TEST REPORT

REPORT NUMBER: 3147158SAT-003 REV2
Report Date: December 31, 2008
1st REVISION DATE: October 26, 2009
2nd REVISION DATE: October 29, 2009

EVALUATION CENTER
Intertek Testing Services NA, Inc.
16015 Shady Falls Rd.
Elmendorf, TX 78112

RENDERED TO

Flame Seal Products, Inc.
4025 Willowbend Boulevard, #310
Houston, TX 77025

PRODUCT EVALUATED: FX100-TB Fire Retardant Coating
Commercially Sold As "Flame Seal-TB" applied on sprayed BaySeal CC Wall Insulation
EVALUATION PROPERTY: Flame Spread

Report of Testing FX100-TB Fire Retardant Coating (commercially sold as "Flame Seal-TB") applied on sprayed BaySeal CC Wall Insulation for compliance with the applicable requirements of the following criteria: *UL 1715 – Fire Test of Interior Finish Material.*

1 Table of Contents

2 Introduction

Intertek Testing Services NA, Inc. (Intertek) conducted testing for Flame Seal Products, Inc., on FX100-TB fire retardant coating, (commercially sold as “Flame Seal-TB”) applied on sprayed BaySeal CC Wall Insulation to evaluate flame spread properties under real scale room fire conditions. Testing was conducted in accordance with UL 1715 Room Fire Test. This evaluation was performed on December 23, 2008.

3 Test Samples

3.1. SAMPLE SELECTION

The FX100-TB and BaySeal CC wall insulation test specimens are traceable samples selected from the manufacturer's facility. Intertek selected the specimens and has verified their composition, manufacturing techniques and quality assurance procedures. The specimens arrived at the Evaluation Center on December 3, 2008 and October 31, 2008, respectively.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

On November 11, 2008, 6 inches of a 1.9 pcf UL Listed closed cell foam, supplied by BaySystems, was applied (using a sprayer) to the UL 1715 test room on the back wall, right wall, and ceiling. The foam consisted of the BaySeal CC ISO (A-component) and the BaySeal CC (B-component). The substrate surface was 5/8” Type X gypsum wallboard with 1 ½” x 3 ½” steel studs behind for support.

After the sprayed foam system was allowed to cure, it was then covered with the FX100-TB fire retardant coating into the UL 1715 test room between the dates of December 15 and 16, 2008. Application was performed by Flame Seal representative, Mike Kiser, using a roller. Wet thickness was 1 coat at 25 mils on the walls, and a total of 25 wet mils on the ceiling (applied in two coats). Some dripping of the coating was apparent as shown in the pre-test photos.

4 Testing and Evaluation Methods

INTRODUCTION

This report presents the results of an investigation of a room corner fire test conducted according to UL 1715 Room Fire Test Standard of Interior Finish Material. This document contains a description of the material evaluated, procedures used, and the test results. Note that the results listed apply only to the specimens tested, in the manner tested, and not to the entire production of this or similar materials, nor to the performance of this material when used in combination with other materials.

PROCEDURE

The standard test facility consists of an 8 ft. wide by 12 ft. long by 8 ft. high room with walls and ceiling and a doorway 2-1/2 ft. wide and 7 ft. high centered in one of the 8 ft. walls. All vertical or horizontal joint details must be representative of those intended for use in field conditions. The remainder of the interior of the room is constructed of 5/8" Type X gypsum wallboard screwed to 2 x 4 metal studs (3 5/8" x 1 5/8"). The test structure is located inside of a building free of excessive drafts.

The fuel source is a wood crib constructed of 1.5 in. x 1.5 in. sticks of Spruce Pine Fir cut to 15-in. lengths. The crib must have a dry wood weight of 30 lbs. and be 15 in. square in plan. One 8d nail is driven at each intersection of two sticks. The crib is assembled in tiers of five sticks each with each tier oriented 90 degrees to the sticks in the adjacent tiers.

The crib is placed on four brick pieces, one under each corner of the crib, at a distance of 1 inch away from the nominal wall planes to provide not less than a 3-in. space between the floor and the lower surface of the crib. Ignition of the crib is accomplished by evenly distributing 1 lb. of shredded and fluffed wood excelsior beneath the crib over a 21 in. x 21 in. area and soaking with 4 oz. of 95% ethyl alcohol.

Four Type K, Chromel-Alumel thermocouples as per UL 1715 were utilized for measurement of the crib fire temperatures in the test room (TC # 5, 4, 3, 2). These thermocouples were placed 60 inches, 36 inches, 12 inches, and 1 inch below the ceiling, respectively. Thermocouples were placed 1 inch below the center of the ceiling specimen (TC #1), and 1 inch below the doorway opening (TC #9). A thermocouple was placed 4 ft from the specimen corner 3 inches from the RHS wall and 1 inch below the ceiling (TC #6). A thermocouple was placed 4 ft from the specimen corner 3 inches from the RHS wall and 3 ft. below the ceiling (TC #7). A thermocouple was placed 8 ft from the specimen corner 3 inches from the RHS wall and 1 inch below the ceiling (TC #8). Documentation of the test consists of color videotape, photographs, and thermocouple data. Temperature readings on all thermocouples are taken prior to the start of the test and continued at 15-second intervals to the completion of the fire exposure. A total of nine thermocouples were used.

TEST CRITERIA

During the test, the test specimen shall not project flame through the doorway opening at any time, and flames shall not extend to the extremities of the specimen. The char pattern shall show a decreasing char layer as measured from the fire source to the extremities.

TEST STANDARD

UL 1715 - Fire Test of Interior Finish Material

5 Testing and Evaluation Results

RESULTS AND OBSERVATIONS

The test was started at 12:35 pm on December 23, 2008. The ambient temperature was 64°F with a relative humidity of 69%. The thermocouples were positioned in accordance with the standard, and their outputs verified after connection to the data acquisition system. The test was witnessed by representatives of Flame Seal Products, Inc. and BaySystems North America, LLC. Critical events during the course of the test are described below:

TIME	OBSERVATION
0:00	Ignition of the excelsior
2:00	The walls began to discolor in the areas adjacent to the crib on the left and back walls
3:30	Discoloration spread to approximately 4 feet up the walls and ceiling
3:40	The blackened and discolored areas began to smoke
6:00	Blisters began to form on the walls
6:00	Smoke density increasing. Walls continued to blacken and blister
7:50	The walls continued to blacken and blister.
9:00	Transient ignition on the back wall approx. 3.5 to 4 feet from burn corner
12:45	Smoke density continued to increase
14:00	Char pieces falling off from ceiling
15:00	Test terminated

Post Test Observations:

After the test, the test room was allowed to cool and the following observations were made:

1) Specimen was discolored and charred in the area impinged by fire
2) Flame spread on back wall approximately 3 ½' to 4' away from corner
3) Flame spread on right side wall approximately 4 ½' away from corner
4) Flame spread on ceiling approximately 4 ½' to 5' away from corner
5) The walls were visible throughout the test. Smoke density was high at the ceiling near the back walls, but lighter approximately 2' inside the door (where the ceiling was visible).

A sample of the test photos is included in Appendix B of this report. Due to the large number of photos, a CD copy of the test video, setup, and test photos will be supplied to the client in addition to this test report.

6 Conclusion

Intertek Testing Services NA, Inc. (Intertek) has conducted testing for Flame Seal Products, Inc., on FX100-TB fire retardant coating, (commercially sold as "Flame Seal-TB") applied on sprayed BaySeal CC Wall Insulation to evaluate flame spread properties under real scale room fire conditions. Testing was conducted in accordance with UL 1715 Room Fire Test. This evaluation was performed on December 23, 2008. The samples submitted and tested as described in this report met the requirements of the UL 1715 Acceptance Criteria.

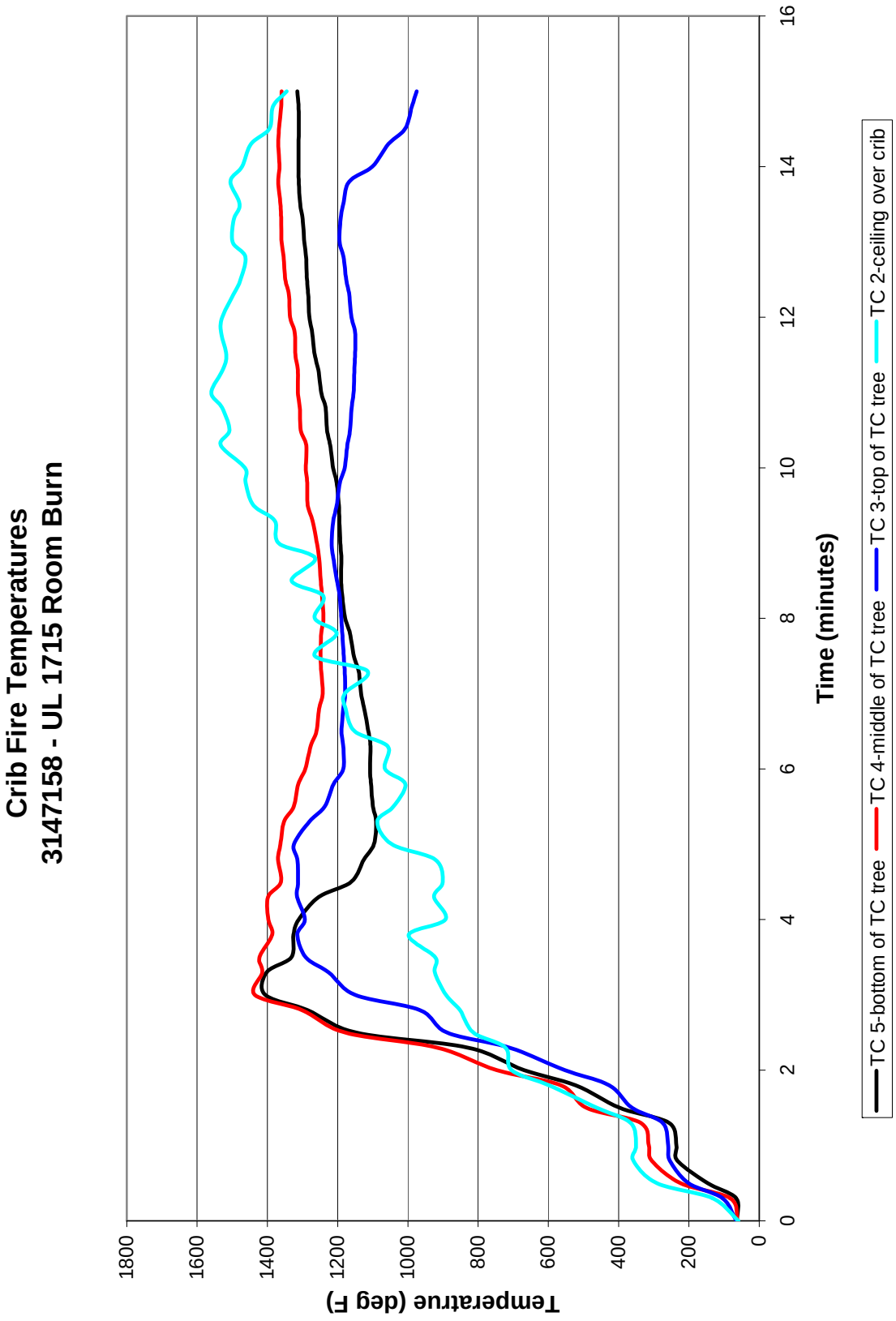
The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

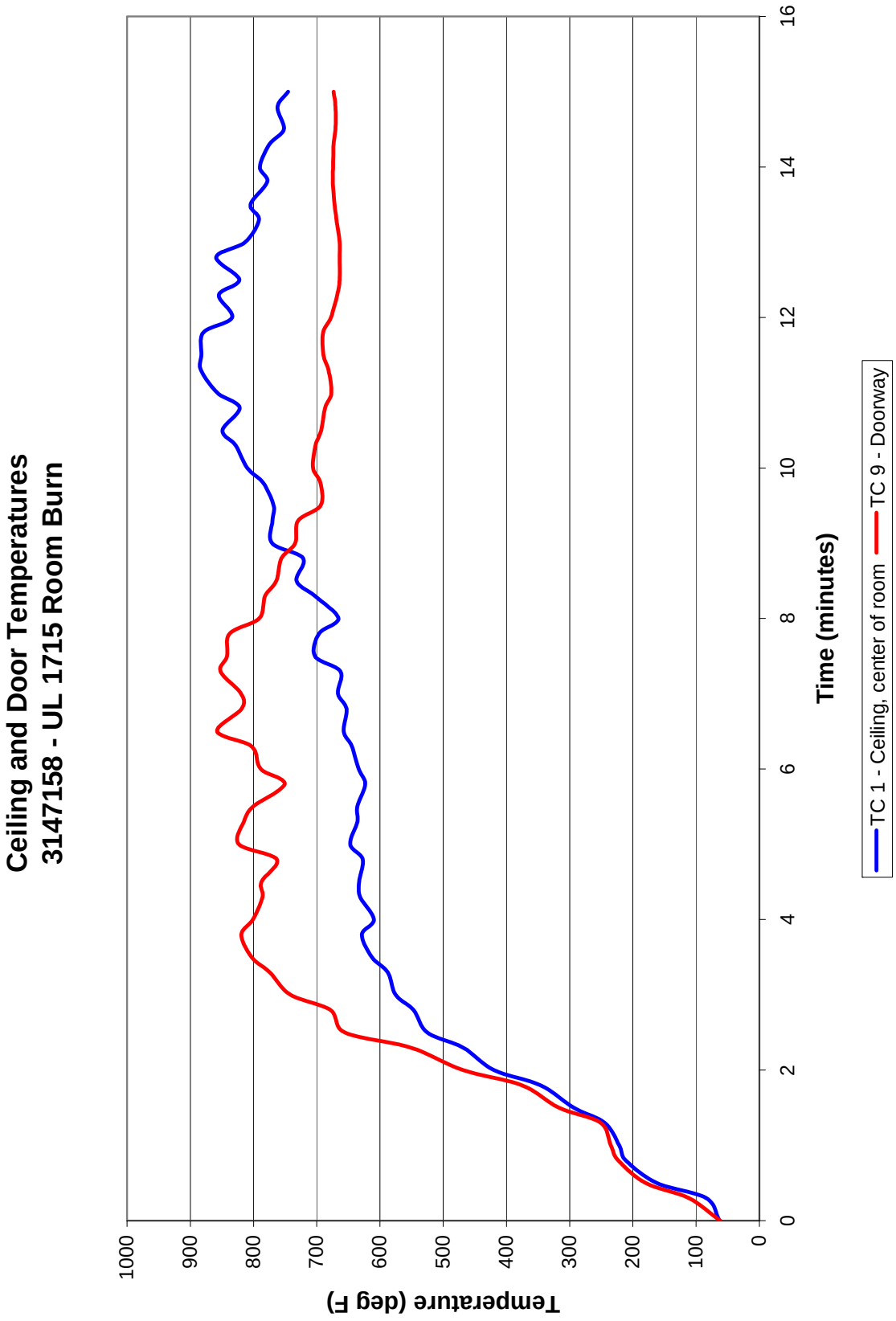
INTERTEK TESTING SERVICES NA, INC.

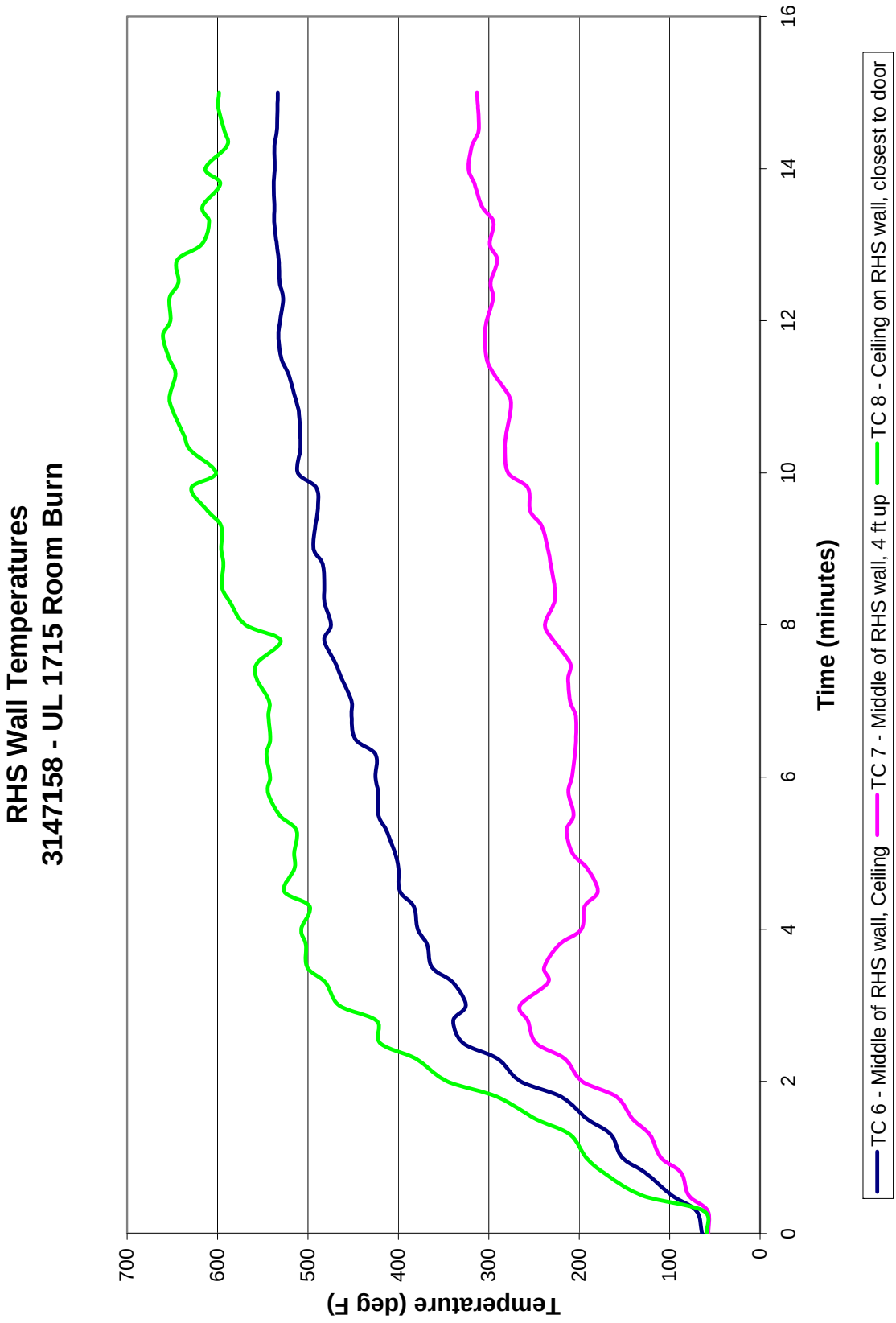
Reported by: _____
Victor M. Burgos
Test Engineer, Fire Resistance

Reviewed by: _____
C. Anthony Peñaloza
Flammability Testing Team Leader, Building Products

APPENDIX A
Test Data


Crib Fire Temperatures
3147158 - UL 1715 Room Burn
Temperature (deg F)
1800
1600
1400
1200
1000
800
600
400
200
0
Time (minutes)
0
2
4
6
8
10
12
14
16
TC 5-bottom of TC tree
TC 4-middle of TC tree
TC 3-top of TC tree
TC 2-ceiling over crib


Ceiling and Door Temperatures
3147158 - UL 1715 Room Burn
Temperature (deg F)
1000
900
800
700
600
500
400
300
200
100
0
0
2
4
6
8
10
12
14
16
Time (minutes)
TC 1 - Ceiling, center of room
TC 9 - Doorway


RHS Wall Temperatures
3147158 - UL 1715 Room Burn
Temperature (deg F)
0
100
200
300
400
500
600
700
Time (minutes)
0
2
4
6
8
10
12
14
16
TC 6 - Middle of RHS wall, Ceiling
TC 7 - Middle of RHS wall, 4 ft up
TC 8 - Ceiling on RHS wall, closest to door

APPENDIX B
Photographs

Room Substrate

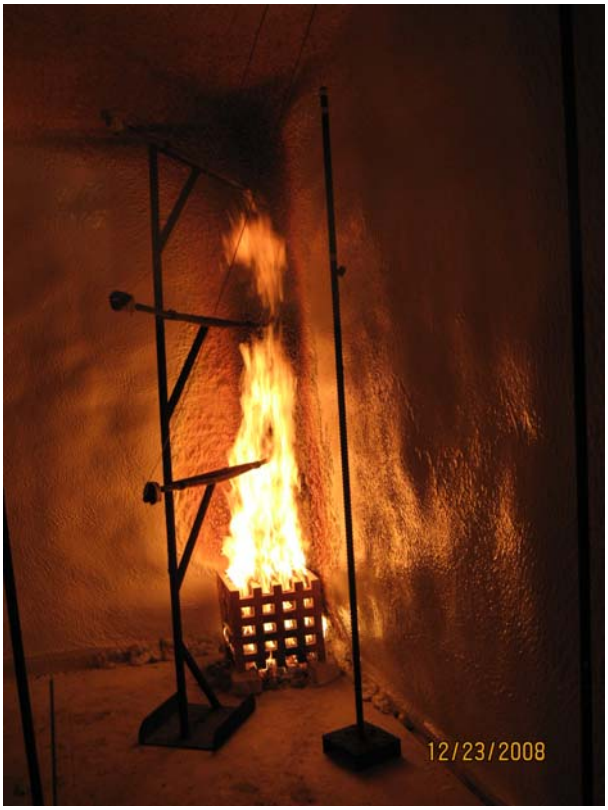
Room Spraying

Foam System

Pretest photo

Pretest photo

Start of Test



Test photo

Test photo

Test photo

Test photo

Test photo

Extinguishing Sample

Post-test photo

Post-test photo

Post-Test Photo

REVISION SUMMARY

DATE	SUMMARY
October 29, 2009	Section 3.2, Sample and Assembly Description. The wording on the paragraph was changed to read the following: "Wet thickness was 1 coat at 25 mils on the walls, and a total of 25 wet mils on the ceiling (applied in two coats)." This was done for further clarification after discussions with the client.
October 26, 2009	Additional descriptions to the following sections: 1) Section 3.2, Sample and Assembly Description. Steel studs used were 1 ½" x 3 ½". 2) Section 3.2, Sample and Assembly Description. Flame Seal 1st coating thickness on the ceiling was verified to be 25 wet mils. Second coating thickness was not verified. 3) Section 5: Post Test Observations, Item #5. The smoke density during the test was reported.
December 31, 2008	Original Issue Date. Original Intertek report number 3147158SAT-003.