

# UL Evaluation Report

**UL ER7280-01**

Issued: April 30, 2016

Revised: May 27, 2021

Visit UL, LLC's [Product iQ™ database](#) for the status of this Report.

UL Category Code: ULEX

CSI MasterFormat®

**DIVISION: 07 00 00 THERMAL AND MOISTURE PROTECTION**  
**Sub-level 2: 07 50 00 Membrane Roofing**  
**Sub-level 3: 07 57 00 Coated Foamed Roofing**  
**Sub-level 4: 07 57 13 Sprayed Polyurethane Foam Roofing**

**COMPANY:**

**NCFI POLYURETHANES**  
**1515 CARTER STREET**  
**MOUNT AIRY, NC 30066-5721**  
**UNITED STATES**  
[www.ncfi.com](http://www.ncfi.com)

**1. SUBJECT:**

**ENDURATECH PREMIER SPRAY-APPLIED FOAM ROOFING SYSTEM**

**2. SCOPE OF EVALUATION**

- 2018, 2015 and 2012 *International Building Code*® (IBC)
- 2018, 2015 and 2012 *International Residential Code*® (IRC)
- ICC-ES Acceptance Criteria for Spray-Applied Foam Plastic Insulation (AC377)
- ICC-ES Acceptance Criteria for Quality Documentation (AC 10)



### The products were evaluated for the following properties:

- Surface Burning Characteristics (UL723)
- Roofing Systems for Exterior Fire Exposure (UL 790)
- Roofing Systems, Wind Uplift Resistance (UL 1897)
- Roof Deck Construction Material with Resistance to Internal Fire Exposure (UL1256)
- Physical Properties (AC 377, Table 1)
- Physical Properties (ASTM D6083, ASTM D6694)
- Impact Resistance (FM 4470)

### 3. REFERENCED DOCUMENTS

- **ICC-ES:**
  - ICC-ES Acceptance Criteria for Spray-Applied Foam Plastic Insulation (AC377)
  - ICC-ES Acceptance Criteria for Quality Documentation (AC10)
- **UL:**
  - UL723, Standard Test Method for Surface Burning Characteristics of Building Materials
  - UL790, Standard Test Methods for Fire Tests of Roof Coverings
  - UL1256, Standard for Fire Test of Roof Deck Constructions
  - UL 1897, Tests for Uplift Resistance of Roof Assemblies
- **ASTM:**
  - ASTM C1029, *Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation*
  - ASTM D6083, *Standard Specification for Liquid Applied Acrylic Coating Used in Roofing*
  - ASTM D6694, *Standard Specification for Liquid-Applied Silicone Coating Used in Spray Polyurethane Foam Roofing Systems*
- **Factory Mutual:**
  - FM 4470 Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction

### 4. USES

The EnduraTech Premier Spray-Applied Foam Roofing System is used in Class A and Class B roof covering systems, in accordance with UL 790 as required by Section 1505.1 of the IBC and Section R902.1 of the IRC. Roof coverings with an A or B classification are permitted systems on buildings of any type construction. These spray foams are used as nonstructural insulation foam in above roof deck assemblies which have slopes of 4:12 or less. Installation shall be in accordance with Section 6 of this report.

### 5. PRODUCT DESCRIPTION

The EnduraTech Premier Roofing System is comprised of two-component, spray-applied polyurethane foam plastic insulations with or without liquid-applied coatings as described in this report. The foam plastic consists of product names, NCFI 10-011 or NCFI 10-013, and is applied at a minimum density of 2.5 pcf (40 kg/m<sup>3</sup>).

The roofing assemblies incorporating the spray foams and coatings comply with the following performance criteria when installed as described in this report.

## 5.1 Roofing Assemblies

### Exterior Fire Exposure

Roofing assemblies evaluated under this report have been tested for fire classification Class A or B in accordance with UL 790, as required by Section 1505.1 of the IBC and Section R902.1 of the IRC.

### Wind Uplift Resistance

Roofing assemblies evaluated in this report have been tested for wind uplift resistance in accordance with UL 1897, and therefore qualify for use under Section 1504.3 of the IBC. The roofing assemblies shall be designed to resist the design wind load pressures for components and cladding in accordance with Section 1609 of the IBC.

### Impact Test

Roofing assemblies in this report have been evaluated for impact resistance in accordance with "Resistance to Foot Traffic Test" in Section 4.6 of FM 4470 and therefore qualify for use under Section 1504.7 of the IBC.

### Internal Fire Exposure

Roofing Assemblies evaluated under this report have been found to comply with internal fire exposure in accordance with UL 1256 as required by Section 1508.1 of the IBC and Section R906.1 of the IRC. A thermal barrier is not required for foam plastic that is part of a Class A, B, or C roof-covering assembly as specified under Section 2603.4.1.5 of the IBC.

## 5.2 Assembly Components

### Spray- Applied Polyurethane Foam (SPF):

Roofing SPF evaluated in this report has been tested for physical properties in accordance with AC377, Table 1 and as referenced in Section 1507.14.2 of the IBC, and Section R905.14.2 of the IRC and ASTM C1029. Surface Burning Characteristics – The spray-applied foam has a flame-spread index of 75 or less. As indicated in Section 2603.3, Exception 3, of the IBC, and Section R316.5.2 of the IRC, the smoke-developed index shall not be limited.

### Coatings:

The liquid applied coatings for use with the roofing assemblies covered under this report and noted in the table below comply with Section 1507.14.3 of the IBC and Section R905.15.2 of the IRC.

| Coating  |  | ASTM Designation |
|----------|--|------------------|
| Acrylic  | ENDURATECH Q, ENDURATECH R,<br>ENDURATECH HT | D6083            |
|          | EVERCOAT EC, EVERCOAT HT                     |                  |
| Silicone | ENDURIS 3400,<br>ENDURIS 3500                | D6694            |

## **6. INSTALLATION**

### **6.1 General**

The roofing systems described shall be installed in accordance with this report, the manufacturer's published installation instructions, and Section 1507.14 of the IBC or Section R905.14 of the IRC as applicable, except as noted in this report.

The manufacturer's published installation instructions shall be available at all times on the jobsite during installation.

The slope of the roof on which the coated foam plastics are installed shall be a minimum of 1/4:12 (2% slope and shall not be greater than the maximum slope indicated in Table 1, Table 2, and Table 3.

### **6.2 Substrates:**

Plywood substrates must be minimum 15/32 in. thick (11.9 mm), code compliant exterior grade or Exposure 1 plywood. All ledges must be supported by blocking or have tongue-and-groove joints as required by Section 2603.4.1.5 of the IBC.

Steel substrates are to be minimum thickness of 22 gauge. All substrates must be free and clear of any oil, grease, wax, dirt, dust, or any other contaminant that will negatively affect the bonding of the spray foam.

The deck and supporting structure to which the EnduraTech Premier Roofing System is applied must be designed to withstand the applicable wind pressures determined in accordance with Section 1609.1 of the IBC.

### **6.3 Reroofing:**

The existing roof shall be in accordance with the provisions and limitations of Section 1511 of the 2018 and 2015 IBC, Section 1510 of the 2012 IBC or Section R908 of the 2018 and 2015 IRC, and Section R907 of the 2012 IRC, as applicable. The structure of the existing deck to be reroofed shall be structurally sound and adequate to support and secure the roofing covering system. Roof covering systems employing mechanical fasteners shall be qualified, to the satisfaction of the code official, as to the adequacy of fasteners penetrating through existing roof coverings into structural substrates. Since the composition and/or condition of any particular underlying existing roofing materials may vary, the reroofing material may vary, and reroofing with adhered systems is outside the scope of this report.

EnduraTech Premier Roofing System may be installed over existing Classified Class A, or B roofing systems as described in the UL Product Certification Category for Roofing Materials (TGFU), File No R7280, under the heading of Spray-Applied and Coating Systems, in addition to those outlined in Tables 1 through 3.

## **7. CONDITIONS OF USE**

NCFI Polyurethanes spray-applied polyurethane roofing systems described in this Report comply with, or are suitable alternatives to what is specified in those codes listed in Section 2 of this report, subject to the following conditions:

- 7.1** The installation and application of the coated foam plastic roof coverings shall comply with the code, the manufacturer's published installation instructions, and this report. In the event of a conflict between the installation instructions and this report, this report governs.

- 7.2 The spray foam systems shall be installed by authorized applicators approved by NCFI Polyurethanes.
- 7.3 Wind uplift pressures on any roof area, including edges and corner zones shall not exceed the allowable wind pressure for the roof covering installed in that particular area.
- 7.4 The allowable wind uplift pressures listed in Tables 1-3 are for the roof systems only. The deck and framing to which the roofing system is attached shall be designed for the applicable components and cladding, wind loads in accordance with the applicable code.
- 7.5 Application over an existing roof must be in accordance with Section 6.3.
- 7.6 Where moderate or heavy foot traffic occurs for maintenance of equipment, or is otherwise necessary, the roof covering must be adequately protected to prevent rupture or wearing of the surface.
- 7.7 Flashing must be installed at wall and roof intersections, and at gutters and around roof openings, as required by Section 1503.2 of the IBC.
- 7.8 NCFI 10-011 and NCFI 10-013 roofing spray foams are manufactured by NCFI Polyurethanes located at the manufacturing locations named below under the UL, LLC Classification and Follow-Up Service Program, which includes audits in accordance with quality elements of ICC-ES Acceptance Criteria for Quality Documentation, AC 10.

| Location          | Plant ID |
|-------------------|----------|
| Mount Airy, NC    | 301      |
| Clearfield, UT    | 302      |
| Missouri City, TX | 305      |

**8. SUPPORTING EVIDENCE**

- 8.1 Data in accordance with ICC-ES Acceptance Criteria for Spray-Applied Foam Plastic Insulation (AC377),
- 8.2 UL Classification reports in accordance with UL 1897, UL 790, and UL1256. See UL Product Certification Categories ([TGIK](#)), ([TGFU](#)), and ([TJBX](#)), respectively.
- 8.3 Data in accordance with UL 723, UL 790, and FM 4470 Section 5.1.
- 8.4 Documentation of quality system elements described in ICC-ES Acceptance Criteria for Quality Documentation (AC10),
- 8.5 Data in accordance with ASTM C1029, Standard Test Method for Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.
- 8.6 Data in accordance with ASTM D6083, Standard Specification for Liquid Applied Acrylic Coating Used in Roofing
- 8.7 Data in accordance with ASTM D6694, Standard Specification for Liquid-applied Silicone Coating Used in Spray Polyurethane Foam Roofing

## **9. IDENTIFICATION**

The roofing spray foams described in this evaluation report are identified by a marking bearing the report holder's name (NCFI Polyurethanes), the product designation, the UL Classification Mark, and the evaluation report number UL ER7280-01. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark Certificate.

## **10. USE OF UL EVALUATION REPORT**

- 10.1** The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.
- 10.2** UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.
- 10.3** The status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via the [Product iQ™ database](#).

**TABLE 1: NONCOMBUSTIBLE DECKS – NEW OR REROOF**

| System No.         | Top Coat/Covering   |   | Base Foam Thickness           | Fire Rating                        |
|--------------------|---|---|-------------------------------|------------------------------------|
|                    | Product Name  | Application Rate  |                               | Maximum Incline (in.)              |
| <b>NCFI 10-011</b> |   |   | <b>UL 790 Class A</b>         |                                    |
| <b>1</b>           | Gravel or Crushed Stone   | Minimum 600 lbs/100 sf  | Minimum 2 inches <sup>1</sup> | 1:12                               |
| <b>2</b>           | EnduraTech Q <sup>2</sup> or EnduraTech R <sup>2</sup>                                | Two applications at 1.75 to 1.85 gal/100 sf   | Any thickness                 | 1:12                               |
| <b>3</b>           | ENDURIS 3400 <sup>2</sup>   | Two applications at maximum 2 gal/100 sf each   | Any thickness                 | 1:12                               |
| <b>4</b>           | EnduraTech Q or EnduraTech R  | One application at maximum 3.7 gal/100 sf surfaced with No. 11 roofing granules 45 lbs/100 sf | Any thickness                 | 4:12                               |
| <b>NCFI 10-013</b> |   |   | <b>UL 790 Class A</b>         |                                    |
| <b>5</b>           | Gravel or Crushed Stone   | Minimum 600 lbs/100 sf  | Minimum 2 inches <sup>1</sup> | 1:12                               |
| <b>6</b>           | EnduraTech Q <sup>2</sup> or EnduraTech R <sup>2</sup>                                | Four applications at maximum 1 gal/100 sf surfaced with No. 11 roofing granules 30 lbs/100 sf | Any thickness                 | 1- <sup>1</sup> / <sub>4</sub> :12 |
| <b>7</b>           | ENDURIS 3400 <sup>2</sup>   | Two applications at 2 gal/100 sf surfaced with No. 11 roofing granules 30 lbs/100 sf          | Any thickness                 | 1- <sup>1</sup> / <sub>4</sub> :12 |
| <b>8</b>           | EnduraTech Q <sup>2</sup> , EnduraTech R <sup>2</sup> , or EnduraTech HT <sup>2</sup> | Maximum of 3.4 gal/100 sf total   | Any thickness                 | <sup>1</sup> / <sub>4</sub> :12    |
| <b>9</b>           | Evercoat EC <sup>2</sup> or Evercoat HT <sup>2</sup>                                  | Maximum of 3.4 gal/100 sf total   | Any thickness                 | <sup>1</sup> / <sub>4</sub> :12    |
| <b>10</b>          | ENDURIS 3400 <sup>2</sup>   | 1.5 – 3.25 gal/100 sf total   | Any thickness                 | 3:12                               |
|                    | ENDURIS 3500 <sup>2</sup>   | 1 – 2.5 gal/100 sf total  |                               |                                    |
| <b>11</b>          | EnduraTech Q <sup>3</sup> , EnduraTech R <sup>3</sup> , or EnduraTech HT <sup>3</sup> | 3 - 5.3 gal/100 sf total  | Any thickness                 | 1- <sup>1</sup> / <sub>2</sub> :12 |
| <b>12</b>          | Evercoat EC <sup>3</sup> or Evercoat HT <sup>3</sup>                                  | 3 – 5.1 gal/100 sf total  | Any thickness                 | 1- <sup>1</sup> / <sub>2</sub> :12 |

<sup>1</sup>Optional base coat of UL Classified fibered asphalt coating applied over the foam at 1 to 3 gallons per 100 square feet

<sup>2</sup>Optional No. 11 granules applied at 30 pounds per 100 square feet

<sup>3</sup>Requires surfacing of No. 11 granules applied at 3 pounds per 100 square feet.

**TABLE 1: NONCOMBUSTIBLE DECKS – NEW OR REROOF** (continued)

| System No.         | Top Coat/Covering   |                                    | Base Foam Thickness | Fire Rating           |
|--------------------|---|------------------------------------|---------------------|-----------------------|
|                    | Product Name  | Application Rate                   |                     | Maximum Incline (in.) |
| <b>NCFI 10-013</b> |   |                                    |                     | <b>UL 790 Class B</b> |
| <b>13</b>          | EnduraTech Q <sup>1</sup> ,<br>EnduraTech R <sup>1</sup> , or<br>EnduraTech HT <sup>1</sup> | Maximum of 3.4 gal/100<br>sf total | Any thickness       | 1/2:12                |
| <b>14</b>          | Evercoat EC <sup>1</sup> or<br>Evercoat HT <sup>1</sup>                                     | Maximum of 3.4 gal/100<br>sf total | Any thickness       | 1/2:12                |

<sup>1</sup>Optional No. 11 granules applied at 30 pounds per 100 square feet

**TABLE 2: COMBUSTIBLE DECKS<sup>1</sup> – NEW OR REROOF**

| System No.                   | Top Coat/Covering   |   | Base Foam Thickness              | Fire Rating           |
|------------------------------|---|---|----------------------------------|-----------------------|
|                              | Product Name  | Application Rate                                |                                  | Maximum Incline (in.) |
| <b>NCFI 10-011 or 10-013</b> |   |   |                                  | <b>UL 790 Class B</b> |
| <b>15</b>                    | Gravel or Crushed Stone   | Minimum 600<br>lbs/100 sf                       | Minimum 2<br>inches <sup>2</sup> | 1:12                  |
| <b>16</b>                    | EnduraTech Q <sup>3</sup> ,<br>EnduraTech R <sup>3</sup> , or<br>EnduraTech HT <sup>3</sup> | Maximum of 3.4<br>gal/100 sf total              | Minimum 1-1/2<br>inches          | 1-1/2:12              |
| <b>17</b>                    | Evercoat EC <sup>3</sup> or<br>Evercoat HT <sup>3</sup>                                     | Maximum of 3.4<br>gal/100 sf total              | Minimum 1-1/2<br>inches          | 1-1/2:12              |
| <b>18</b>                    | ENDURIS 3400 <sup>4</sup>   | 1.5 – 3.25 gal/100<br>sf total                  | Minimum 1-1/2<br>inches          | 1:12                  |
|                              | ENDURIS 3500 <sup>4</sup>   | 1 – 2.5 gal/100 sf<br>total                     |                                  |                       |
| <b>19</b>                    | EnduraTech Q <sup>3</sup> or<br>EnduraTech R <sup>3</sup>                                   | One application at<br>maximum 3.7<br>gal/100 sf | Minimum 1-1/2<br>inches          | 1/2:12                |

<sup>1</sup>Minimum 1<sup>5</sup>/<sub>32</sub> inch thick plywood deck

<sup>2</sup>Base coat of Dead Level Fibrated Asphalt Roof Coating applied over the foam at 1 to 3 gallons per 100 square feet

<sup>3</sup>Requires surfacing of No. 11 granules applied at 45 pounds per 100 square feet.

<sup>4</sup>Requires surfacing of No. 11 granules applied at 30 pounds per 100 square feet.



**TABLE 3: COMBUSTIBLE DECKS<sup>1</sup> –RECOVER**

| System No.                   | Existing Roof System                             | Top Coat/Covering  |  | Base Foam Thickness                           | Fire Rating                     |
|------------------------------|--|--|--|---|---------------------------------|
|                              |  | Product Name   | Application Rate                                     |   | Maximum Incline (in.)           |
| <b>NCFI 10-011 or 10-013</b> |  |  |  |   | <b>UL 790 Class B</b>           |
| <b>20</b>                    | Class A or Class B gravel or smooth surfaced BUR | EnduraTech Q <sup>2</sup> or EnduraTech R <sup>2</sup>                                 | One application at maximum 3.7 gal/100               | Minimum 1- <sup>1</sup> / <sub>2</sub> inches | <sup>1</sup> / <sub>2</sub> :12 |
| <b>21</b>                    |  | EnduraTech Q <sup>2</sup> , EnduraTech R <sup>2</sup><br>or EnduraTech HT <sup>2</sup> | 3 – 5.3 gal/100 sf total<br>3 – 5.1 gal/100 sf total | Minimum 1 inch                                | 1:12                            |
| <b>22</b>                    |  | Evercoat EC <sup>2</sup> or Evercoat HT <sup>2</sup>                                   | 2 – 5.1 gal/100 sf total                             | Minimum 1 inch                                | 1:12                            |
| <b>23</b>                    | Class A or Class B gravel or smooth surfaced BUR | ENDURIS 3400 <sup>3</sup>  | 1.5 – 3.25 gal/100 sf total                          | Minimum 1 inch                                | 1:12                            |
|                              |  | ENDURIS 3500 <sup>3</sup>  | 1.5 – 2.5 gal/100 sf total                           |   |                                 |
| <b>24</b>                    | Class A or Class B gravel or smooth surfaced BUR | Gravel or Crushed Stone  | Minimum 600 lbs/100 sf                               | Minimum 2 inches <sup>4</sup>                 | 1:12                            |

<sup>1</sup>Minimum <sup>15</sup>/<sub>32</sub> inch thick plywood deck

<sup>2</sup>Requires surfacing of No. 11 granules applied at 45 pounds per 100 square feet.

<sup>3</sup>Requires surfacing of No. 11 granules applied at 30 pounds per 100 square feet.

<sup>4</sup>Optional base coat of UL Classified fibered asphalt coating applied over the foam at 1 to 3 gallons per 100 square feet

© 2021 UL LLC

*This UL Evaluation Report is not an endorsement or recommendation for use of the subject and/or product described herein. This report is not the UL Listing or UL Classification Report that covers the subject product. The subject product's UL Listing or UL Classification is covered under a separate UL Report. UL disclaims all representations and warranties whether express or implied, with respect to this report and the subject or product described herein. Contents of this report may be based on data that has been generated by laboratories other than UL that are accredited as complying with ISO/IEC Standard 17025 by the International Accreditation Service (IAS) or by any other accreditation body that is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). The scope of the laboratory's accreditation shall include the specific type of testing covered in the test report. As the accuracy of any non-UL data is the responsibility of the accredited laboratory, UL does not accept responsibility for the accuracy of this data.*

