

CLIENT:
 CRANE COMPOSITES
 Attn: Michelle Bauer
 8015 Dixon Dr.
 Florence KY 41042

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|--------------------------|-------------------------|
| Test Report No: Tj1898-2 | Date: February 19, 2014 |
|--------------------------|-------------------------|

SAMPLE ID: The Client submitted and identified the following test material as "IPSA .075."

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 facilities on January 30, 2014

TESTING PERIOD: February 5, 2014

AUTHORIZATION: Proposal FB-2014-012003 signed by Michelle Bauer on January 20, 2014

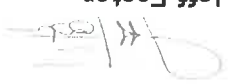
TEST REQUESTED: Perform standard flame spread and smoke density developed classification tests on the sample supplied by the Client in accordance with ASTM Designation E84-12, "Standard Method of Test for Surface Burning Characteristics of Building Materials"; The foregoing test procedure is comparable to UL 723, ANSI/NFPA No. 255, and UBC No. 8-1.

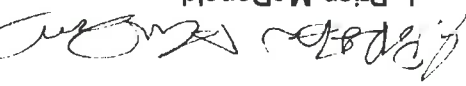
TEST RESULTS:

| | |
|------------------------|-----|
| <u>Flame Spread</u> | 25 |
| <u>Smoke Developed</u> | 170 |

CLASSIFICATION: The material tested resulted in a Class A. Detailed test results are presented in the subsequent pages of this report

Prepared By

Jeff Foster
 Fire Test Technician


Signed for and on behalf of
 QAI Laboratories, Inc.

 J. Brian McDonald
 Operations Manager



PREPARATION AND CONDITIONING: The sample was submitted in six panels that were 4 feet long cut to measure 24 inches wide and approximately .0690 inches thick. The sample material was placed into conditioning at 73°F (±5°F) and 50% (±5%) relative humidity until day of testing.

E 84 TEST DATA SHEET:

MOUNTING METHOD: The sample was supported during testing by 2" hexagonal mesh poultry netting running the length of the test chamber and 1/4" round metal rods placed at 2' intervals across the width of the test chamber.

CLIENT: Crane Composites **DATE:** February 7, 2014

SAMPLE: IP5A.075

IGNITION: 1 minutes, 50 seconds

FLAME FRONT: 7 feet maximum

TIME TO MAXIMUM SPREAD: 4 minute, 30 seconds

TEST DURATION: 10 minutes, 00 seconds

SUMMARY: **FLAME SPREAD:** 25 (26.9 unrounded) **SMOKE DEVELOPED:** 170 (172 unrounded)

OBSERVATIONS:

Audible crackling could be heard 38 seconds into test. Blistering and bubbling began at 1 minute 01 seconds, followed by charring at 1 minute 04 seconds. Sustained ignition began at 1 minute 50 seconds. Steady fire spread increase throughout test until 8 minutes 30 seconds. Test concluded at 10 minutes with after burn.

CALIBRATION DATA:

Time to Ignition of Last Red Oak (sec): 57
 Red Oak Smoke Area (%A*Min): 111
 Total Fuel Burned (ft³): 59.68

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SUMMARY OF ASTM E84 RESULTS:

Because of the possible variations in reproducibility, the results are adjusted to the nearest figure divisible by 5. Smoke Density values over 200 are rounded to the nearest figure divisible

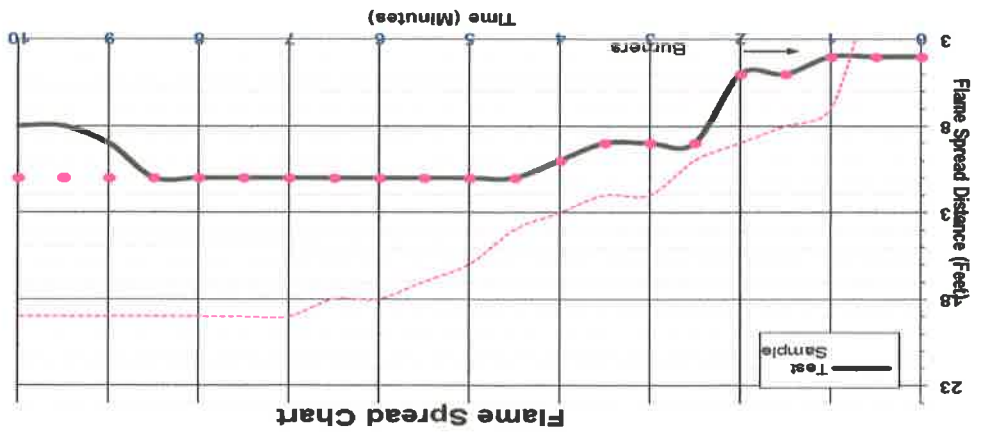
by 5. In order to obtain the Flame Spread Classification, the above results should be compared to the following table:

| <u>NFPA CLASS</u> | <u>IBC CLASS</u> | <u>FLAME SPREAD</u> | <u>SMOKE DEVELOPED</u> |
|-------------------|------------------|---------------------|---------------------------|
| A | A | 0 through 25 | Less than or equal to 450 |
| B | B | 26 through 75 | Less than or equal to 450 |
| C | C | 76 through 200 | Less than or equal to 450 |

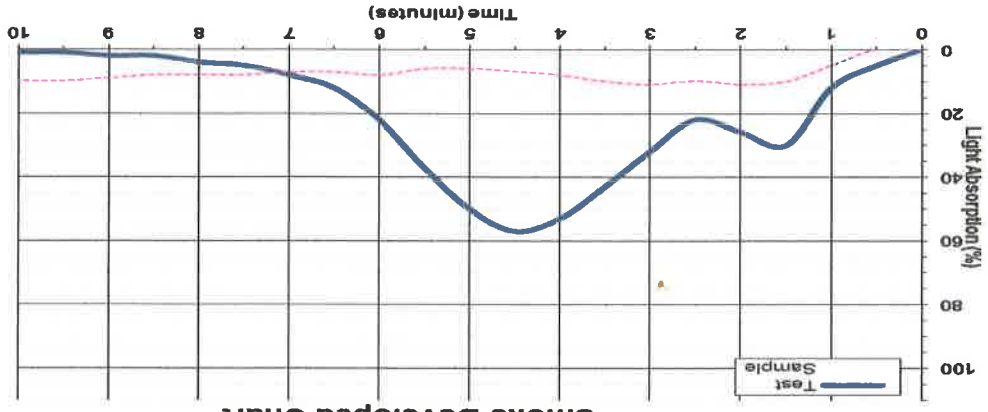
BUILDING CODES CITED:

1. National Fire Protection Association, ANSI/NFPA No. 101, "Life Safety Code", 2006 Edition.
2. International Building Code, 2006 Edition, Chapter 8, Interior Finishes, Section 803.

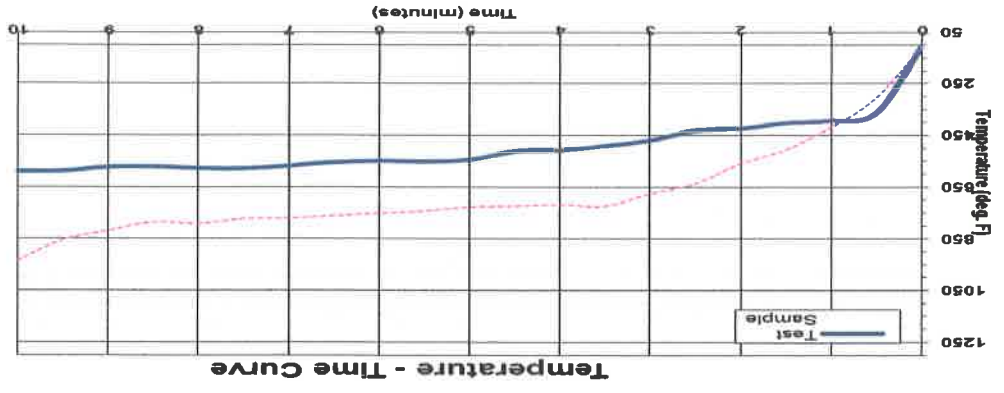
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Flame Spread Chart



Smoke Developed Chart



Temperature - Time Curve

END OF REPORT

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