipe and duct insulation shall not flame, glow, smolder or smoke when tested in accordance with ASTM C411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250°F (121°C). Pipe and duct insulation shall be listed and labeled. Pipe and duct insulation shall not be used to reduce the maximum flame spread and smoke-developed indices except where the pipe or duct and its related insulation, coatings and adhesives are tested as a composite assembly in accordance with Section 602.2.1.7.

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Pipe insulation

CHANGE SIGNIFICANCE: It is common for plastic piping to be installed in plenum spaces, such as above-ceiling return air plenums. Section 602.2.1 requires that materials installed within plenums be noncombustible or have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723. Some plastic piping materials cannot meet the requirements of Section 602.2.1; therefore, if they are installed within a plenum, they must be protected by some material that does meet the fire performance requirements and that is listed for that application. Section 602.2.1 allows combustible piping to be "fully enclosed within materials listed and labeled for installation within a plenum and listed for the application." The revised code text states that if pipe insulation is used as the enclosing material, the entire assembly of the pipe, the insulation and any coverings and adhesives must be tested as a composite assembly. Although there are insulation materials available that meet the fire performance requirements themselves, it is an unknown how the entire assembly will perform unless the entire assembly is tested. Without being tested as a composite assembly, it is possible that the protected piping could break down and degrade when exposed to heat, despite being protected by a pipe insulation material.

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Duct insulation