



May 28, 2009

To Whom It May Concern:

EnergyComplete™ Spray Foam is a latex-based spray foam air sealant, intended to address the air leakage requirements in the ICC codes listed below. The purpose of this letter is to identify those areas and provide supporting evidence. The documentation referenced throughout this letter is part of the submittal package for an ICC Evaluation Services report. Copies of test reports are available upon request and after completion of a non-disclosure agreement.

EnergyComplete™ Spray Foam is intended to fill in gaps that occur in the building envelope from joints and penetrations. This typically includes joints inside wall cavities, the face of top plates, the bottom plate to sub-floor intersection, wiring/plumbing/duct penetrations, band joist interfaces, and around windows and doors.

Applicable ICC Codes and their respective sections include the following (see addendum for specific language):

- 2006 Intl. Building Code (IBC) –
 - Chapter 13, “Energy Efficiency”. Chapter 13 references the ICC Intl. Energy Conservation Code (IECC). See below for further information on the IECC.
- 2006 Intl. Residential Code (IRC) –
 - Chapter 11, “Energy Efficiency”. Sections N1102.4, “Air Leakage” and N1102.5, “Moisture Control”.
- 2006 / 2009 Intl. Energy Conservation Code (IECC) –
 - Chapter 4, “Residential Energy Efficiency”. Sections 402.4, “Air leakage” and 402.5, “Moisture control”.
 - Chapter 5, “Commercial Energy Efficiency”. Sections 502.4, “Air leakage” and 502.5, “Moisture control”.

There are no references to specific performance metrics or test standards for sealants in the codes cited above. However, EnergyComplete™ Spray Foam has been tested for physical properties that are generally recognized by the construction industry for materials used in residential and commercial buildings. Following is a list of those properties with the associated test standard and the results of the testing.

- Flame Spread & Smoke Developed – Testing for flame spread and smoke developed indices per ASTM E 84, “Standard Test Method for Surface Burning Characteristics of Building Materials”. Results: less than 25 flame spread index, less than 50 smoke developed index. Intertek Testing Services Project Report Number: 3178964SAT-001, dated April 23, 2009.
- Air Leakage – Testing for air leakage rate per ASTM E 283, “Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen”. Results: <0.01 cfm/ft². Architectural Testing Inc., Job No: 83775.04-106-31.
- Accelerated Aging – Though no consensus test standard exists, a protocol for cycling through temperature and relative humidity conditions that represents climatic changes throughout the United States over a fifty-year period was developed. Results: no loss of adhesion; tensile elongation exceeds 20%; air sealing is maintained. In addition, testing was conducted in accordance with ASTM C 719, “Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement (Hockman Cycle)”. Results: No cohesive failure or cracking. Architectural Testing, Inc., Job No: 83775.04-106-31.
- Water Vapor Permeability – Testing for water vapor permeability per ASTM E 96, “Standard Test Methods for Water Vapor Transmission of Materials”. Results: Wet cup - 113 perms; dry cup – 41 perms. Architectural Testing, Inc., Job No: 83775.04-106-31.
- Low-pressure, Flexible Seal – Testing for pressure-build per AAMA 812-04, “Voluntary Practice for Assessment of Single Component Aerosol Expanding Polyurethane Foams for Sealing Rough Openings of Fenestration Installations”. Result: Expansion force is less than 0.1 psi and will not cause door or window frames to warp. Architectural Testing, Inc., Job No: 86207.03-106-31. In addition, the foam remains flexible when cured, and will not transfer structural load to window or door framing.

For more information, contact Owens Corning’s Technical Response Center at 1-419-248-6557.

Addendum 1 – Excerpts from Referenced Code documents

- **International Building Code**

Chapter 13 ENERGY EFFICIENCY

1301.1 Criteria. Buildings shall be designed and constructed in accordance with the *International Energy Conservation Code*.

- **International Residential Code**

Chapter 11 - ENERGY EFFICIENCY

N1102.4.1 Building thermal envelope. The building thermal envelope shall be durably sealed to limit infiltration. The sealing methods between dissimilar materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weatherstripped or otherwise sealed with an air barrier material, suitable film or solid material.

1. All joints, seams and penetrations
2. Site-built windows, doors and skylights
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations
5. Dropped ceilings or chases adjacent to the thermal envelope
6. Knee walls
7. Walls and ceilings separating the garage from conditioned spaces
8. Behind tubs and showers on exterior walls
9. Common walls between dwelling units
10. Other sources of infiltration

N1102.5 Moisture control. [Partial] The building design shall not create conditions of accelerated deterioration from moisture condensation

- **International Energy Conservation Code**

Chapter 4 – RESIDENTIAL ENERGY EFFICIENCY

402.4.1 Building Thermal Envelope The building thermal envelope shall be durably sealed to limit infiltration. The sealing methods between dissimilar materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weatherstripped or otherwise sealed with an air barrier material, suitable film or solid material.

1. All joints, seams and penetrations
2. Site-built windows, doors and skylights
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations
5. Dropped ceilings or chases adjacent to the thermal envelope
6. Knee walls
7. Walls and ceilings separating the garage from conditioned spaces
8. Behind tubs and showers on exterior walls
9. Common walls between dwelling units
10. Attic access openings*
11. Rim joist junction*
12. Other sources of infiltration

402.5 Moisture control. [Partial] The building design shall not create conditions of accelerated deterioration from moisture condensation.

Chapter 5 – COMMERCIAL ENERGY EFFICIENCY

502.4.3 Sealing of the building envelope. Openings and penetrations in the building envelope shall be sealed with caulking materials or closed with gasketing systems compatible with the construction materials and locations. Joints and seams shall be sealed in the same manner or taped or covered with a moisture vapor-permeable wrapping material. Sealing materials spanning joints between construction materials shall allow for expansion and contraction of the construction materials.

* Listed in the 2009 version only