May 3, 2016


ANSI/UL790 (ASTM E108) Test Report Project Number 10CA23622 dated July 8, 2010 is distributed by the National Slate Association for reference where the resistance to fire is a consideration in the selection of roof coverings.

The testing was conducted by Underwriters Laboratories of Northbrook, Illinois under contract to the National Roofing Contractors Association and in co-operation with the National Slate Association. Testing was undertaken to independently re-establish the ability of North American produced, S-1 rated roofing slate to meet the requirements of a Class A fire rated roof system under current IBC codes. A test panel was assembled with a representative range of slate colors from National Slate Association quarry members from the United States and Canada. The test panel was constructed to meet the requirements of Section 6 of ASTM E108 Standard Test Methods for Fire Tests of Roof Coverings.

Under the required Intermittent Flame Test and Burning Brand Test conducted by Underwriters Laboratories, ¼” thick, S-1 rated, North American produced roofing slate met the requirements of a Fire Class A roof covering when laid over ASTM D226 underlayment on a combustible roof deck.

For questions related to this test report, please contact the National Slate Association toll free at 866-256-2111 or email mail@slateassociation.org.
The test deck was constructed in accordance with paragraph 4.2.
The roof covering material was applied in accordance with paragraph 4.4.
The test sample was conditioned in accordance with paragraph 4.5.

**System Description:**

- #30 underlayment
- Slate shingles over 1/2 inch plywood decks

**Underside Activity**

<table>
<thead>
<tr>
<th>First Smoke (Hr:Min:Sec)</th>
<th>First Asphalt Drip (Hr:Min:Sec)</th>
<th>First Glow (Hr:Min:Sec)</th>
<th>Flames On Underside (Hr:Min:Sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:05:15</td>
<td>00:24:15</td>
<td>NA</td>
<td>None</td>
</tr>
</tbody>
</table>

**Test Observations:**

- 00:00:56 Surface flames above top of brand
- 00:03:07 Surface flames 1/2 foot above top of brand
- 00:05:15 Smoke on underside at Horizontal Joint
- 00:05:40 Brand 25% consumed
- 00:09:27 Brand 50% consumed
- 00:09:35 smoke stopped
- 00:13:56 Brand 75% consumed
- 00:15:09 Surface flames 1/2 foot above top of brand
- 00:15:10 Surface flames 0 feet above top of brand
- 00:16:44 Surface flames 0 feet above top of brand
- 00:17:28 Brand 100% consumed
- 00:19:42 Discoloration on underside at plywood joint
- 00:21:49 Smoke continues on underside
- 00:24:15 Asphalt drip on underside at Horizontal Joint
- 00:35:36 All action ceased, test terminated.

**Clear Depth (inches):** 1/2  
**Test Duration (Hr:Min:Sec):** 00:35:36

**Summary of Results:**

No portion of the roof covering material was blown or fell off the test deck in the form of flaming / glowing brands.
The roof deck was not exposed by breaking, sliding, cracking, or warping of the roof covering.
No portions of the roof deck fell away in the form of glowing particles.
There was no sustained flaming of the underside of the deck.

**Pass/Fail:** PASS

Only those products bearing the UL Mark should be considered as being covered by UL.
Department 3015FPD Instrument Calibration Tracking

Data current at 10:52:45 on 2010-07-08

Procedure - UL790

File No.: R20610 Assignment No.: 10CA23622
Client : NRCA Test No.: 2

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Last cal</th>
<th>Next cal</th>
<th>Verification date/time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verified by</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test apparatus [fire] was calibrated on 2010-07-08
Test apparatus [wind] was calibrated on 2010-07-08
Instruments used during test apparatus calibration:

97F04DAS / 21095 2010-05-04 2010-05-31 2010-07-08 07:06:55 auto
15FE5AVM / 20303 2010-02-19 2011-02-28 2010-07-08 07:04:39 auto
16F01IC / 21096 2010-05-04 2011-05-31 2010-07-08 07:06:55 auto
83F01CLK / 20562 2010-05-04 2011-05-31 2010-07-08 07:04:39 auto
91F04CLK / 31457 2010-05-04 2011-05-31 2010-07-08 07:06:55 auto
0221080001 / 57135 2008-02-25 2010-02-28 <No Value> <No Value> auto
199F07MD / 45863 2010-07-06 2011-07-31 2010-07-08 07:06:56 auto
199F08MD / 45792 2009-10-08 2010-10-31 2010-07-08 07:06:56 auto
91F04CLK / 31457 2010-05-04 2011-05-31 2010-07-08 07:06:55 auto

Test was conducted on 2010-07-08.
Instruments used during test operation:

83F01CLK / 20562 2010-05-04 2011-05-31 2010-07-08 10:09:54 auto
51F99SCL / 21857 2010-03-17 2011-03-31 2010-07-08 10:09:54 auto
190F07MD / 45863 2010-07-06 2011-07-31 2010-07-08 10:09:54 auto
199F08MD / 45792 2009-10-08 2010-10-31 2010-07-08 10:09:54 auto

end of page
INTERMITTENT FLAME TEST - ANSI/UL 790 (Eighth Edition)

Project: 10CA236222  File: R20610  Test Code: 07081001
Tested by: PASTOR  Engineer: RHODES  Date: 07/08/10
Employee #: 14333  44947  Page 1 of 2

The test deck was constructed in accordance with paragraph 4.2
The roof covering material was applied in accordance with paragraph 4.4
The test sample was conditioned in accordance with paragraph 4.5

Client Name: NRCA
System No.: 1  Test No.: 1  Deck Thickness (in): 1
Class: A  Slope (in/ft): 5  Ambient Temp (°F): 32

System Description:
#30 underlayment
Slate shingles over ½ inch plywood decks

<table>
<thead>
<tr>
<th>Underside Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Smoke (Hr:Min:Sec)</td>
</tr>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

Surface Flames

<table>
<thead>
<tr>
<th>Cycle</th>
<th>Test Time (Minutes)</th>
<th>Ignition (Min:Sec)</th>
<th>Flames Out (Min:Sec)</th>
<th>Max. flame travel (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 - 4</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>4 - 8</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>8 - 12</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>12 - 16</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>16 - 20</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>6</td>
<td>20 - 24</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>7</td>
<td>24 - 28</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>8</td>
<td>28 - 32</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>9</td>
<td>32 - 36</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>10</td>
<td>36 - 40</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
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<td>15</td>
<td>56 - 60</td>
<td>None</td>
<td>N/A</td>
<td>None</td>
</tr>
</tbody>
</table>

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INTERMITTENT FLAME TEST - ANSI/UL790 (Eighth Edition)

Project: 10CA23622  
File: R20610  
Test Code: 07081001

Tested by: PASTOR  
Engineer: RHODES

Employee #: 14333  
44947  
Date: 07/08/10  
Page 2 of 2

Client Name: NRCA

System No. 1  
Test No.: 1  
Deck Thickness (in): 1

Class: A  
Slope (in/ft): 5  
Ambient Temp (°F): 82

System Description:
# 30 underlayment
Slate shingles over 1/2 inch plywood decks

Test Observations:

Char Depth (inches): 1/2
Test Duration (Hr:Min:Sec): 00:58:28

Summary of Results:

No portion of the roof covering material was blown or fell off the test deck in the form of flaming / glowing brands.
The roof deck was not exposed by breaking, sliding, cracking, or warping of the roof covering.
No portions of the roof deck fell away in the form of glowing particles.
There was no sustained flaming of the underside of the deck.

Pass/Fail: PASS

Only those products bearing the UL Mark should be considered as being covered by UL.
Department 3019FPPD Instrument Calibration Tracking

Data current at 09:52:23 on 2010-07-08

Procedure - UL790

File No.: R20610 Assignment No.: 10CA23622
Client : NRCA Test No.: 1

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Test was conducted on 2010-07-08.
Instruments used during test operation:

- **83F01CLK** / 20562 2010-05-04 2011-05-31 2010-07-08 08:53:32 auto
- **91F04CLK** / 31457 2010-05-04 2011-05-31 2010-07-08 08:53:32 auto
- **190F07MD** / 45863 2010-07-06 2011-07-31 2010-07-08 08:53:32 auto
- **199F08MD** / 45792 2009-10-08 2010-10-31 2010-07-08 08:53:32 auto

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