

Aquatherm Technical Bulletin

201205C - AQTTB

Aquatherm in Plenums - 2021 IMC and UMC Code Changes

Date Issued: 31 May 2012

By itself bare Aquatherm PP-R and PP-RP pipe products do not meet the requirements of the International Mechanical Code (IMC) nor the Uniform Mechanical Code (UMC) for use in plenums or return air ducting. In testing done in accordance with ASTM E84 or UL 723 the bare pipe had a flame spread of 15 and a smoke developed of 250.²

Within the new **2021 IMC** (International Mechanical Code), which normally governs Aquatherm's use within a plenum space in the United States, **there exists an exception that allows for any 25/50 flame spread and smoke-developed rated insulation to be used in conjunction with Aquatherm pipe.** (Abridged "Plenums" code section from 2021 IMC)²

SECTION 602 PLENUMS

602.2.1 Materials within plenums. Except as required by Sections 602.2.1.1 through 602.2.1.8, materials within plenums shall be noncombustible or shall be listed and labeled as having 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.

Exceptions:

5. Combustible materials fully enclosed within one of the following:
 - 5.3. Materials listed and labeled for installation within a plenum and listed for the application.

According to this code, so long as all Aquatherm pipe and fittings installed within the plenum space are "*fully enclosed*" within another material that is "*listed and labeled for installation within a plenum and listed for the application*", the requirements for installation are met.

Aquatherm has tested fiberglass insulation and mineral wool insulation enclosing Aquatherm pipe and has obtained the required 25/50 flame-spread and smoke-developed index to be listed with International Code Council. The documentation is available from your Aquatherm Regional Representative or by contacting Aquatherm Engineering.

Additionally, the **2021 UMC** (Uniform Mechanical Code) has updated wording that **allows for the same exception**, though the wording is a bit different. (Abridged "Plenums" code section from 2021 UMC)²

602.2 Combustibles within Ducts or Plenums. Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index not to exceed 25

and a smoke developed index not to exceed 50, where tested as a composite product in accordance with ASTM E 84 or UL 723.

Plastic piping installed in plenums shall be tested in accordance with the requirements of ASTM E84 or UL 723. Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited.

Exceptions:

7) Duct insulation, coverings, and linings and other supplemental materials Installed in accordance with Section 605.0.

Section 605.1.1 Within Ducts or Plenums.....Pipe and duct insulation shall Not be used to reduce the maximum flame and smoke requirements in Section 602.2 unless listed for application in plenums and tested in accordance with ASTM E84 or UL 723 as a composite assembly of the duct or pipe and its associated insulation, coatings and adhesives.²

The implication of the above requirement is that as long as Aquatherm is not exposed (meaning it is fully enclosed within a 25/50 flame and smoke tested to ASTM E84 standards as a composite product)¹, it can be installed within a plenum space.

Again, Aquatherm has tested fiberglass insulation and mineral wool insulation enclosing Aquatherm pipe as a composite product in accordance with ASTM E84 and has obtained the required 25/50 flame-spread and smoke-developed index to be listed with International Code Council. The documentation is available from your Aquatherm Regional Manager² or by contacting Aquatherm Engineering.¹

As more jurisdictions adopt the 2021 IMC and UMC codes, acceptance of Aquatherm within plenum spaces should be met with less resistance than ever before.¹

1. Revised and updated 2 November 2018
2. Revised and updated 3 September 2021