Earthwool® 1000° Pipe Insulation
with ECOSE® Technology

Technical Bulletin

Knauf Performance+® Earthwool® 1000º Pipe Insulation ASJ+/SSL+ with ECOSE® Technology - is Listed and Labeled as Plenum Insulation Rated Over Plastic Pipe Assemblie

This Bulletin and the attached Underwriters Laboratories Test Report 4789829957, verifies that Performance+® Earthwool® 1000° Pipe Insulation ASJ+/SSL+ with ECOSE® Technology is Plenum Rated, and is Listed and Labeled Pipe Insulation by Underwriters Laboratories (UL) File R8583, Category: INSULATED PLASTIC PIPE ASSEMBLIES (BSMP) for installation over polymer pipes (i.e. PVC, CPVC, and polypropylene).

UL Test Report 4789829957 address the reference of the 2012, 2015, 2018, 2021 and 2024 International Building Code:

- Section 720.7 Insulation and coverings on pipe and tubing.
  - Exception: Insulation and coverings on pipe and tubing installed in plenums shall comply with the International Mechanical Code.

Per 2012, 2015, 2018 and 2021 International Mechanical Code:

- Section 602.2.1 Materials within plenums. Materials within the plenums shall be noncombustible or shall be listed and labeled with flame spread index not more than 25 and smoke developed index not more than 50 when tested per ASTM E84 or UL 723.
  - Exception #5: Combustible materials fully enclosed within one of the following;
    - 5.3 Material listed and labeled for installation within a plenum and listed for the application.

Per 2024 International Mechanical Code:

- Section 602.3 Materials within plenums. Materials within plenums shall be noncombustible or shall be in compliance with the applicable requirements in Sections 602.3.1 through 602.3.10.
  - Exception # 2. Combustible materials fully enclosed within one of the following:
    - 2.3. Materials listed and labeled for installation within a plenum and listed for the application.

Performance+® Earthwool® 1000° Pipe Insulation ASJ+/SSL+ with ECOSE® Technology complies with the Fire Hazard Classification (FHC) Flame Spread Index 25/Smoke Developed Index 50 as tested over ¼" thick PVC, CPVC and polypropylene.

For Listing, go to UL Online Certifications Directory; in File Number type: R8583

Certifications

FHC 25/50

Insulated Plastic Pipe Assemblies BSMP.R8583

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File Number: R8583

Project Number: 4789829957

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REPORT

on

Knauf Pipe Insulation with ASJ+ Jacket and SSL+ Closure Insulated Plastic Pipe Assemblies (BSMP)

Under the

CLASSIFICATION PROGRAM

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Shelbyville, IN

UL LLC
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DESCRIPTION

PRODUCT COVERED:

The Product covered by this Report is a hollow-cylindrical glass-fiber pipe insulation with WMP-ASJ (polypropylene-kraft-scrim-foil) facing intended for use in Insulated Plastic Pipe Assemblies.

The product is Classified by UL LLC (UL) as to Surface Burning Characteristics only.

USE

The product is permitted to be installed in ducts, plenums, and other spaces as permitted by authorities having jurisdiction. The pipe assembly is intended to be used with PVC, Polypropylene, and CPVC pipes.

TEST RECORD NO. 1

GENERAL:

Test results relate only to the items tested.

EXAMINATION OF MATERIALS

The materials used in this investigation were produced under the observation of a representative of UL, in a ready-to-use form. The composition of the finished material is of proprietary nature. Data on the composition is on file at UL for use in the Follow-Up Service Program.

Various physical and chemical tests were conducted on the components and finished products. The results developed from these tests were employed in establishing specifications for use in the factory Follow-Up Service Program.

SURFACE BURNING CHARACTERISTICS:

SAMPLES

The test samples consisted of Knauf Insulation LLC glass fiber pipe and equipment covering with ASJ+ (WMP-ASJ, polypropylene-kraft-scrim-foil) facing using a SSL+ Advanced Closure System, with 1/4-inch PVC, Polypropylene, and CPVC plastic sheets laid on top of the faced pipe assembly.

Each test sample was supported with 1/4 in. diameter uncoated steel rods and placed at 2 ft intervals.

For each test a piece of 1 ft long by 22 in. wide by 1/16 in. thick uncoated steel plate was placed at the fire end of the tunnel furnace "upstream" from the gas burners to complete the 25 ft chamber length.

The test samples were allowed to condition at a temperature of 73 ±4°F and a relative humidity of 50±5 percent prior to testing.

METHOD

The tests were conducted in accordance with Standard UL723, Eleventh Edition, dated April 19, 2018, "Test for Surface Burning Characteristics of Building Materials", (ASTM E84-21a).

RESULTS

Data on flame spread and smoke developed appears in the following tabulations. Graphs of flame spread versus time and smoke developed versus time are also provided as part of the Test Record.

Flame Spread Index

The maximum distance the flame spreads along the length of the sample from the end of the igniting flame is determined by observation.

The Flame Spread Index (FSI) of the material is determined by rounding the Calculated Flame Spread (CFS) as described in UL 723. The CFS is derived by calculating the area under the flame spread distance (ft) versus time (min) curve, ignoring any flame front recession, and using one of the calculation methods as described below.

1. If the total area (A_T) is less than or equal to 97.5 min-ft, the CFS shall be 0.515 times the total area ($FSI=0.515\ A_T$).

2. If the total area (A_T) is greater than 97.5 min-ft, the CFS is to be 4900 divided by 195 minus the total area ($FSI=4900/(195-A_T)$).

Table 1: Flame Spread Summary

Test No.	Sample Description	Maximum Flame Spread (ft)	Time of Maximum Flame Spread (min:s)	Calculated Flame Spread (CFS)
1	ASJ+ faced glass-fiber pipe insulation with 1/4-inch CPVC sheet backing	3.5	0:16	17.80
2	ASJ+ faced glass-fiber pipe insulation with 1/4-inch Polypropylene sheet backing	3.5	0:17	17.78
3	ASJ+ faced glass-fiber pipe insulation with 1/4-inch PVC sheet backing	3.5	0:18	17.77
4	ASJ+ faced glass-fiber pipe insulation with 1/4-inch Polypropylene sheet backing	3.5	0:15	17.80
5	ASJ+ faced glass-fiber pipe insulation with 1/4-inch CPVC sheet backing	3.5	0:22	17.69

Flame Spread Index	20

Smoke Developed Index

The smoke Developed Index is determined by rounding the Calculated Smoke Developed (CSD) as described in UL 723. The CSD is determined by the output of a photoelectric circuit operating across the furnace flue pipe. A curve is developed by plotting values of light absorption (decrease in cell output) against time. The CSD is derived by expressing the net area under the curve for this material as a percentage of the net area under the curve for untreated red oak.

The CSD is expressed as:

$$CSD=(A_M/A_{ro})x100$$

Where:

CSD=Calculated Smoke Developed

A_M= The area under the curve for the test material

A_{ro}= The area under the curve for untreated red oak

Table 2: Smoke Developed Summary

Test No.	Sample Description	CSD Calculated Smoke Developed
1	ASJ+ faced glass-fiber pipe insulation with 1/4-inch CPVC sheet backing	24.1
2	ASJ+ faced glass-fiber pipe insulation with 1/4-inch Polypropylene sheet backing	24.5
3	ASJ+ faced glass-fiber pipe insulation with 1/4-inch PVC sheet backing	21.2
4	ASJ+ faced glass-fiber pipe insulation with 1/4-inch Polypropylene sheet backing	26.8
5	ASJ+ faced glass-fiber pipe insulation with 1/4-inch CPVC sheet backing	21.4

Smoke Developed Index	25

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the Standard for Surface Burning Characteristics for Building Materials, UL723, Eleventh Edition (dated April 19, 2018) and, therefore, such products are judged eligible to bear UL's Mark as described below and on the Conclusion Page of this Report.

Any information and documentation provided to you involving UL Mark services are provided on behalf of UL or any authorized licensee of UL.

Classification Marking:

The surface Burning Characteristics as shown below in the Classification Marking represent the judgment of UL based upon the results of the examination and tests presented in this Report.

Insulated Plastic Pipe
Assemblies
Control No. or File Number

CERTIFIED IN ACCORDANCE WITH IMC, SECTION 602.1, EXCEPTION 5.3. DURING INSTALLATION, THE PIPE IS TO BE COVERED WITH MINIMUM 1-INCH THICK POLYPROPYLENE-KRAFT-SCRIM-FOIL FACED PIPE COVERING DESIGNATED "FHC 25/50".

Test Record by:

Courtney Hudson
Engineer Project Associate
Built Environment

Reviewed by:

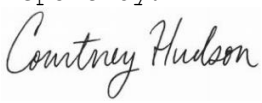
Dwayne Sloan
Director, Principal Engineering
Built Environment

Michelle Sluga
Principal Engineer
Built Environment

Conclusion

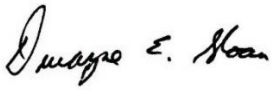
Samples of the product covered by this Report have been found to comply with the requirements covering the category and the products are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the samples investigated by UL and does not signify UL certification or that the product described is covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the UL Classification Mark on such products which comply with UL's Follow-Up Service Procedure and any other application requirements of UL. The Classification Mark of UL on the product, or the UL symbol on the product and the Classification Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Classification and Follow-Up Service.

Report by:



Courtney Hudson
Engineer Project Associate
Built Environment

Reviewed by:



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