DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 21 00—Thermal Insulation
REPORT HOLDER:
   COVERTECH FABRICATING, INC.

EVALUATION SUBJECT:
rFOIL™ REFLECTIVE PLASTIC CORE INSULATION, AND rFOIL BIG-8™ REFLECTIVE PLASTIC CORE DUCT INSULATION

1.0 EVALUATION SCOPE
Compliance with the following codes:
- 2013 Abu Dhabi International Building Code (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:
- Thermal resistance
- Surface-burning characteristics
- Water vapor transmission

2.0 USES
rFOIL™ is recognized for use as insulation installed in floors and walls in buildings of any construction type. When installed in accordance with this report, rFOIL™ insulation provides thermal resistance values as noted in Section 4.1.2.

rFOIL Big-8™ is recognized for use as duct insulation for residential and commercial HVAC duct systems. When installed in accordance with this report, rFOIL Big-8™ insulation provides thermal resistance values as noted in Section 4.2.

3.0 DESCRIPTION
rFOIL™ reflective plastic core insulation is manufactured from two layers of polyethylene bubble material laminated on each side with a layer of flat polyethylene film with a metalized surface film. rFOIL™ has a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 (UL 723). In this configuration, the water vapor permeance of the insulation is less than 1.0 perm when tested in accordance with ASTM E96.

rFOIL Big-8™ reflective plastic core duct insulation is manufactured from two layers of the rFOIL™ reflective plastic core insulation separated by 2-inch-wide strips of bubble pack insulation (see Figure 4 of this report). rFOIL Big-8™ has a flame-spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E84 (UL 723). In this configuration, the water vapor permeance of the insulation is less than 0.05 perm when tested in accordance with ASTM E96.

4.0 INSTALLATION

4.1 rFOIL™ Reflective Plastic Core Insulation Installation:
4.1.1 General: The insulation is stapled to wood studs, floor joists or furring with 5/16-inch-crown-width (7.9 mm) staples having a minimum leg length of 1/4 inch (6.35 mm), spaced at 6 inches (152 mm) on center. Seams or tears shall be patched with aluminum foil adhesive tape supplied by Covertech Fabricating, Inc.

The manufacturer’s published installation instructions and this report must be strictly adhered to and a copy of these instructions must be available at all times on the jobsite during installation. The instructions within this report govern if there are any conflicts between the manufacturer's published instructions and this report.

4.1.2 Thermal Resistant Assemblies:
4.1.2.1 Wall Cavity Application: rFOIL™ insulation is placed on the inside of the stud cavity and stapled at the midpoint of the 3½-inch (89 mm) side of 2-by-4 wood studs spaced at 16 inches (406 mm) on center. The insulation forms two 1½-inch-deep (41.3 mm) air spaces within the cavity. The exterior surface is covered with 1½-inch-thick (12.7 mm) plywood, complying with and attached in accordance with the applicable code. The interior surface is covered with minimum 1½-inch-thick (12.7 mm) gypsum wallboard complying with ASTM C1396, attached in accordance with the applicable code. Inside surface-to-surface thermal resistance of the assembly is noted in Table 1 of this report. Thermal resistance of the insulated cavity described in this section is noted in Table 2 of this report. See Figure 1 of this report for an illustration of the assembly.

4.1.2.2 Crawl Space Application: The floor assembly consists of minimum of 2-by-8 wood floor joists spaced a
maximum of 24 inches (610 mm) on center, with a minimum of one layer of 3/4-inch-thick (19 mm) plywood on the upper surface, attached in accordance with the applicable code. The length of the insulation sheet is placed parallel to the floor joists. Inside surface-to-surface thermal resistance of the assembly is noted in Table 1 of this report. See Figure 2 of this report for an illustration of the assembly.

**4.1.2.3 Furring Strip Block Wall Application:** The block wall assembly consists of nominal 1-by-2 furring strips attached vertically at a maximum of 16 inches (406 mm) on center to minimum 8-inch-thick (203 mm) block wall. The insulation is installed parallel to the existing furring strips using 1½-inch-long (38 mm) nails. Minimum ½-inch-thick (12.7 mm) gypsum wallboard complying with ASTM C1396 is attached over the furring strips in accordance with the applicable code to create two 3/4-inch (19 mm) air spaces. Inside surface-to-surface thermal resistance of the assembly is noted in Table 1 of this report. See Figure 3 of this report for an illustration of the assembly.

**4.2 rFOIL Big-8™ Duct Insulation Application:**
The rFOIL Big-8™ reflective plastic core duct insulation is installed using one of the following methods:

a. To achieve the thermal resistance value (R-value) listed in Table 3, 2-inch-wide spacer strips of rFOIL™ reflective plastic core duct insulation are wrapped around the duct to create spacers at 2-foot intervals. The Big-8 duct insulation is wrapped around the duct with the spacers creating an airspace between the duct and the insulation. All seams and joints are sealed using rFOIL Metalized Tape (see Figure 5 of this report).

b. To achieve the thermal resistance value (R-value) listed in Table 3, the Big-8 duct insulation is wrapped loosely around the duct without the spacers used in method (a). All seams and joints are sealed using rFOIL Metalized Tape (see Figure 6 of this report).

**5.0 CONDITIONS OF USE**
The rFOIL™ reflective plastic core insulation and Big-8 reflective plastic core duct insulation described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the condition that installation complies with the manufacturer’s published installation instructions and the applicable code.

**5.1** The rFOIL Big-8™ reflective plastic core duct insulation must be installed in accordance with the applicable requirements of Chapter 6 of the IMC.

**5.2** Air ducts operating at temperatures exceeding 120°F (49°C) must be provided with sufficient thermal insulation to limit the exposed surface temperature to 120°F (49°C).

**6.0 EVIDENCE SUBMITTED**
Data and reports of tests in accordance with the ICC-ES Acceptance Criteria for Reflective Insulation (AC02), dated June 2011 (Editorially revised May 2018).

**7.0 IDENTIFICATION**
Each roll of product is labeled with the manufacturer’s name (Covertech Fabricating, Inc.); product name (rFOIL); surface-burning characteristics; thermal resistance (R-value) for rFOIL Big-8™; the wording “See ESR-1236 for the thermal resistance (R-value) of the assembly or assemblies”; the lot number; product dimensions; and the evaluation report number (ESR-1236).
TABLE 3—R-VALUES FOR rFOIL™ INSULATED METAL AIR DUCT ASSEMBLIES

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>FIGURE NUMBER</th>
<th>R-VALUE&lt;sup&gt;1&lt;/sup&gt; (hr-ft&lt;sup&gt;2&lt;/sup&gt;•°F/Btu)</th>
<th>R-VALUE&lt;sup&gt;2&lt;/sup&gt; (hr-ft&lt;sup&gt;2&lt;/sup&gt;•°F/Btu) including air film resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>rFOIL™ Big 8 Spacer Wrap</td>
<td>5</td>
<td>6.4</td>
<td>8.0</td>
</tr>
<tr>
<td>rFOIL™ Big 8 Direct Wrap</td>
<td>6</td>
<td>5.9</td>
<td>6.7</td>
</tr>
</tbody>
</table>

For SI: 1 hr•ft<sup>2</sup>•°F/Btu = 0.176 m<sup>2</sup>•K/W.

<sup>1</sup>R-values are according to ASTM C335, when tested at a mean temperature of 75°F (23.9°C), for outside surface of the duct to the outside surface of insulation.

<sup>2</sup>R-values are according to ASTM C335, when tested at a mean temperature of 75°F (23.9°C), for outside surface of the duct to the outside surface of insulation including the air film resistance.

FIGURE 1—WALL CAVITY APPLICATION
SI: 1 inch = 25.4 mm

FIGURE 2—CRAWL SPACE APPLICATION

FIGURE 3—DOUBLE FURRED BLOCK WALL APPLICATION
SI: 1 inch = 25.4 mm
FIGURE 4—BIG-8 SPEC DRAWING

FIGURE 5

Big-8 Spacer Wrap for an R-8 Value
(With Spacer Strips)

Reflective Tape
Spacer Strip

FIGURE 6

Big-8 Direct Wrap for an R-6 Value
(Without Spacer Strips)