
TECHNICAL BULLETIN TB253

INSTALLATION IN PLENUM SPACE (UNITED STATES)

Product: RAUPEX[®] Pipe and EVERLOC+[™] Fittings
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A plenum is defined as an enclosed portion of the building structure that is designed to allow air movement, thereby serving as part of an air distribution system. Plenums can serve as supply, return, exhaust and ventilation portions of the air distribution system.

The International Mechanical Code (IMC) and Uniform Mechanical Code (UMC) require that combustible materials installed within air plenums have a flame spread (FS) index of not more than 25, and a smoke developed (SD) index of not more than 50. These numbers do not contain units, and are used as index (comparative) ratings of how quickly building materials burn and how much smoke is developed when they burn. Materials that meet these requirements are sometimes said to have a “plenum rating.”

The flame spread index and the smoke developed index are measured in a standardized laboratory test that burns the combustible material and measures the speed of flame spread and the volume of smoke developed.

The IMC and UMC specify that the flame spread index and the smoke developed index of a material is to be determined based on the following standards:

- **ASTM E84: *Standard Test Method for Surface Burning Characteristics of Building Materials***, or
- **UL 723: *Test for Surface Burning Characteristics of Building Materials***

Alternatively, plastic water distribution piping may be listed and labeled in accordance with UL 2846 with an optical density less than 0.5, an average optical density less than 0.15, and a flame spread distance less than 5 ft.

REHAU RAUPEX pipes and EVERLOC+ polymer fittings (1/2 through 2 in. sizes) have received listings through NSF International to the ASTM E84 standard.

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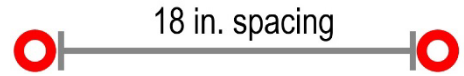
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1. RAUPEX Pipe

The following sizes and types of RAUPEX pipe are listed with a flame spread index of not more than 25 and a smoke developed index of not more than 50 when installed with a minimum pipe spacing of 18 in.

Table 1: Flame Spread / Smoke Developed ≤ 25/50 RAUPEX Pipe

Pipe Description	ASTM E84 / 18 in. spacing FS/SD
≤ 3/4 in. RAUPEX UV Shield	FS≤25 SD≤50
1/2 in. RAUPEX O ₂ Barrier	



2. RAUPEX pipe in galvanized support channel

RAUPEX pipes have been evaluated when installed in an assembly with REHAU galvanized support channel. The following sizes and types of RAUPEX pipe are listed with a flame spread index of not more than 25 and a smoke developed index of not more than 50 when installed in the REHAU galvanized support channel with no minimum spacing requirements.

Table 2: Flame Spread / Smoke-Developed ≤ 25/50 RAUPEX Pipe with REHAU Galvanized Support Channel

Pipe Description	ASTM E84 / Galvanized support channel FS/SD
3/4 to 2 in. RAUPEX UV Shield	FS≤25 SD≤50
3/4 to 2 in. RAUPEX O ₂ Barrier	



3. RAUPEX pipe and EVERLOC+ polymer fittings wrapped with fiberglass Insulation

RAUPEX pipes and EVERLOC+ fittings have been evaluated while wrapped in 1/2 in. thick fiberglass insulation. The following sizes and types of RAUPEX pipe and EVERLOC+ fittings are listed with a flame spread index of not more than 25 and a smoke developed index of not more than 50 when installed with an approved 1/2 in. thick fiberglass pipe insulation (also with a flame spread index not more than 25 and a smoke developed index not more than 50) with no minimum spacing requirements.

Table 3: Flame Spread / Smoke Developed ≤ 25/50 RAUPEX Pipe with 1/2 in. Thick Fiberglass Insulation

Pipe Description	ASTM E84 Wrapped in 1/2 in. thick fiberglass insulation FS/SD
≤ 2 in. RAUPEX UV Shield	FS≤25 SD≤50
≤ 2 in. RAUPEX O ₂ Barrier	
≤ 2 in. EVERLOC+ Polymer Fittings	



4. RAUPEX pipe in UL 2846 Applications

RAUPEX UV Shield pipes have also been evaluated to UL 2846 for plastic water distribution plumbing pipe for visible flame and smoke characteristics. When covered with UL classified pipe and equipment covering material, RAUPEX UV Shield pipe exhibits peak optical densities of 0.5 or less, maximum average optical densities of 0.15 or less, and maximum flame-propagation distances of 5 ft or less.

- **UL 2846: Fire Test Of Plastic Water Distribution Plumbing Pipe For Visible Flame And Smoke Characteristics**

Table 4: Optical Density and Flame Propagation with UL Classified Pipe and Equipment Covering Material

Pipe Description	UL 2846 Pipe covered with UL Classified Pipe and Equipment Covering Material
≤ 2 in. RAUPEX UV Shield	Peak Optical Density ≤ 0.5 Max. Avg. Optical Density ≤ 0.15 Max. Flame Propagation Dist. ≤ 5 ft

