

TECH SOLUTIONS 212.0 LEED FOR HOMES: ACHIEVING POINTS WITH DOW BUILDING SOLUTIONS PRODUCTS



SUMMARY

This document provides general information about LEED for Homes, a rating system developed by the U.S. Green Building Council (USGBC) that was officially launched in January 2008. In addition to the general guideline information, this document also details the categories and points that may be achieved using current products from Dow Building Solutions. Based on the January 2008 version of LEED for Homes, the certification requirements for Certified, Silver, Gold and Platinum are 45-59 points, 60-74 points, 75-89 points and 90-136 points, respectively. STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, STYROFOAM SIS™ Brand Structural Insulated Sheathing, WEATHERMATE™ Housewraps, GREAT STUFF PRO™ Insulating Foam Sealants, FROTH-PAK™ FS Foam Insulation Kits, FROTH-PAK™ Foam Sealant Kits, STYROFOAM™ Brand Spray Polyurethane Foam Insulation (RS Series), and complementary products can potentially contribute 25-51 points to the certification.

LEED FOR HOMES

General Information

LEED for Homes is a rating system that promotes the design and construction of high-performance green homes. According to the USGBC:

A green home uses less energy, water and natural resources; creates less waste; and is healthier and more comfortable for the occupants. Benefits of a LEED home include lower energy and water bills; reduced greenhouse gas emissions; and less exposure to mold, mildew and other indoor toxins.

The eight credit categories for LEED for Homes include:

- Innovation & Design Process
- Location & Linkages
- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Awareness & Education

They should be considered as an integrated process, as shown in Figure 1.

Figure 1: LEED for Homes Credit Categories



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*STYROFOAM™ Brand Extruded Polystyrene Insulation products include STYROFOAM™ Brand Square Edge Insulation, STYROFOAM™ Brand SCOREBOARD™ Insulation, STYROFOAM™ Brand Residential Sheathing, STYROFOAM™ Brand Residing Board, STYROFOAM™ Brand DURAMATE™ Plus Insulation, and STYROFOAM™ Brand Tongue and Groove Insulation.

**Dow polyisocyanurate insulation products include TUFF-R™ Insulation, Super TUFF-R™ Insulation and THERMAX™ Sheathing.

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Success of the LEED for Homes program depends on the USGBC authorized provider network, which provides the field inspection and potential performance testing for the program. There are currently many USGBC authorized providers in the United States based in different regions. Providers are a conduit between the project team and USGBC. A rater performs onsite verification of the measures implemented in the LEED designed home. The rater can be an employee of the provider or an independent contractor. However, the rater must be affiliated with a provider. A list of current authorized providers can be found at www.usgbc.org. Even though a provider is located in one particular place, the provider may have local raters throughout a region. Always call the provider nearest you to get more information.

USGBC provides the final home certification for the LEED for Homes program. This final certification process may proceed quickly once final documentation for the home is ready.

Home renovation can be certified through LEED for Homes, but the home must be brought back to the stud level, so pre-drywall inspection can be done and all other LEED for Homes criteria can be met.

LEED for Homes certification cannot be started on a completed home. The LEED for Homes program requires an integrated process from design through completion and also requires pre-drywall inspection, which cannot be accomplished after the home is completed.

USGBC does not currently have an online system for LEED for Homes. The documentation currently resides with the provider and project team. Check www.usgbc.org for a potential online certification system in the future.

CERTIFICATION REQUIREMENTS

There are four certification levels:
 Certified (45-59 points)
 Silver (60-74 points)
 Gold (75-89 points)
 Platinum (90-136 points)

The prerequisite requirements must be achieved in order to get

any level of certification. The minimum points listed in Table 1 are also required to meet a certain level of certification no matter what the total points might be.

Example: A home achieves a total of 103 points. The total points are broken out into the eight different sections as follows:

- Innovation & Design Process (ID): 11
- Location & Linkages (LL): 10
- Sustainable Sites (SS): 4
- Water Efficiency (WE): 15
- Energy & Atmosphere (EA): 38
- Materials & Resources (MR): 16
- Indoor Environmental Quality (EQ): 6
- Awareness & Education (AE): 3

Even though the total points for this home appear to qualify it as a “Platinum” home, the Sustainable Sites category did not achieve the minimum point requirement for certification (5 points required, only 4 achieved). This home cannot be certified.

TABLE 1: LEED FOR HOMES CERTIFICATION LEVELS

	Prerequisites (Mandatory Measures)	Minimum Point Requirements	Maximum Points Available
Innovation & Design Process (ID)	3	0	11
Location & Linkages (LL)	0	0	10
Sustainable Sites (SS)	2	5	22
Water Efficiency (WE)	0	3	15
Energy & Atmosphere (EA)	2	0	38
Materials & Resources (MR)	3	2	16
Indoor Environmental Quality (EQ)	7	6	21
Awareness & Education (AE)	1	0	3
Total Points	18	16	136

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POTENTIAL POINTS FOR CURRENT DOW BUILDING SOLUTIONS PRODUCTS

Current Dow Building Solutions products can help builders achieve the following points in different sections based on the LEED for Homes program. Direct quotes from the guidelines appear in italics and notes on potential points that can be earned by using Dow products appear in standard text.

Innovation & Design Process (ID)

ID 3. Innovative or Regional Design

The intent of this credit is to minimize the home's environmental impact by incorporating additional green design and construction measures that have tangible and demonstrated benefits beyond those in the LEED for Homes rating system.

3.1 Innovation 1, 1 pt

Closed crawl spaces save energy and reduce moisture problems versus traditional vented crawl spaces. STYROFOAM™ Brand Extruded Polystyrene Insulation* and THERMAX™ Sheathing are excellent choices for closed crawl spaces.

3.2 Innovation 2, 1 pt

STYROFOAM SIS™ Brand Structural Insulated Sheathing performs three functions: insulation, structural lateral bracing and water-resistive barrier. By using this product, the builder can save time, money and resources.

3.3 Innovation 3, 1 pt

Prefabricated systems, such as Superior Walls from Superior Walls of America, Ltd. and THERMOMASS (trademark of Composite Technologies Corporation), save time and resources for builders.

STYROFOAM™ Brand Extruded Polystyrene Insulation* is an excellent choice in both of these prefabricated systems.

3.4 Innovation 4, 1 pt

A complete weatherization system integrates many components into a system that reduces water intrusion. WEATHERMATE™ Weather Barrier Solutions products, including STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, WEATHERMATE™ Housewraps, WEATHERMATE™ Flashings, WEATHERMATE™ Sill Pan, GREAT STUFF PRO™ Window & Door Insulating Foam Sealant and WEATHERMATE™ Construction Tape, work together to help protect homes from water intrusion and improve comfort.

Sustainable Sites (SS)

SS 5. Non-toxic Pest Control, 1 pt

Requires pest control alternatives. WEATHERMATE™ SILL SEAL Foam Gasket can be used to separate the wood from concrete connections (0.5 point). GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant can be used to seal external cracks and penetrations (0.5 point).

Energy & Atmosphere (EA)

EA 1. Optimize Energy Performance (Performance Approach)

1.1 Performance of ENERGY STAR Homes, prerequisite

1.2 Exceptional Energy Performance, 34 pts

STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, GREAT STUFF PRO™ Insulating Foam Sealants, WEATHERMATE™ Housewraps and STYROFOAM SIS™ Brand Structural Insulated Sheathing are excellent choices along with other energy-efficient features to meet and exceed the ENERGY STAR home requirements. Dow also offers energy analysis to determine the percentage improvements for specific energy-efficient features.

EA 2. Insulation (Prescriptive Approach)

2.1 Basic Insulation, prerequisite

2.2 Enhanced Insulation, 2 pts

STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, STYROFOAM SIS™ Brand Structural Insulated Sheathing, FROTH-PAK™ FS Foam Insulation Kits and STYROFOAM™ Brand Spray Polyurethane Foam Insulation (RS Series) from Dow are excellent choices along with other energy-efficient features to meet and exceed the 2004 IECC insulation requirements by at least 5 percent.

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EA 3. Air Infiltration

3.1 Reduced Envelope Leakage, prerequisite

3.2 Greatly Reduced Envelope Leakage, 2 pts

3.3 Minimal Envelope Leakage, 3 pts

STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, WEATHERMATE™ SILL SEAL Foam Gasket, WEATHERMATE™ Housewraps, GREAT STUFF PRO™ Insulating Foam Sealants, STYROFOAM™ Brand Spray Polyurethane Foam Insulation (RS Series), FROTH-PAK™ FS Foam Insulation Kits and FROTH-PAK™ Foam Sealant Kits from Dow are excellent choices to minimize air infiltration and leakage around the house.

EA 5. Heating and Cooling Distribution Systems

A. Forced Air Systems

5.1 Reduced Distribution Loss, prerequisite

5.2 Greatly Reduced Distribution Loss, 2 pts

Seal joints in ducts using FROTH-PAK™ Foam Sealant Kit to minimize duct leakage outside the conditioned building envelope to meet the leakage requirement of equal or less than 3.0 cfm at 25 Pa per 100 ft² of conditioned floor area. This leakage rate must be verified by an energy rater.

5.3 Minimal Reduced Distribution Loss, 3 pts

STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, STYROFOAM™ Brand Spray Polyurethane Foam Insulation (RS Series), FROTH-PAK™ FS Foam Insulation Kits and FROTH-PAK™ Foam Sealant Kits from Dow can be used in cathedralized attics and closed crawl spaces, which can help comply with Section 5.3 b):

Locate the air handler unit and all duct work within the conditioned envelope and minimize envelope leakage.

B. Nonducted HVAC Systems

5.1 Reduced Distribution Loss, prerequisite

5.2 Greatly Reduced Distribution Loss, 2 pts

Requires the system be entirely within the conditioned envelope. STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, STYROFOAM™ Brand Spray Polyurethane Foam Insulation (RS Series), FROTH-PAK™ FS Foam Insulation Kits and FROTH-PAK™ Foam Sealant Kits from Dow can be used in cathedralized attics and closed crawl spaces, which allows installing the nonducted HVAC system entirely within the conditioned envelope.

Materials & Resources (MR)

MR 1. Material Efficient Framing

1.5 Offsite Fabrication, 4 pts

STYROFOAM™ Brand Extruded Polystyrene Insulation*, Dow polyisocyanurate insulation**, GREAT STUFF PRO™ Insulating Foam Sealants, WEATHERMATE™ Housewraps and STYROFOAM SIS™ Brand Structural Insulated Sheathing from Dow are excellent choices for manufactured panelized wall framing systems and modular houses.

MR 2. Environmentally Preferable Products

2.2 Environmentally Preferable Products, 0.5 pt each, maximum 8 pts, Dow potential 3 pts

STYROFOAM SIS™ Brand Structural Insulated Sheathing contains up to 80 percent post-consumer recycled content and qualifies for 0.5 point by complying with Section 2.2 a): Environmentally preferable product for recycled content.

GREAT STUFF PRO™ Window & Door Insulating Foam Sealant, GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant and FROTH-PAK™ Foam Sealant are compliant with current California Air Resources Board and South Coast Air Quality Management District Rule 1168 Adhesives and Sealants (amended Jan. 7, 2005) and the Ozone Transport Commission Model Rule for Adhesives and Sealants

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(effective Jan. 1, 2009) to qualify for Section 2.2 b): Low emissions credit for adhesives and sealants. These three products qualify for 0.5 point each with a total of 1.5 points by complying with low emissions for adhesives and sealants.

FROTH-PAK™ Polyurethane Foam Spray System and STYROFOAM™ Brand Spray Foam System are compliant with current California Air Resources Board and South Coast Air Quality Management District Rule 1168 (amended Jan. 7, 2005) and the Ozone Transport Commission Model Rule for Adhesives and Sealants (effective Jan. 1, 2009) to meet Section 2.2 b): Low emissions credit for insulation with a total of 1 point.

MR 3. Waste Management

3.1 Construction Waste Reduction, 3 pts

Requires reducing or diverting waste generated from new construction activities from landfill and incinerators to a level below the industry norm. Foam sheathings, including STYROFOAM™ Brand Extruded Polystyrene Insulation* and Dow polyisocyanurate insulation**, weigh less than wood sheathings such as oriented strand board (OSB). Therefore, foam sheathings contribute to reduced construction waste and help meet the 2.5 pounds or less per square foot of conditioned floor area in Section 3.2 a).

Indoor Environmental Quality (EQ)

EQ 10. Garage Pollutant Protection

10.1 Minimize Pollutant From Garage, 2 pts

Requires tightly sealed shared surfaces between garage and conditioned spaces. GREAT STUFF PRO™ Insulating Foam Sealants and FROTH-PAK™ Foam Sealant Kits provide air sealing of penetrations between the garage and the living area.

SUMMARY

Table 2 shows the total potential points that Dow products can contribute based on the sections described previously.

TABLE 2: TOTAL POTENTIAL POINTS⁽¹⁾ WHEN USING DOW PRODUCTS⁽²⁾

Section	Potential Points
Innovation & Design Process	4
Location & Linkages	0
Sustainable Sites	1
Water Efficiency	0
Energy & Atmosphere	8-34
Materials & Resources	10
Indoor Environmental Quality	2
Awareness & Education	0
Total Points Potential	25-51

(1) These potential points are suggestions only and need to be verified by USGBC. USGBC has the final authority to resolve any discrepancies regarding points.

(2) Not all products listed in this document are available in all areas. Check with your local Dow sales representative or distributor to determine available products in your area. Please consult technical support or your local sales representative if you have questions about whether a particular product can help earn LEED points.

Scope and Restrictions

This list of potential points is only applicable to the LEED for Homes program released in January 2008 by the U.S. Green Building Council. Future versions of the LEED for Homes program may impact the potential points based on new additional requirements.

References

- LEED for Homes Rating System
- LEED for Homes Checklist
- LEED for Homes Webinar – The Delivery Process
- www.usgbc.org

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NOTICE: Changes to the International Residential Code require the installation of a water-resistive barrier (WRB) within most exterior wall assemblies in residential construction. The following Dow insulated sheathing products qualify as a WRB when installed according to the installation instructions developed for "installation of foam sheathing as a water-resistive barrier": STYROFOAM™ DURAMATE™ Plus, STYROFOAM™ Residential Sheathing, STYROFOAM™ Tongue and Groove, STYROFOAM SIS™, STYROFOAM™ Square Edge, STYROFOAM™ Residing Board, STYROFOAM™ High Performance Underlayment, THERMAX™ Sheathing, TUFF-R™ and Super TUFF-R™ and therefore do not require the use of a building paper or a housewrap as a WRB. When a WRB is not needed, these Dow foam sheathings may be installed according to standard installation instructions for foam sheathing from Dow. Be sure products and installation instructions meet code requirements for your particular location. Note: WEATHERMATE™ and WEATHERMATE™ Plus Housewraps have already qualified as water-resistive alternatives to the prescribed felt (see Evaluation Reports NER-593 and NER-640 for approved alternative).

STYROFOAM™ Brand Extruded Polystyrene Insulation

CAUTION: This product is combustible. Protect from high heat sources. A protective barrier or thermal barrier may be required as specified in the appropriate building code. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400.

Dow Polyisocyanurate Insulation

CAUTION: This product is combustible and shall only be used as specified by the local building code with respect to flame spread classification and to the use of a suitable thermal barrier. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400.

WARNING: Rigid foam insulation does not constitute a working walkable surface or qualify as a fall protection product.

GREAT STUFF PRO™ Sealants contain isocyanate and a flammable blowing agent. Read the label and Material Safety Data Sheet carefully before use. Eliminate all sources of ignition before use. Wear gloves, and safety glasses or goggles. Provide adequate ventilation or wear proper respiratory protection. Contents under pressure.

FROTH-PAK™ Polyurethane Spray Foam contains isocyanate, hydrofluorocarbon blowing agent and polyol. Read the instructions and Material Safety Data Sheets carefully before use. Wear protective clothing, gloves, goggles or safety glasses, and proper respiratory protection. Supplied air or an approved air-purifying respirator equipped with an organic vapor sorbent and a particle filter may be required to maintain exposure levels below ACGIH, OSHA, WEEL or other applicable limits. Provide adequate ventilation. Contents under pressure.

STYROFOAM™ Brand Spray Polyurethane Foam contains isocyanate, hydrofluorocarbon blowing agent and polyol. Read the instructions and Material Safety Data Sheets carefully before use. Wear protective clothing, gloves, goggles and proper respiratory protection. Supplied air or an approved air-purifying respirator equipped with an organic vapor sorbent and a particle filter is required to maintain exposure levels below ACGIH, OSHA, WEEL or other applicable limits. Provide adequate ventilation. Contents under pressure. STYROFOAM™ Brand SPF should be installed by a trained SPF applicator.

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including Dow can give assurance that mold will not develop in any specific system.

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