

CLIENT: **Tuff Industries**
9570 Bottom Wood Lake Road
Lake Country, BC V4V 1S7

Test Report No: RJ3782-1-Rev.1

Original Issue Date: February 27, 2015
Revision Date: March 4, 2015

SAMPLE ID: The test samples are identified as: **Tufdek™ Vinyl Deck Flooring / Roofing**

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

DATE OF RECEIPT: Samples were received on January 21, 2015.

TESTING PERIOD: February 3, 2015 through February 20, 2015.

AUTHORIZATION: Signed QAI Test Proposal GH-2014-1216-01 by Bryan Hughes dated January 13, 2015.

TEST PROCEDURE: Conduct a full series of Class C roof fire tests on the submitted samples in accordance with the methods and procedures outlined in ASTM Test Method E108-11, "*Standard Test Methods for Fire Tests of Roof Coverings*".

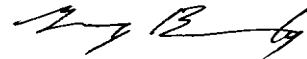
TEST RESULTS: The submitted samples **Met** the Class C requirements of ASTM E108-11.

Prepared By



David Royer
Laboratory Technician

**Signed for and on behalf of
QAI Laboratories**



Greg Banasky
Senior Test Technician

STORAGE OF COMPLETED TEST DECKS:

All test deck assemblies were stored indoors at temperatures not lower than 60°F (16°C) nor higher than 90°F (32°C) for the period of time necessary to cure the assembly components prior to testing. Test decks were stored such that each was surrounded by free circulating air.

A. Roof System and Test Deck Assembly Construction Details

The Intermittent Flame and Spread of Flame test decks were built with the following construction details and in accordance with the ASTM E108-11 specifications for deck construction:

Lumber: Nominal 2" x 4" Douglas Fir, moisture content between 8-12%.
Deck: 11/32" AC Exterior grade plywood, moisture content not greater than 8%.
Joint Treatment: Tufdek™ Deck Patch Cement Floor Filler was trowel applied over all joints.
Adhesive: Tufdek™ Contact Adhesive Low VOC Solvent Adhesive was rolled onto the surface of the deck and the back side of the Tufdek™ Vinyl Deck Flooring / Roofing with a medium nap roller. The surfaces were allowed to dry until tacky and then the deck covering was applied to the test deck.
Deck Covering: Tufdek™ Vinyl Deck Flooring / Roofing

The Burning Brand test decks were built with the following construction details and in accordance with the ASTM E108-11 specifications for deck construction:

Lumber: Nominal 2" x 4" Douglas Fir, moisture content between 8-12%.
Deck: 1" x 8" nominal lumber with five evenly spaced 1/8" horizontal joints.
Joint Treatment: Tufdek™ Deck Patch Cement Floor Filler was trowel spread over all joints.
Adhesive: Tufdek™ Contact Adhesive Low VOC Solvent Adhesive was rolled onto the surface of the deck and the back side of the Tufdek™ Vinyl Deck Flooring / Roofing with a medium nap roller. The surfaces were allowed to dry until tacky and then the deck covering was applied to the test deck.
Deck Covering: Tufdek™ Vinyl Deck Flooring / Roofing

B. Test Results

1. Burning Brand Test – Class C (Two Test Decks)

Wind Velocity: 1056 ft/min ± 44 ft/min
 Test Deck Slope: ¼" per Horizontal Foot
 Class A Brands: Size: 1½" x 1½" x ²⁵/₃₂" (20 per test deck)

Observations: Both test decks performed in a similar manner. The brands were placed on the deck following the flame application schedule as outlined in section 10.4.3. Brands were placed at the locations considered most vulnerable which was determined to be centered over the horizontal joints. At approximately 30 minutes the tests were concluded. At no time during the test was there any evidence of flaming on the underside of the test decks, neither did any glowing embers fall from the deck assembly.

Burning Brand Details				
Test Assembly	Ignition (MM/SS)	Brands Extinguished (MM/SS)	Test Terminated (MM/SS)	Pass/Fail
1	0:00	28:15	30:00	Pass
2	0:00	27:30	29:00	Pass

Results: The submitted vinyl deck flooring **MET** the requirements for **Class C Burning Brand** compliance when tested in accordance with ASTM E108-11.

2. Intermittent Flame Test – Class C (Two Test Decks)

Wind Velocity:	1056 ft/min ± 44 ft/min
Flame Temperature:	1300 ± 50° F
Test Deck Slope:	¼" per Horizontal Foot
Cycling Periods:	3 cycles: 1-minute Flame-On, 2-minute Flame-Off

Observations:

Test Deck Assembly #1: The deck assembly ignited at 12 seconds in the first flame-on cycle then self-extinguished during the following flame-off cycle. The deck ignited during both of the remaining flame-on cycles and would self-extinguish during the flame-off cycles. The test was terminated at 11 minutes with no evidence of flaming on the underside of the deck, neither was there any glowing embers or displacement of any portion of the deck.

Test Deck Assembly #2: : The deck assembly ignited at 10 seconds in the first flame-on cycle then self-extinguished during the following flame-off cycle. The deck ignited during both of the remaining flame-on cycles and would self-extinguish during the flame-off cycles. The test was terminated at 10 minutes 30 seconds with no evidence of flaming on the underside of the deck, neither was there any glowing embers or displacement of any portion of the deck.

Results: The submitted vinyl deck flooring **MET** the requirements for **Class C Intermittent Flame** compliance when tested in accordance with ASTM E108-11.

3. Spread of Flame – Class C (Two Test Decks)

Wind Velocity: 1056 ft/min \pm 44 ft/min
Flame Temperature: 1300 \pm 50° F
Test Deck Slope: ¼" per Horizontal Foot
Flame Application: 10 Minutes

Deck No. 1

Ignition Time: 12 seconds.
Maximum Spread of Flame: 6 ft.
Time to Maximum Spread: 1 minutes 34 seconds
Lateral Spread of Flame: None
Flame Front Recession: 4 ft.

Observations: After the ignition of the test sample surface the flame front progressed steadily to the maximum spread distance of 6 feet. The flame front would subsequently recede back to 2 feet during the ten minute test period.

Deck No. 2

Ignition Time: 17 seconds.
Maximum Spread of Flame: 6 ft.
Time to Maximum Spread: 1 minutes 27 seconds
Lateral Spread of Flame: None
Flame Front Recession: 4 ft.

Observations: After the ignition of the test sample surface the flame front progressed steadily to the maximum spread distance of 6 feet. The flame front would subsequently recede back to 2 feet during the ten minute test period.

Results: The submitted vinyl deck flooring **MET** the requirements for **Class C Spread Of Flame** compliance when tested in accordance with ASTM E108-11.

CONDITIONS OF ACCEPTANCE FOR CLASSIFICATION BY ASTM E108:

At no time during or after the intermittent flame, spread of flame or burning brand tests shall:

1. Any portion of the roof covering material be blown or fall off the test deck in the form of flaming or glowing brands that continue to glow after reaching the floor, or
2. The roof deck be exposed, or
3. Portions of the roof deck fall away in the form of particles that continue to glow after reaching the floor.
4. At no time during the Class C intermittent flame or Class C burning brand tests shall there be sustained flaming of the underside of the deck.

REVISION HISTORY

Revision Date: March 4, 2015

The Sample Id was changed,

From: **Tufdek™ PVC Vinyl Deck Flooring**

To: **Tufdek™ Vinyl Deck Flooring / Roofing.**

This report RJ3782-1-Rev.1 supersedes and replaces any previous reports under the name RJ3782-1.

End of Report