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File R21933  
Project 05CA29358

February 15, 2005

Report

on

THROUGH-PENETRATION FIRESTOP SYSTEM  
NO. W-L-7129

Under The

CLASSIFICATION PROGRAM

In-O-Vate Technologies, Inc.  
Jupiter, FL

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## DESCRIPTION

## SYSTEMS COVERED:

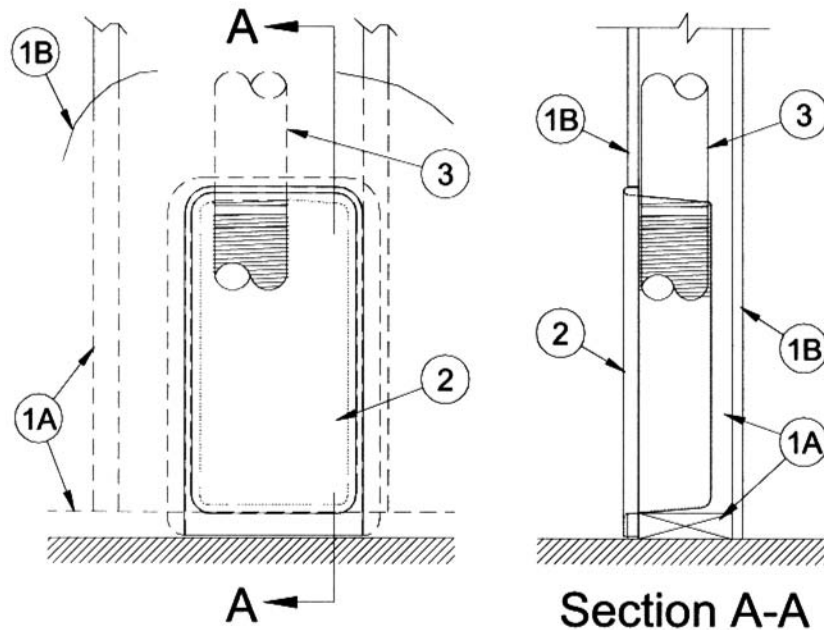
Through-Penetration Firestop Systems No. W-L-7129

## SYSTEM DETAILS:

System No. W-L-7129

F Rating - 1 Hr

T Ratings - 1/4 and 1/2 Hr (See Item 2)



1. Wall Assembly - The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of min nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.

B. Gypsum Board\* - One layer of nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design.

2. Firestop Device\* - Recessed fixture intended for dryer appliance exhaust duct installed per manufacturer's installation instructions in one side of wall assembly. Cutout in gypsum board for top exhaust device is 18-1/4 by 9-1/2 in. (464 by 241 mm) wide. Cutout in gypsum board for bottom exhaust device is 16 by 14 in. (406 by 356 mm) wide. Max gap between cabinet and gypsum board around periphery of cutout shall be 1/8 in. (3.2 mm).

IN-O-VATE TECHNOLOGIES - Dryerbox Model 350, 425, 3D or 4D. When Model 350 or 3D firestop device is used in walls constructed with min 5-1/2 in. deep stud cavities, T Rating is 1/2 hr. Otherwise, T Rating is 1/4 hr.

3. Steel Vent Duct - Nom 4 in. (102 mm) diam by min 26 gauge rigid steel dryer duct friction fitted into top or bottom opening of the firestop device (Item 2) for purposes of venting to the exterior. Vent duct to be routed entirely within fire rated construction from the firestop device to the exterior of the building. Vent duct to be firestopped in accordance with an appropriate F-A-7000, F-C-7000 or F-E-7000 Series firestop system where it passes through the top plate or sole plate of the chase wall in which it is routed.

4. Insulation - (Not Shown) - The spaces between the sides of the firestop device and the studs and the space immediately above the firestop device are to be tightly packed with glass fiber batt or mineral wool batt insulation. As an option, the entire stud cavity containing the firestop device may be filled with insulation.

\*Bearing the UL Classification Mark

TEST RECORD NO. 1

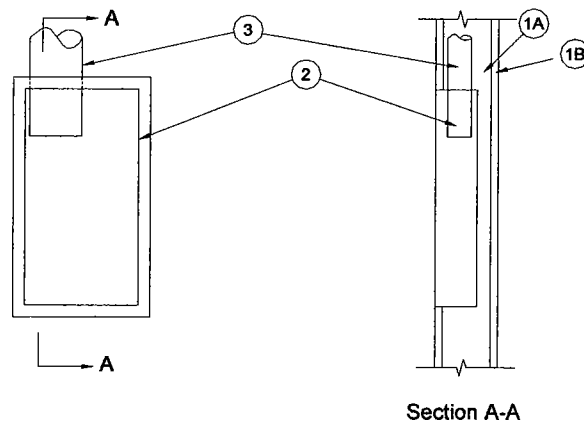
GENERAL:

This Report covers the fire exposure and hose stream tests conducted on November 18, 2004. The fire exposure and hose stream tests were conducted in accordance with the Third Edition of the Standard, *Fire Tests of Through-Penetration Firestops*, ANSI/UL 1479 (ASTM E814).

Test results relate only to items tested.

TEST ASSEMBLY:

The test assembly was constructed as described below:



Item No.	Description
1	U300 Series 1-Hr hour fire rated wall assembly with an 18-1/2 in. high by 9-1/2 in. wide partial opening on both sides of the wall. The specimens used in the assembly were installed in adjacent 2 x 6 stud cavities per the manufacturer's installation instructions. The center 2 x 6 stud was insulated with mineral wool to thermally separate the adjacent stud cavities.
2, 3	Dryerbox Model 350 installed within opening. Nominal 4 in. diameter rigid steel duct was fixed to each specimen and terminated on the unexposed side of the wall to simulate an actual exhaust flue. A nominal 8 in. length of flexible aluminum dryer duct was fixed to the rigid steel duct to simulate a dryer attachment. A thin bead of silicone sealant was applied to the perimeter of the specimen at the gypsum board cutout interface.

FIRE EXPOSURE TEST:

RESULTS

The average furnace temperature recorded was in accordance with the standard time-temperature curve outlined in ANSI/UL 1479.

Furnace Pressure - The furnace pressure recorded was positive and was not less than 0.01 in. of water throughout the fire exposure test.

Significant Observations - No flaming was observed on the unexposed surface of the firestop system during the fire exposure test. The fire exposure test was terminated at 60 min.

The firestop system met the Conditions of Acceptance for a 1 hr F Rating as outlined in ANSI/UL 1479.

The limiting temperature for the T Rating was reached at 37 min into the fire test.

HOSE STREAM TEST:

#### RESULTS

A through projection of water was observed beyond the unexposed surface of the firestop system.

TEST RECORD NO. 2

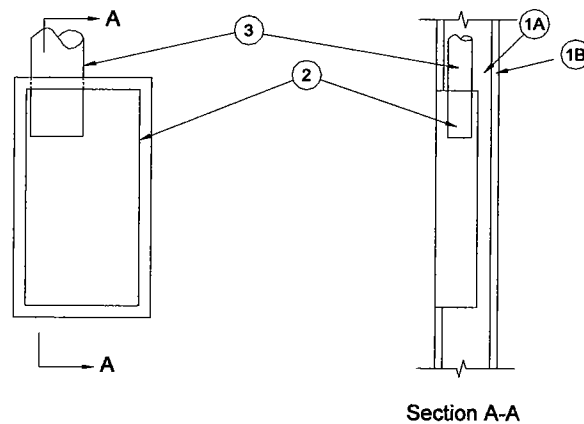
GENERAL:

This Report covers the fire exposure and hose stream tests conducted on November 19, 2004. The fire exposure and hose stream tests were conducted in accordance with the Third Edition of the Standard, *Fire Tests of Through-Penetration Firestops*, ANSI/UL 1479 (ASTM E814).

Test results relate only to items tested.

TEST ASSEMBLY:

The test assembly was constructed as described below:



Item No.	Description
1	U400 Series 1-Hr hour fire rated wall assembly with an 18-1/2 in. high by 9-1/2 in. wide partial opening on both sides of the wall. The specimens used in the assembly were installed in adjacent 2 x 6 stud cavities per the manufacturer's installation instructions. The center 2 x 6 stud was insulated with mineral wool to thermally separate the adjacent stud cavities.
2, 3	Dryerbox Model 350 installed within opening. Nominal 4 in. diameter rigid steel duct was fixed to each specimen and terminated on the unexposed side of the wall to simulate an actual exhaust flue. A nominal 8 in. length of flexible aluminum dryer duct was fixed to the rigid steel duct to simulate a dryer attachment. A thin bead of silicone sealant was applied to the perimeter of the specimen at the gypsum board cutout interface.

FIRE EXPOSURE TEST:

RESULTS

The average furnace temperature recorded was in accordance with the standard time-temperature curve outlined in ANSI/UL 1479.

Furnace Pressure - The furnace pressure recorded was positive and was not less than 0.01 in. of water throughout the fire exposure test.

Significant Observations - No flaming was observed on the unexposed surface of the firestop system during the fire exposure test. The fire exposure test was terminated at 60 min.

The firestop system met the Conditions of Acceptance for a 1 hr F Rating as outlined in ANSI/UL 1479.

The limiting temperature for the T Rating was reached at 43 min into the fire test.

#### HOSE STREAM TEST:

#### RESULTS

A through projection of water was observed beyond the unexposed surface of the firestop system.

TEST RECORD NO. 3

GENERAL:

This Report covers the fire exposure and hose stream tests conducted on January 31, 2005. The fire exposure and hose stream tests were conducted in accordance with the Third Edition of the Standard, *Fire Tests of Through-Penetration Firestops*, ANSI/UL 1479 (ASTM E814).

Test results relate only to items tested.

TEST ASSEMBLY:

The test assembly was constructed as described in Test Record No. 1.

FIRE EXPOSURE TEST:

RESULTS

The average furnace temperature recorded was in accordance with the standard time-temperature curve outlined in ANSI/UL 1479.

Furnace Pressure - The furnace pressure recorded was positive and was not less than 0.01 in. of water throughout the fire exposure test.

Significant Observations - No flaming was observed on the unexposed surface of the firestop system during the fire exposure test. The fire exposure test was terminated at 30 min.

HOSE STREAM TEST:

RESULTS

A through projection of water was observed beyond the unexposed surface of the firestop system.

STUDY FOR CLASSIFICATION PURPOSES:

Based on the visual observations after the application of the hose stream test, it was observed that the through opening was at the location of the cored opening for the exposed side dryer box's rigid steel exhaust duct. This opening for the exhaust duct would not be a typical installation practice and was constructed for testing purposes only. Therefore, the opening in the wall should be discounted.

After a review of the test data it was agreed upon to require that the voids along side and above the dryer box be tightly filled with fiberglass or mineral wool batt insulation. The addition of insulation would retard deterioration of the gypsum board and studs from heat transmitted through the dryer box. Therefore, the dryer box would be eligible for a 1 hr F rating.

After a review of the test data it was determined that the use of a nominal 2 x 4 stud size would not affect the F rating of the system.



The submitter had requested to include the Model 425 dryer box for Classification.

After a review of the overall dimensions and material used, it was determined that the height and width dimensions as well as the type and thickness of the material used was identical to the Model 350 firestop device. Therefore it was determined that the Model 425 firestop device would be eligible for Classification based on the test results herein.

Pending additional test data, the T Rating of the firestop system will be reduced to 1/4 hr when the Model 350 dryer box is used in conjunction with nominal 2 by 4 in. framing members or when the Model 425 dryer box is used in conjunction with nominal 2 by 6 in. framing members. The 1/4 hr T Rating was established based on the published Finish Ratings of existing U300 Series Wall and Partition designs in the UL Fire Resistance Directory.

TEST RECORD NO. 4

STUDY FOR CLASSIFICATION PURPOSES:

The submitter requested Classification coverage for Model 3D and 4D firestop devices based on the tests conducted on the Model 350 firestop device. The Model 3D and 4D firestop devices are shorter and wider than the Model 350 firestop device and the port to accommodate the exhaust duct is located at the bottom of the device rather than the top.

Based on previously established data regarding the performance of the Model 350 firestop device tested in this Report, it was determined that the inclusion of the Model 3D and 4D firestop devices shown in the Description was acceptable provided that the steel vent duct is routed through fire rated construction from the firestop device to the exterior of the building and provided that the opening made in the sole plate or bottom runner of the chase wall in which the vent duct is installed is firestopped in accordance with an appropriate F-A-7000, F-C-7000 or F-E-7000 Firestop System.

TEST RECORD SUMMARY:

The results of this investigation indicated that the products evaluated will comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's mark as described on the Conclusion Page of this Report.

Test Record by:

C. J. JOHNSON  
Lead Engineering Associate

Reviewed by:

RICHARD N. WALKE  
Staff Engineer

## CONCLUSION:

The construction covered by this Report has been investigated and is judged to be eligible for publication under UL's product category for Through-Penetration Firestop Systems. Products identified in this Report as being Listed or Classified, are covered independently under Listing or Classification and Follow-Up Service. Only those products which properly bear the UL Mark are considered as Listed or Classified by Underwriters Laboratories Inc.

Report by:



KARL AITTANIEMI  
Senior Project Engineer

Reviewed by:



Richard N. Walke  
Staff Engineer