



**January 17, 2008**

## **LEED for Homes...**

Potential applicable credits using The Icynene Insulation System®

This is a general guide as to ways in which the installation of Icynene® can help contribute to LEED for Homes mandatory requirements and optional points, either directly or through assisting strategies that are complementary.

Based on the LEED for Homes Pilot Rating System (\*) Version 1.11, released February, 2007 by the U.S. Green Building Council.

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## Resource Category

Credit Area/ Path

Points

### ID Innovation and Design Process

#### ID 2. Quality Management for Durability

##### *Prerequisites*

##### 2.1 Durability Planning

- Durability (Risk) Evaluation (Exhibit ID2-A)

**Mandatory**

##### *Optional Credits*

##### 2.4 Third Party Durability Inspection

- Durability Inspection Checklist (Attachment D)

**Points: 3**

Significance: Icynene<sup>®</sup> can be an integral part of specific strategies employed to address areas of concern as identified on the Durability Inspection Checklist, such as: air infiltration, heat loss and natural disaster. In all climate zones except 2B and 3B, an air impermeable insulation is required. Icynene<sup>®</sup> is an ASTM E84 tested air impermeable insulation. Direct application of Icynene<sup>®</sup> to the underside of the roof deck creates an unvented attic design. Icynene<sup>®</sup> can exhibit enhanced resistance to rainwater ingress and airborne embers as well as improved fire performance.



## EA Energy and Atmosphere

### EA 1. Energy Star Labeled Home (Pathway)

#### *Prerequisites*

#### 1.1 Meet requirements for ENERGY STAR for Homes

**Mandatory**

Significance: Using Icynene<sup>®</sup> to effectively air seal and insulate the building envelope, conditioned spaces from unconditioned spaces, cantilevers and other architectural projections can facilitate the achievement of an ENERGY STAR qualification for the home. Alignment of the insulation with the air barrier, continuity of insulation, and encapsulation of services and penetrations is assured. Blower door test performance result as well as HERS Grade rating is optimized.

#### *Optional Credits*

#### 1.2 Exceptional Energy Performance

**Points: 2 to 34**

(Exceed requirements of ENERGY STAR for Homes)

Note: Exact point allocation is determined per table Exhibit EA 1-A. Points from 2 to 34 are possible. Point values increase with every 1-point decline in HERS Index. For a given HERS Index, the point allocation varies depending on whether the project is in Climate Zone 1-5, or 6-8. Fewer points are awarded for a given HERS Index in the Northern Climate Zones.

### OR (Alternative Pathway)

#### Credit EA 2 through EA 10 (Pathway)

### EA 2. Insulation

#### *Prerequisites*

#### 2.1 Basic Insulation

Meet or exceed 2004 IECC and at least HERS "Grade II". Mandatory third-party rated with pre-drywall Thermal Bypass Inspection.

Significance: in one step, and using a single trade, installation of Icynene<sup>®</sup> satisfies 21 out of 25 individual Thermal Bypass checklist items.



**Optional Credits**

**2.2 Enhanced Insulation**

**Points: 2**

Install above code insulation that exceeds the 2004 International Energy Conservation Code (IECC) by at least 5% as demonstrated by RESCheck compliance software AND meet at least RESNET “Grade I” specifications.

**EA 3. Air Infiltration**

**Prerequisites**

Good Envelope

**Mandatory**

**Optional Credits**

Better **OR**

**Points: 2**

Best Envelope

**Points: 3**

**Exhibit EA3-A**

LEED Criteria	IECC Climate Zone 1-2	IECC Climate Zone 3-4	IECC Climate Zone 5-7	IECC Climate Zone 8
EA 3.1 Meets ENERGY STAR (Mandatory) (Good)	7.0 ACH50	6.0 ACH50	5.0 ACH50	4.0 ACH50
EA 3.2 Exceeds ENERGY STAR (Optional) (Better)	5.0	4.25	3.5	2.75
EA 3.3 Exceeds Energy Star (Optional) (Best)	3.0	2.5	2.0	1.5

(CZ = IECC Climate Zone)



Significance: “Better” to “Best” envelope highly likely with installation of Icynene®. Air leakage rates of less than 2.0 ACH50 are typical. Normalized leakage area (NLA) also is permitted as an alternative measure.

## **EA 5. Heating and Cooling Distribution Systems**

### ***Prerequisites***

#### ***(Forced Air Systems)***

### **5.1 Reduced Distribution Losses**

Significance: Installation of Icynene® can assist in satisfying one of the mandatory measures – that requiring at least R-6 insulation around ducts in unconditioned spaces.

## **EA 6. Space Heating and Cooling Equipment**

Note: One of three 6.1 prerequisites.

Significance: Design of HVAC using ACCA Manual “J” (“right-sizing” or optimized design) is facilitated by an effectively sealed building envelope, such as is realized with the installation of Icynene®.



## Materials and Resources

### MR 2. Environmentally Preferable Products

Note: Icynene<sup>®</sup> is listed in The GreenSpec<sup>®</sup> Guide [www.buildinggreen.com](http://www.buildinggreen.com).

#### *Optional Credits*

#### 2.2 Environmentally Preferable Materials

Insulation: (roof and wall and floor):

Comply with State of California DHS “Small Chamber”  
VOC Emission test (\*)

**Points: 0.5**

(\*) Note: The LEED for Homes provider should initiate a Credit Interpretation Request (C.I.R.) for this item based on the compliance of Icynene<sup>®</sup> to the rigorous CAN/ULC S770 Small Chamber VOC Emissions test.

Local Materials:

Extracted, processed and manufactured within 500 miles  
of the home.

**Points: 0.5**

Significance: Icynene<sup>®</sup> is Dealer manufactured, in the exact volume required,  
right on the job site.

### MR 3. Waste Management

#### *Optional Credits*

#### 3.2 Waste Reduction

**Points: 0 to 3**

Significance: Icynene<sup>®</sup> is light in weight and predominantly composed of air (1:100 expansion ratio), and is easily compacted, resulting in optimization of waste credits as calculated by weight or by volume.  
Icynene<sup>®</sup> installed in building cavities using “smooth spray” techniques would contribute to minimizing construction waste.



## IEQ Indoor Environmental Quality

### IEQ Credit 1

#### (ENERGY STAR with Indoor Air Package Pathway)

**Points: 11**

Installation of Icynene® would contribute to IAP checklist items: 1.13 and contribute to 4.8.

Note: An ENERGY-STAR qualified home is a prerequisite for this pathway.

Significance: Depending on design, installation of Icynene® would facilitate Indoor Air Package checklist items: 1.13 (attic air barrier and air sealing), 1.22 (IECC-compliant exterior wall insulation), and 4.8 (ACCA Manual J used for heating and cooling design loads), depending on design.

### OR (Alternative Pathway)

## IEQ 6. Distribution of Space Heating and Cooling

### (IEQ Credit 2 to 10 Pathway)

#### a. Forced Air Systems

#### *Prerequisites*

#### 6.1 Room by Room Load Calculations:

Note: ACCA Manual “D” calculations are based on Manual “J” calculations. As previously mentioned, Manual “J” calculations can be optimized as a consequence of a well-sealed building envelope – Icynene® optimizes that performance.

## IEQ 10. Garage Pollutant Protection

#### *Prerequisites*

10.1 No HVAC in garage. No air handling equipment or ductwork in garage.

**Mandatory**

#### *Optional Credits*

10.2 Minimize pollutants from garage.

**Points: 2**



Tightly seal shared surfaces between garage and conditioned spaces.

Note: includes spaces above and next to garage. Other requirements also apply – refer to IEQ 10.2.

Significance: Icynene® can, in one step, provide an effective air seal as well as the required insulation for a critical area such as the shared surfaces between the garage and conditioned space.

### Guidance for Users

This document is presented in good faith as a general guide to where the installation of Icynene® can contribute to mandatory or optional credits in the LEED for Homes rating system. The impact of the installation of Icynene® may depend on several factors, including but not limited to:

- technical or administrative changes to the LEED for Homes rating system,
- other design considerations/details of the particular home,
- the extent of strategies employed that are complementary to insulation and air sealing.
- the successful acceptance by USGBC of Credit Interpretation Requests as submitted by the LEED for Homes provider.

Disclaimer:

Icynene expects that all contractors/installers adhere to the local building code requirements and Icynene's Installer's Manual.

ICYNENE INC.

