



# Spears® CPVC Products for Use in Return Air Plenums

TECH-2-No.113

Spears® CPVC piping products have been successfully installed in duct and return air plenums for over 30 years in thousands of applications without incident and have been widely accepted for plenum use by Design Engineers and Code Officials worldwide.

## What are the material duct and plenum requirements according to the major mechanical codes?

The major mechanical codes require materials exposed within ducts or plenums be noncombustible or meet a flame spread index of 25 and a smoke developed index of 50 as defined by ASTM E 84 or UL 723. The 2015 IMC further requires the material be listed and labeled.

### 2015 Uniform Mechanical Code (UMC)

**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, when tested as a composite product in accordance with ASTM E 84 or UL 723.

### 2015 International Mechanical Code (IMC)

**602.2.1 Materials within plenums.** Except as required by Sections 602.2.1.1 through 602.2.1.7, 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 E 84 or UL 723.

## Is CPVC considered a noncombustible material?

CPVC is not classified as a noncombustible material, however, Spears® CPVC materials exhibit extraordinary fire-resistant properties enabling CPVC to meet the 25/50 flame and smoke mechanical code requirements in accordance with ASTM E 84 or UL 723. CPVC is considered a self-extinguishing material; i.e. the CPVC material does not continue to burn when flame source is removed.

### The Exceptional Fire-Resistant Properties of CPVC

**Limiting Oxygen Index** – The minimum concentration of oxygen, expressed as a percentage that will support combustion of a polymer.

CPVC = 60% Earth's Atmosphere = 21%

**Heat of Combustion** - The calorific value of total energy released as heat when a substance undergoes complete combustion with oxygen under standard conditions. CPVC = 7,700 BTU's / lb.

**Flash Ignition Temperature** - The flash point at which vapors of the material will ignite, when given an ignition source.

CPVC = 900° Fahrenheit

## What are the differences between Tested and Listed & Labeled materials?

**Tested materials:** The material meets the tested portion of the mechanical code when the test results conform to the 25/50 flame & smoke requirements.

**Listed & Labeled materials:** Materials are listed when they are included in a list published by an organization who is concerned with evaluation of products, periodic inspection of production of listed materials and whose listing states that material meets identified testing standards for a specific purpose. The product must then exhibit a label, symbol, or other identifying mark of the listing organization which indicates compliance with appropriate standards such as ASTM E 84 or UL 723.

## Do Spears® CPVC products comply with the major mechanical codes?

Yes - Specific CPVC products from Spears® Manufacturing Company have been found to meet the 25/50 Flame and Smoke requirements in accordance with ASTM E 84 or UL723 as stated in the major Mechanical Codes and have obtained a listing from the International Code Council – Evaluation Service (ICC-ES) PMG-1278. The ICC-ES offers an Evaluation Service to industry in an effort to evaluate products to existing Plumbing, Mechanical and Gas (PMG) codes and standards for use in building construction. For decades, ICC-ES has been the industry leader in performing technical evaluations for code compliance, providing regulators and construction professionals with clear evidence that products comply with codes and standards. ICC-ES has a proven track record of excellence in product evaluations.

The following Spears® CPVC products have been listed by the ICC-ES for use in plenums and are labeled accordingly:

### ASTM E-84/UL723 Standard Test Method for Surface Burning Characteristics of Building Materials

- EverTUFF® SDR 11 CTS CPVC Pipe & Fittings
- EverTUFF® Industrial CPVC Pipe & Fittings
- LabWaste® CPVC Pipe & Fittings

### ICC PMG 1278 Listing

Spears® CPVC products have been listed by the International Code Council-Evaluation Service (ICC-ES) in accordance with ASTM E84 and UL® 723 for compliance with requirements of the Uniform Mechanical Code® (UMC) and International Mechanical Code® (IMC) for use in return air plenums by having a Flame Spread/Smoke Development of less than 25/50, respectively, as specified in PMG-1278 at [www.icc-es-pmg.org](http://www.icc-es-pmg.org).

Spears® CPVC Products are listed in compliance with **Uniform Mechanical Code – 2015, 2012, 2009, 2006**  
**International Mechanical Code – 2015, 2012, 2009, 2006**

## Do Spears® CPVC products have other fire performance listings?

Yes - Due to the excellent fire resistant properties of CPVC, Spears® Manufacturing Company has obtained other product listings:

**ULC S102.2** Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies. **(For plenum use)**

- EverTUFF® CPVC Sch40/Sch80 Fittings
- LabWaste® CPVC Pipe & Fittings
- CPVC Valves

**UL 1887** Fire Test of Plastic Sprinkler Pipe for Visible Flame and Smoke Characteristics. **(For plenum use)**

- FlameGuard® CPVC Fire Sprinkler Systems

**US Coast Guard Approval (File# 164.141/45/0)** Low Flame Spread Requirements and Smoke and Toxicity Requirements of the 2010 FTP Code Annex 1, Parts 2 and 5. **(For use in Accommodation, Service & Control Spaces)**

- EverTUFF® CTS CPVC Hot & Cold Water Distribution System
- EverTUFF® Industrial Schedule 40 and Schedule 80 CPVC Piping and Fittings
- OceanTUFF™ CPVC Schedule 40 Drainage System

Spears® Manufacturing Company continues to provide leadership in the area of life safety, making sure that our products meet and exceed all current model code requirements. For more information on our listings, please contact our Technical Service Department (818) 364-1611.



*Progressive Products From Spears® Innovation & Technology*

**SPEARS® MANUFACTURING COMPANY**

15853 Olden St., Sylmar, CA 91342

(818) 364-1611 • Visit our Web site: [www.spearsmfg.com](http://www.spearsmfg.com)

