



Plenum Rating of Knauf Insulation Earthwool 1000 Pipe Insulation Validation

The 2015 International Building Code in Section 720.7 states that: "Insulation and covering on pipe and tubing installed in plenums shall comply with the *International Mechanical Code*", which states in Section 602.2.1, "**Materials exposed within plenums** – *Materials within plenums shall be noncombustible or 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 E-84 or UL-723.*" *Exception 5.3 of Section 602.2.1 indicates that combustible materials can be in a plenum space if they are, "...enclosed within materials listed and labeled for installation within a plenum".*

Knauf Insulation Earthwool 1000 Pipe Insulation is UL Classified (UL File No. R-8583) as "FHC 25/50" which has a less than or equal to 25 flame spread (FS) index rating, and less than or equal to 50 smoke-developed (SD) index when subjected to UL's *standard test for Surface Burning Characteristic of Building Materials*. It has the same surface burning characteristics rating of less than or equal to 25(FS)/50(SD) when tested as an insulation material on a polyvinyl chloride (PVC) as the surrogate combustible substrate in question in the plenum. See the Intertek Test Report Number 103244268SAT-001 dated 10-2017. Flame spread and smoke developed test results achieved are inclusive for all pipe sizes with a minimum of one inch of insulation.

Knauf Insulation does not normally report values better than 25(FS)/50(SD) because there is not a meaningful difference if the material meets the intent of the building code requirement. Any assertion that one material is better than another because it is better than the 25(FS)/50(SD) demonstrates misunderstanding of the code and fire hazard classification. The following pages present the surface burning tests to validate the claim.

Intertek

REPORT NUMBER: 103244268SAT-001
ORIGINAL ISSUE DATE: October 30, 2017
REVISED DATE:

EVALUATION CENTER
Intertek Testing Services NA Inc.
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Elmendorf, TX 78112

RENDERED TO

Knauf Insulation GmbH
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TEST REPORT

Report of Testing "PVC with 1 in. glass insulation" for compliance with the applicable requirements of the following criteria: ASTM E84-17 TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)

ABSTRACT

Specimen I. D. "PVC with 1 in. glass insulation"

Test Standard: ASTM E84-17 TEST FOR SURFACE BURNING
CHARACTERISTICS OF BUILDING MATERIALS (UL
723, UBC 8-1, NFPA 255)

Test Date: October 26, 2017

Client: Knauf Insulation GmbH

Test Results:

FLAME SPREAD INDEX	0
SMOKE DEVELOPED INDEX	0

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Joseph Martinez
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Reviewed and approved:



Servando Romo
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Intertek

VI. TEST RESULTS & OBSERVATIONS

The test was conducted on October 26, 2017 and witnessed by Will Zhou of Knauf Insulation.

The test results, computed on the basis of observed flame front advance and electronic smoke density measurements are presented in the following table.

Test Specimen	Flame Spread Index	Smoke Developed Index
"PVC with 1 in. glass insulation"	0	0

The data sheets are included in Appendix A. These sheets are actual print-outs of the computerized data system which monitors the tunnel furnace, and contain all calibration and specimen data needed to calculate the test results.

VII. OBSERVATIONS

During the test, the specimen was observed to behave in the following manner.

Time (min:sec)	Observations
0:00	The test burners were turned on.
1:05	The fiberglass began to bleach.
10:00	The test burners were shut off.

After the test, the specimen was observed to be damaged as follows:

Distance (FEET)	Damage Descriptions
0 – 6	The fiberglass insulation was observed to be bleached. The PVC was observed to be partially melted and warped.
6 – 12	The fiberglass insulation was observed to be discolored.
12 – 24	No visible damage was observed.