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TEST REPORT

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RENDERED TO
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PRODUCT EVALUATED:
3'0" x 3'6" Single Swing Flush Door with Through Penetrations Filled with Fire Door Caulk.

EVALUATION PROPERTY:
90 Minute Positive Pressure Fire Endurance

Report of Testing Fire Door Caulk’s non-combustible intumescent caulk filling multiple through penetrations in a 3’0”x 3’6” mineral core door for compliance with the applicable requirements of the following criteria: UL 10C (2009) “Positive Pressure Fire Tests of Door Assemblies”, NFPA 252 (2012), and CAN4 S104 (1985).

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1 Introduction PHOTOGRAPHS, ASSEMBLY 1

The Middleton, Wisconsin fire testing laboratory of Intertek Testing Services NA (Intertek)/Warnock Hersey conducted a Vertical Fire Test for Fire Door Caulk LLC. The test sample(s) were received at the laboratory on June 13, 2012 in good condition. This report gives the results of the evaluation of the fire resistance property of Fire Door Caulk's impact on a listed fire door with multiple through penetrations.

The test was conducted at positive pressure in accordance with and UL 10C (2009) "Fire Tests of Door Assemblies", NFPA 252 (2012), and CAN4 S104 (1985)

2 Test Samples And Assembly Description

The door was selected by Intertek. The caulk was selected and submitted by the client. The caulk was sampled at the Middleton Lab by Intertek. Construction details are in the project file.

Assembly 1

Door	Size/Configuration	Nominal 3'0" wide x 3'6" high x 1-3/4" single swing flush door.
	Door Skin	Door skin: Birch Veneer
	Stiles	Composite.
	Door Top Rail	Composite.
	Door Bottom Rail	Composite.
	Door Core	MDS non-combustible core.
Frame	Size/Configuration	3'0" wide x 3'6" high listed steel frame.
	Material	16ga.
	Wall Type	8" CMU
Hardware	Lockset	Simulated
	Hinges	Simulated
	Edge seal	1 strip of Lorient 1.5" intumescent applied to jambs.
Through Penetrations	All penetrations were filled with Fire Door Caulk.	Core: $\lt; t \frac{1}{4} \text{''}$, $\lt; t \frac{1}{2} \text{''}$, $\lt; t \frac{1}{4} \text{''}$. Stile & Rail: $\lt; t \frac{1}{2} \text{''}$, $\lt; t \frac{1}{4} \text{''}$. ***See Figure 3 for a map of these through penetrations. ***No voids in the caulk or penetrations were allowed.

PHOTOGRAPHS, ASSEMBLY 1

3 Test Installation and Procedures

The test assembly was installed per the installation instructions of the door and frame manufacturers in a fire rated wall constructed in a furnace frame. The Fire Door Caulk was applied by Intertek in the fashion the manufacturer requested. The average door clearances to the frame were measured and recorded within the allowable limit as follows (unit: inches):

Assembly 1

<u>Top</u> 0.050	<u>Hinge stile</u> 0.105	<u>Latch stile</u> 0.100	<u>Bottom</u> 0.375
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After positioning the assembly frame over the furnace opening, the burners were ignited and a timer started. Temperatures within the furnace were monitored using thermocouples and the data recorded. The burners were controlled to keep the furnace temperatures within the allowable limits specified in the test standards. These temperature data are included in this report.

Periodic observations were made of the exposed and unexposed surfaces of the test assembly during the fire endurance test. These observations are included in this report.

A pressure tap was installed through the furnace wall adjacent to the test assembly at one height (top of door) to measure furnace pressure. The pressure plane at the top of the door within the furnace was maintained at 0.04 inches of water column to simulate testing the top portion of a door. The pressure data is included in this report.

Immediately after the Fire Endurance Test, the assembly frame was moved into position for a Hose Stream Test. The exposed surface of the test assembly was subjected to the impact, erosion, and cooling effects of a hose stream described in the test standards.

The following test equipment was used to collect and monitor test conditions.

<u>Test Equipment</u>	<u>Inventory Number</u>	<u>Measurement Uncertainty</u>	<u>Calibration Date</u>
Omega Data Acquisition System	1163	±2°F at 95% C. L.	5/16/12
Pressure Transducer	1156	±0.005" w.c. at 95% C.L.	9/16/11
Magnehelic differential pressure gauge	633	±0.005" w.c. at 95% C.L.	1/19/12
Water pressure gauge	1186	Grade C	4/16/12
Accusplit Timer	611	±0.001% (over 3hr. period)	7/29/11

PHOTOGRAPHS, ASSEMBLY 1

4 Testing and Evaluation of Results

4.1. Observations, June 27, 2012

Assembly 1

TIME	EXPOSED FACE
00:00	Burners ignited.
00:48	Flash over of veneer skin.
02:28	Flash over complete.
90:00	Test stop.

TIME	UNEXPOSED FACE
00:00	Assembly tight to frame.
01:23	Smoke from around perimeter of door.
02:28	Smoke ceases.
04:19	Light smoke from head of door.
07:15	Discoloration of hinge side and top hinge corner.
09:10	Discoloration of latch side and top latch corner.
30:00	No significant change.
45:00	No significant change.
47:40	Glow at top hinge corner.
60:00	Glow and char at bottom hinge corner of door.
71:09	Top hinge corner is deteriorating.
75:00	No change at filled holes.
90:00	Test stop.

4.2. Door Deflection

Door deflection relative to the frame, where applicable, was monitored throughout the test. The door's deflection did not exceed the allowable limit, 1 times the door thickness, and thus met the requirements of the test standards for deflection.

4.3. Flaming and Penetration

During the fire exposure period there was no flaming of the unexposed face of the assembly in excess of that allowed by the standard. The assembly met the criteria of the test standards for flaming.

4.4. Hose-Stream Test Observations and Results

A Hose-Stream Test was conducted for 18.3 seconds based on a total assembly area of 12.22 square feet and a required duration of 1.5 seconds per square foot of assembly area at 30 psi. At the conclusion of the Hose-Stream test, all of the through penetrations being evaluated remained filled with the intumescent caulk. The top corners of the door were removed from the opening during the Hose-Stream test, this failure of the door occurred away from the evaluated areas and was not caused by the through penetrations or application of the Fire Door Caulk.


PHOTOGRAPHS, ASSEMBLY 1

5 Conclusion

Assembly 1: The Fire Door Caulk intumescent applied to through openings ranging from 1/4" to 3/4" in diameter in a 3'0" by 3'6" single swing door, as described herein, complied with UL 10C (2009) "Positive Pressure Fire Tests of Door Assemblies", NFPA 252 (2012), and CAN4 S104 (1985) for a "90 minute" rating.

This report does not automatically imply product certification. Products must bear the Warnock Hersey registered certification mark to demonstrate compliance.

INTERTEK TESTING SERVICES NA

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PHOTOGRAPHS, ASSEMBLY 1

APPENDIX A

Test Data, Technical Drawing and Photographs

FIGURE 1 · FURNACE TEMPERATURES, ASSEMBLY 1

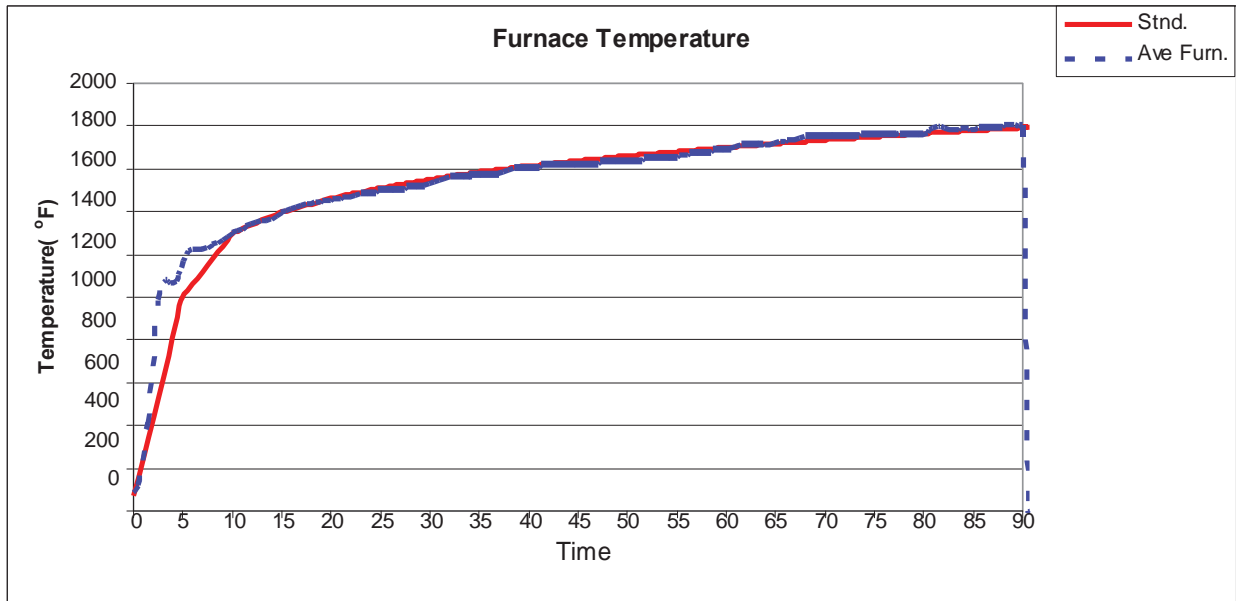


FIGURE 2 · FURNACE PRESSURES, ASSEMBLY 1

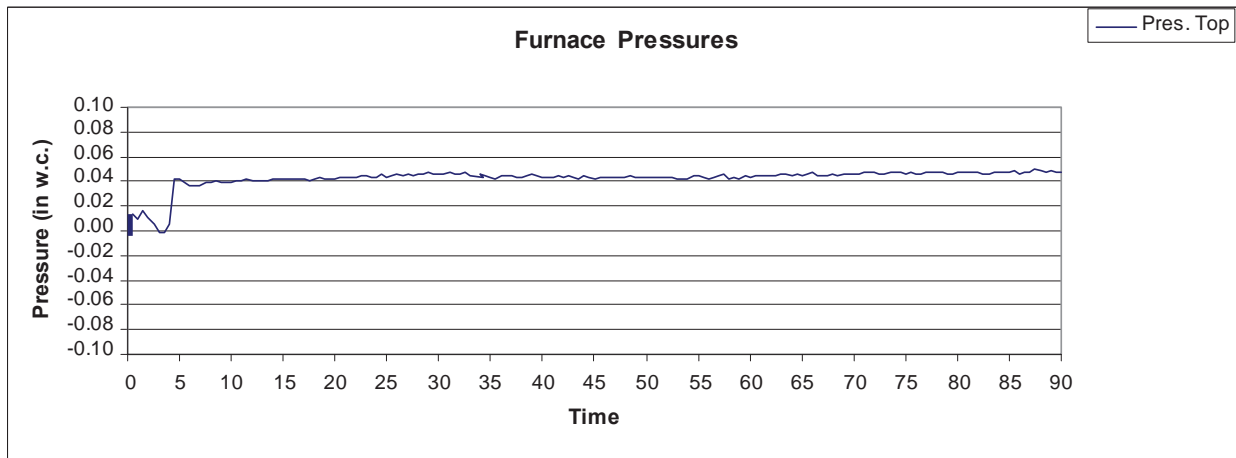
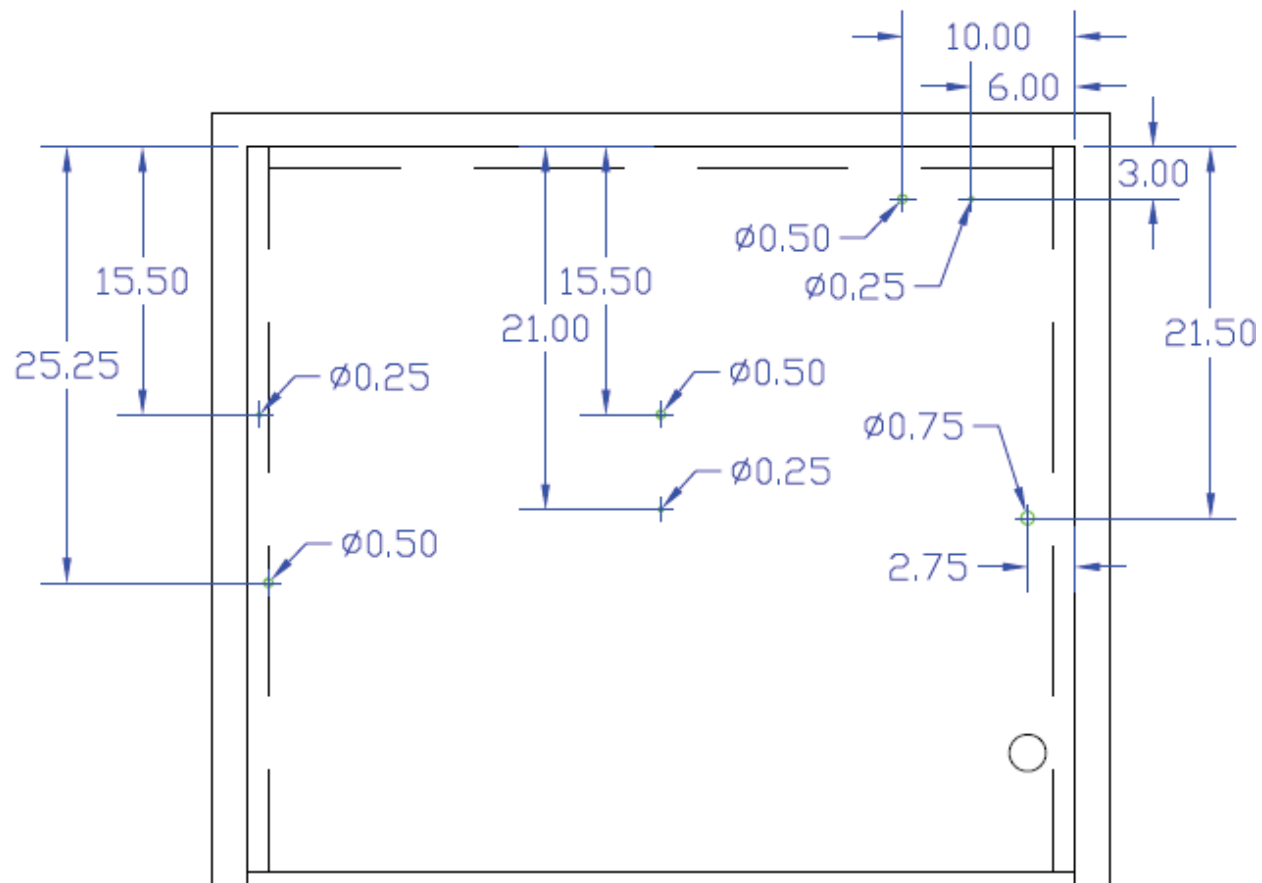


FIGURE 10.15.1 ASSEMBLY MAP



PHOTOGRAPHS, ASSEMBLY 1
Before



PHOTOGRAPHS, ASSEMBLY 1
Fire Endurance



PHOTOGRAPHS, ASSEMBLY 1
Hose Stream





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REVISION SUMMARY

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June 27, 2012	Original Issue Date
