

CLIENT: **International Fireproof Technology, Inc.**
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And
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Test Report No: TJ6783-1	Report Date: October 29, 2019
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SAMPLE ID: Exposed spray-applied polyurethane foam and wood stud assembly coated with 24 mils wet film thickness DC315, installed with ½ inch gypsum wallboard.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI on September 20th, 2019 in good condition.

TESTING PERIOD: September 27th, 2019.

AUTHORIZATION: Proposal 19DB062502

TEST PROCEDURE: Testing to the following methods with the deviations found on page 5:

- ASTM E119-16a, "Standard Test Methods for Fire Tests of Building Construction and Materials" (ASTM E119).
- CAN/ULC S101-07, "Standard Methods of Fire Endurance Tests of Building Construction and Materials" (CAN/ULC S101).

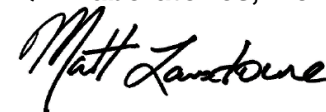
TEST RESULTS: The International Fireproof Technology, Inc. assembly outlined on page 3 of this report, MEETS the temperature rise and burn through requirements when evaluated to fire exposure as outlined per ASTM E119 and CAN/ULC S101 evaluated on a reduced sample size.

Prepared By



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Signed for and on behalf of
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Matt Lansdowne
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Introduction:

This report documents the fire testing conducted by QAI Laboratories for International Fireproof Technology, Inc assembly consisting of a spray-applied polyurethane foam (SES Nexseal 2.0 closed cell) installed in wood stud cavity, coated with 24 mils wet film thickness (WFT) DC315 installed with gypsum wallboard.

Testing was performed on a reduced assembly size, following the time temperature fire exposure as outlined in ASTM E119 and CAN/ULC-S101, with the deviations as noted on Page 5 of this report.

Sample Description:

Sample description is listed from non-fire side to exposed surface.

COMPONENT	DESCRIPTION	
Assembly	Overall Size:	69 inches width x 72 inches height.
	Description:	Wood stud, with ½ inch drywall one surface. Cavity filled with 3.5 inches spray-applied polyurethane foam insulation. Studs and foam were coated with IFTI DC315 intumescent. Foam and coating exposed to fire.
Wall Board	Type:	1-layer CGC Sheetrock gypsum, ASTM C1396 compliant.
	Size:	½ inch thickness.
	Fasteners:	1-1/4 inch length, #6 coarse thread drywall screws spaced 7 inches OC around perimeter, and 12 inches OC field.
	Installation:	Joints were tapped and mudded with industry standard tape and compound.
Framing	Type:	Spruce-Pine-Fir (SPF) Grade #2 lumber.
	Size:	2 inches by 6 inches nominal size.
	Spacing:	24 inches on center (OC).
	Fasteners:	3 inches length 10D common nails, 2 at top, 2 at bottom to double 2 x 6 top plate, and single sill plate.
Insulation:	Type:	SES Nexseal 2.0
	Thickness:	3.5 inches nominal.
	Density:	2.0 lbs/ft ³ target density.
	Installation:	Spray-applied into stud cavity, to target thickness of 3.5 inches.
Coating:	Type:	DC315 intumescent.
	Thickness	24 mils applied wet mils thickness uniformly applied over the spray-applied foam insulation and wood stud surfaces.

Table 1. Test Assembly Description

Test Apparatus:

The furnace used in the tests is a pilot-scale fire burning apparatus with interior dimensions of 60 in. in height, 60 in. in width, and 52 in. in depth.

Temperatures within the furnace were monitored using four thermocouples. The temperatures are controlled by adjusting fuel to the furnace burners to conform to the time/temperature curve specified by the test standards.

Unexposed temperatures were monitored by thermocouples (TCs). The TC's were placed at nine locations per section 7.3.1.2 of the referenced standard. The temperatures were recorded continuously for the duration of the test, and the temperature rise data are provided graphically in Figure 5 and 6 in Appendix A.

The wall section is mounted in a vertical orientation, into a steel frame specimen holder. The specimen holder is then rolled up to the furnace and secured by chain and straps to the furnace opening.

One pressure tap was installed through the back wall of the test furnace. The pressure tap was attached and monitored by a Setra model 264 pressure transducer (ID# A300442). The furnace pressure was controlled by adjusting a damper in the furnace exhaust stack.



Figure 1: Furnace Interior

Thermocouple Location:

Nine thermocouples were used in this test and placed on the unexposed surface of the test sample as indicated by Figure 2. below:

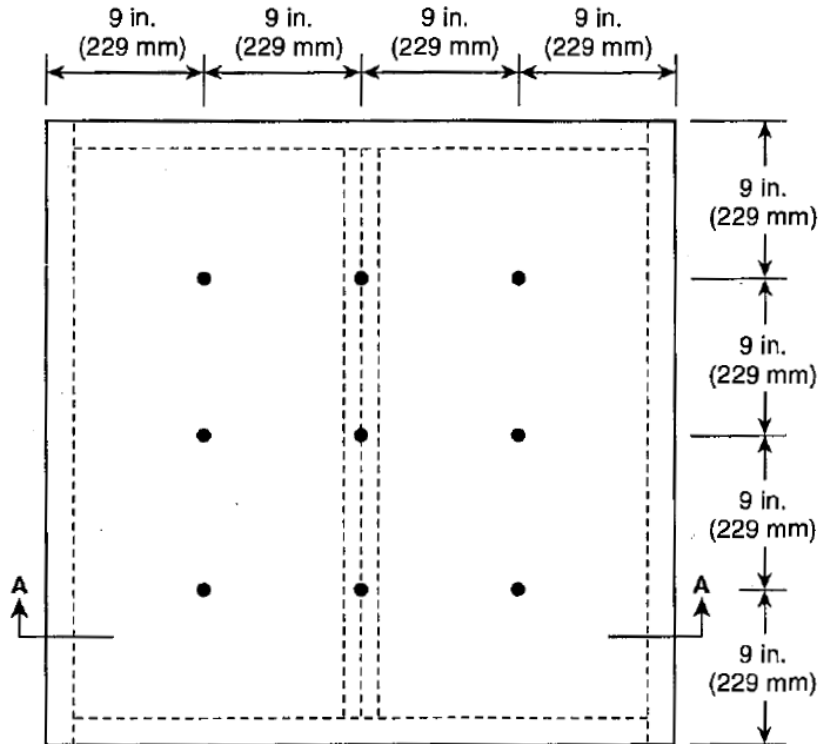


Figure 2. Thermocouple Locations

Deviations from the Test Standard:

The purpose of this test was for R&D and was not tested at the required sample size of 100 ft.².

In addition, the required number of furnace thermocouples were not met due to the reduced sample size.

Hose stream testing was not performed.

TEST REQUIREMENTS:

1. No through penetration of flames or hot gasses during evaluation.
2. Temperature rise average cannot exceed 250°F above ambient (noted 80°F at start of test): < 330°F.
3. Maximum temperature cannot exceed 325°F above ambient (noted 80°F at start of test): < 405°F
4. During hose stream, no through passage of water through the assembly.

Test Results:

Observations

The following observations were taken over the duration of the fire test:

Table 2: Test Observations of Test Assembly

Test Time (min)	Unexposed Side Observations
00:00	Test initiated
00:30	Light charring noted on wall
05:00	Most of face of test sample has charred and intumesced
10:00	Little change in conditions above
30:00	A few small pieces of material have fallen to the furnace floor, steady performance overall
60:00	Test Concluded

Flaming and Penetration

No flaming occurred on the unexposed face of test assembly, and no through penetrations or openings were observed during the fire test.

Unexposed Temperature Rise

The maximum temperature limit of 325°F above initial was not reached for the tested assembly during the 60 minutes test.

The average temperature limit of 250°F above initial was not reached for the tested assembly during the 60 minutes test.

Hose Stream Test

The hose stream test was not performed.



Conclusions:

QAI performed testing following the time temperature fire exposure as outlined in ASTM E119 and CAN/ULC S101, with the deviations found on page 5, on an exposed spray-applied polyurethane foam and wood stud assembly, with gypsum wallboard where the wood studs and spray-applied foam insulation were coated with 24 mils DC315.

The evaluated assembly met the temperature rise on the non-fire side requirements per ASTM E119 and CAN/ULC S101 when exposed evaluated for 1 hour of fire exposure.

APPENDIX A

Page	Title
8	Furnace Time Temperature Curve
9	Unexposed Time Temperature Curve

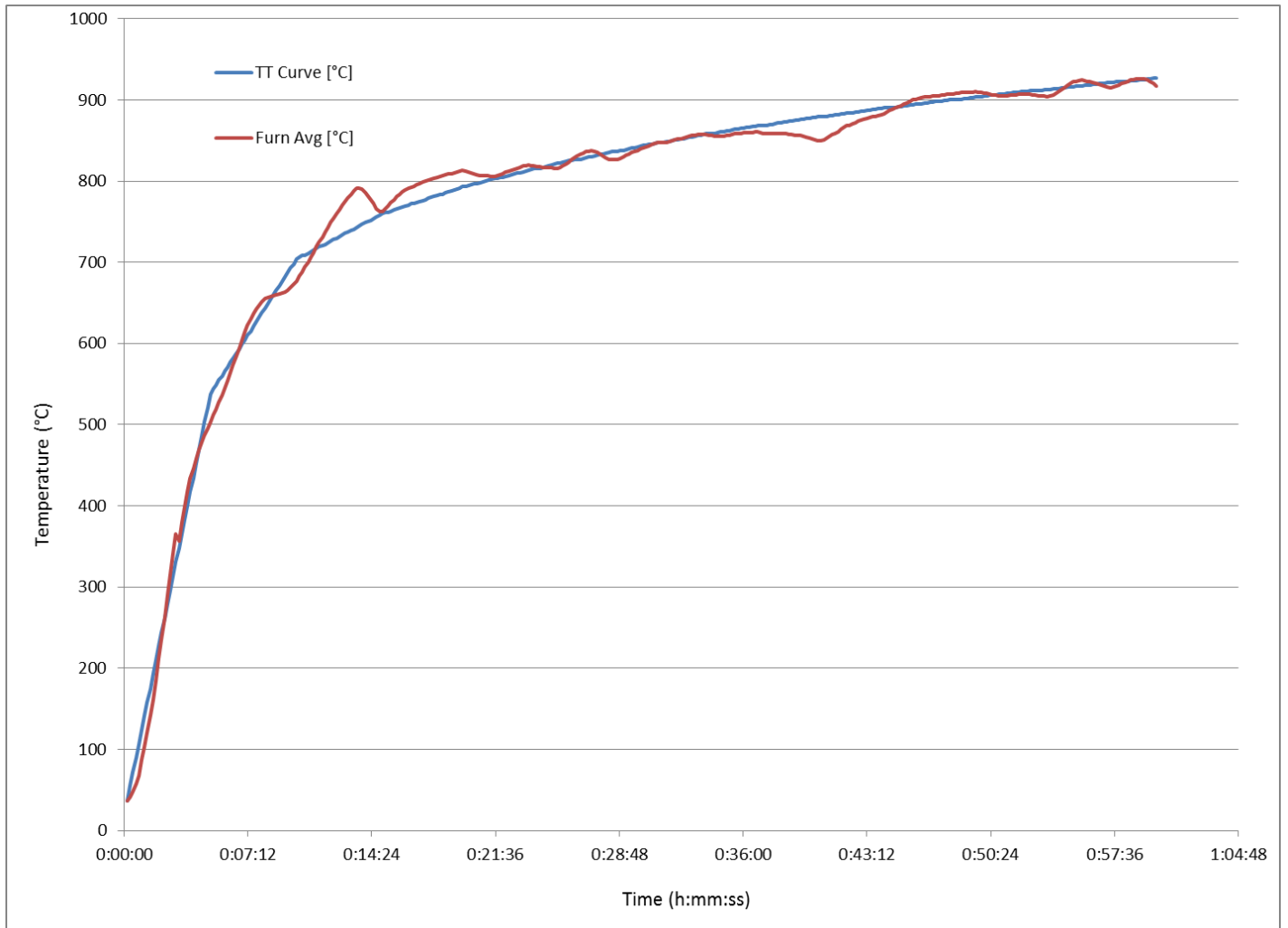


Figure 3: Furnace Time Temperature Curve

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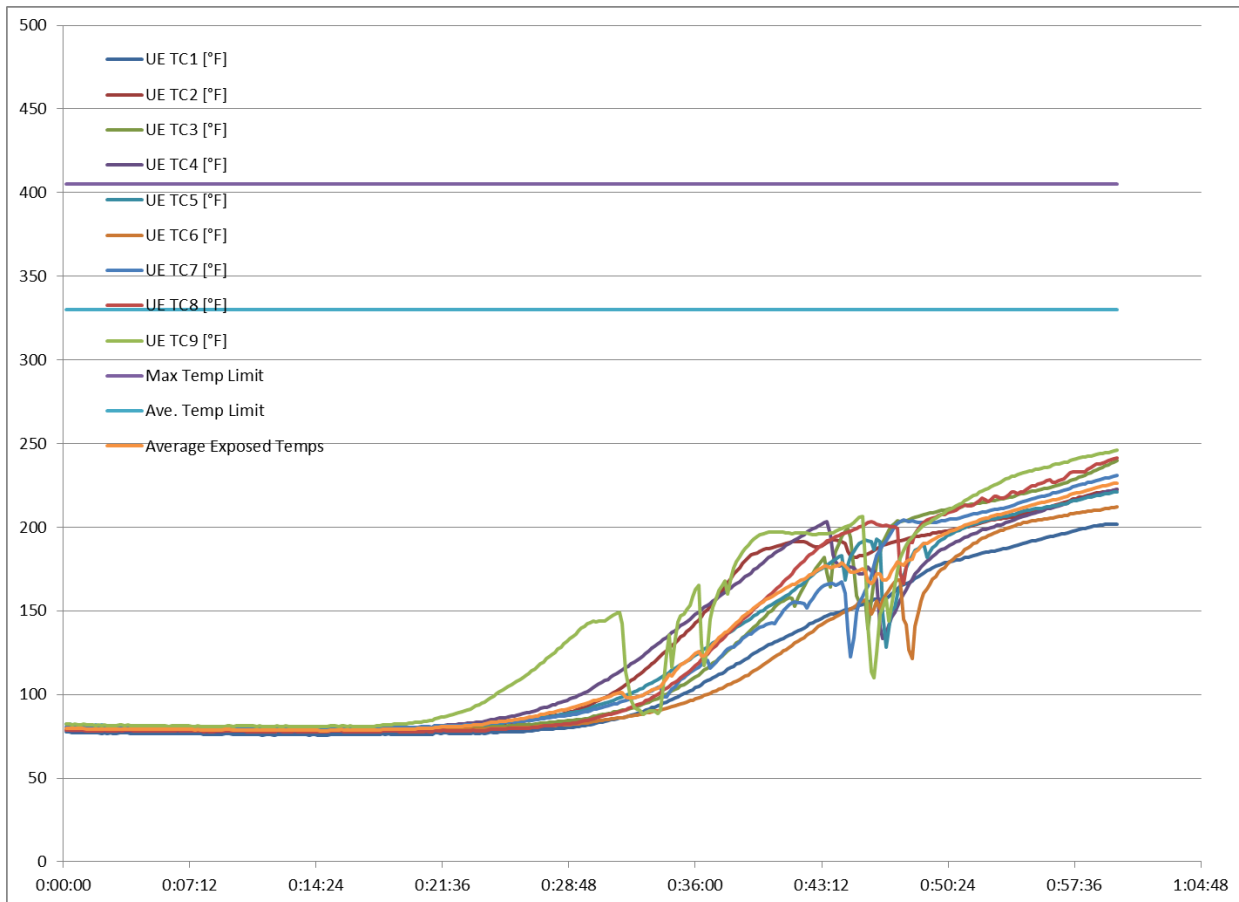


Figure 4: Unexposed Time Temperature Curves

NOTE – The displayed temperatures became detached from sample and were reattached mid test to the same location, causing drop of temperature. As the time during thermocouple drop were not within the allowable non fire side temperatures, the results are not considered to effect the results contained in this report

APPENDIX B

Page	Title
11	Sample Pictures



Figure 7: After Test Photo.

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