

# ICC-ES Evaluation Report

**ESR-2847\***

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**DIVISION: 07—THERMAL AND MOISTURE PROTECTION**  
**Section: 07210—Building Insulation****REPORT HOLDER:****LaPolla Industries, Inc.**  
**15402 VANTAGE PARKWAY EAST, SUITE 322**  
**HOUSTON, TEXAS 77032**  
**(281) 219-4100**  
[www.lapolla.com](http://www.lapolla.com)**EVALUATION SUBJECT****FOAM-LOK FL500 (ALSO KNOWN AS AIR TIGHT OC)  
SPRAY FOAM INSULATION****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- 2006 *International Energy Conservation Code*® (IECC)
- Other Codes (see Section 8.0)

**Properties evaluated:**

- Surface-burning characteristics
- Physical properties
- Thermal resistance (*R*-values)
- Air permeability

**2.0 USES**

Foam-Lok FL500 (also known as Air Tight OC) spray foam insulation is used as a nonstructural thermal insulating material in Type V-B construction under the IBC and dwellings under the IRC. The insulation is for use in wall cavities, floor assemblies or ceiling assemblies. Foam-Lok FL500 spray foam insulation may be used as an air-impermeable insulation.

**3.0 DESCRIPTION****3.1 Foam-Lok FL500:**

Foam-Lok FL500 spray foam insulation is a low-density, cellular polyurethane foam plastic that is installed as a nonstructural component of floor/ceiling and wall assemblies. The material is a two-component, open-cell, one-to-one-by-volume spray foam with a nominal density of 0.5 pcf (8 kg/m<sup>3</sup>). The polyurethane foam is produced in the field by combining an isocyanate “A” component and a polymeric resin “B” component. The components have a

shelf life of six months when stored in factory-sealed containers at temperatures between 50°F and 80°F (10°C and 27°C). The insulation liquid components are supplied in nominally 55-gallon (208 L) drums.

**3.2 Surface-burning Characteristics:**

The insulation at a maximum thickness of 5.6 inches (142 mm) and a nominal density of 0.5 pcf (8 kg/m<sup>3</sup>), has a flame-spread index of 25 or less and smoke-developed index of 450 or less when tested in accordance with ASTM E 84. Thicknesses up to 12 inches (305 mm) in wall cavities and 12 inches (305 mm) in ceiling cavities are recognized based on room corner testing in accordance with NFPA 286, when the insulation is covered with minimum 1/2-inch-thick (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with, and installed in accordance with, the applicable code.

**3.3 Thermal Resistance (*R*-values):**

The insulation has thermal resistance (*R*-values), at a mean temperature of 75°F (24°C), as shown in Table 1.

**3.4 Air Permeability:**

Foam-Lok FL500 spray foam insulation at a minimum thickness of 4.5 inches (114 mm) is considered air-impermeable in accordance with IRC Section R806.4, based on testing in accordance with ASTM E 283.

**4.0 INSTALLATION****4.1 General:**

Foam-Lok FL500 spray foam insulation must be installed in accordance with the manufacturer’s published installation instructions, the applicable code and this report. A copy of the manufacturer’s published installation instructions must be available at all times on the jobsite during installation.

**4.2 Application:**

The insulation is spray-applied on the jobsite using a volumetric positive displacement pump as identified in the LaPolla application instructions. The Foam-Lok FL500 resin “B” component must be stored at temperatures between 50°F (10°C) and 80°F (27°C). The insulation is used in areas where the maximum ambient temperature is equal to or less than 180°F (82°C). The foam plastic must not be used in electrical outlet or junction boxes or in contact with water. The foam plastic must not be sprayed onto a substrate that is wet, or covered with frost or ice, loose scales, rust, oil, or grease. The insulation must be protected from the weather during and after application. The Foam-Lok FL500 insulation may be spray-applied in one pass up to the maximum thicknesses specified in Section 4.3.

**\*Revised January 2010**

#### 4.3 Thermal Barrier:

The Foam-Lok FL500 spray foam insulation must be separated from the interior of the building by an approved thermal barrier of  $\frac{1}{2}$ -inch-thick (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with, and installed in accordance with, IBC Section 2603.4 or IRC Section R314.4, as applicable. Thicknesses of up to 12 inches (305 mm) for ceiling cavities and 12 inches (305 mm) for wall cavities are recognized based on room corner fire testing in accordance with NFPA 286.

#### 4.4 Use in Attics and Crawl Spaces:

When installation is in attics and crawl spaces, the foam plastic insulation must be protected against ignition in accordance with IBC Section 2603.4.1.6, or IRC Section R314.5.3 or R314.5.4, as applicable.

In attics and crawl spaces, where entry is made only for service of utilities, Foam-Lok FL500 insulation must be separated from the interior of the building by an ignition barrier in lieu of a thermal barrier, when installation is in accordance with IBC Section 2603.4.1.6 or IRC Section R314.5.3 or R314.5.4, as applicable.

#### 5.0 CONDITIONS OF USE

The Foam-Lok FL500 (also known as Air Tight OC) spray foam 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 following conditions:

- 5.1 This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application.
- 5.2 The Foam-Lok FL500 spray foam insulation must be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. If there are conflicts between this report and the manufacturers' published installation instructions, this report governs.
- 5.3 The insulation must be separated from the interior of the building by an approved 15-minute thermal barrier.
- 5.4 The insulation must not exceed the density and thicknesses noted in Sections 3.2 and 4.3.
- 5.5 The insulation must be protected from the weather during and after application.
- 5.6 The insulation must be applied by contractors certified by LaPolla Industries, Inc.
- 5.7 Use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with IRC Section R320.5 or IBC Section 2603.8, as applicable.
- 5.8 The insulation has been evaluated only for use in Type V-B construction under the IBC and nonfire-resistance-rated assemblies in dwellings under the IRC.
- 5.9 Jobsite certification and labeling of the insulation must comply with IRC Sections N1101.4 and N1101.4.1 and IECC Sections 102.1.1, and 102.1.11 as applicable.

5.10 A vapor retarder must be installed as required by the applicable code.

5.11 The insulation is produced in Houston, Texas, under a quality control program with inspections by Intertek Testing Services NA, Inc. (AA-657).

#### 6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated June 2009.
- 6.2 Reports of air leakage tests in accordance with ASTM E 283.
- 6.3 Reports of room corner fire testing in accordance with NFPA 286.

#### 7.0 IDENTIFICATION

Components for Foam-Lok FL500 spray foam insulation are identified with the manufacturer's name (LaPolla Industries, Inc.), address and telephone number; the product name (Foam-Lok FL500/Air Tight OC); use instructions; the density; the flame-spread and smoke-development indices; the shelf life and production date or the expiration date; the evaluation report number (ESR-2847); and the name of the inspection agency, (Intertek Testing Services NA, Inc.).

#### 8.0 OTHER CODES

##### 8.1 Evaluation Scope:

In addition to the codes listed in Section 1.0, the products described in this report have been evaluated for compliance with the following codes:

- BOCA<sup>®</sup> *National Building Code*/1999 (BNBC)
- 1999 *Standard Building Code*<sup>®</sup> (SBC)
- 1997 *Uniform Building Code*<sup>™</sup> (UBC)

##### 8.2 Uses:

See Section 2.0, except wording on the type of construction should read as follows:

The insulation has been evaluated for use in Type VI construction under the SBC, Type V-N construction under the UBC and Type 5-B construction under the BNBC.

##### 8.3 Description:

See Section 3.0.

##### 8.4 Installation:

8.4.1 **General:** See Section 4.1.

8.4.2 **Application:** See Section 4.2.

8.4.3 **Thermal Barrier:** See Section 4.3.

##### 8.5 Conditions of Use:

The Foam-Lok FL500 spray foam insulation described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 8.1 of this report, subject to the Conditions of Use noted in Sections 5.1 through 5.10, except revise the wording in Section 5.6 to read as follows:

In jurisdictions adopting the SBC, use of the insulation system in areas where the probability of termite infestation is "very high" must be in accordance with SBC Section 2304.1.4.

TABLE 1—THERMAL RESISTANCE (R-VALUES)

THICKNESS (inches)	R-VALUE (°F.ft <sup>2</sup> .h/Btu)
<b>ASTM C 518 TESTED VALUES</b>	
1	3.8
4	15.0
<b>CALCULATED R-VALUES<sup>1</sup></b>	
2	7.6
3	11.3
3.5	13.2
5	18
6	21.8
7	25.5
8	29
9	32.8
10	36.4
11	40
12	43.7

For **SI**: 1 inch = 25.4 mm; 1 °F.ft<sup>2</sup>.h/Btu = 0.176 110 °K.m<sup>2</sup>/W.

<sup>1</sup>Calculated R-values greater than 4 inches are based on tested K values at a 4-inch thickness.