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2010 International  
Builders' Show



**Award Winning STYROFOAM SIS™ from Dow**  
**More than Just a Structural Insulated Sheathing**  
**Dean DeWildt, PE**

*Much More than the Industry's First*

**S**tructural  
**I**nsulated  
**S**heathing



# 14 Awards for Innovation and Counting



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*Also the Industry's*

- **Tightest Fitting**
- **Most Water Resistant**
- **Easiest to Install**
- **“Green”est**

*light-framed wall sheathing.*

STYROFOAM SIS™ Brand Structural Insulated Sheathing

**Winning Raves**  
Across the Industry

**Building Products**  
"One of the 21 grand-slam products that will leave you cheering?"

**JLC Construction**  
"An innovative product that helps you work smarter, faster and better"

**Professional Builder**  
"One of the 100 best new products"

**Remodeling 100**  
"An innovation worth watching"

**GreenBuilder** "An innovation worth watching"

**PCBC 2008** "One of this year's coolest home-building products"

**ecohome** Editor's Choice Award

**LBM** Editors Choice - Hot Products

**GreenBuilder TOP 50**

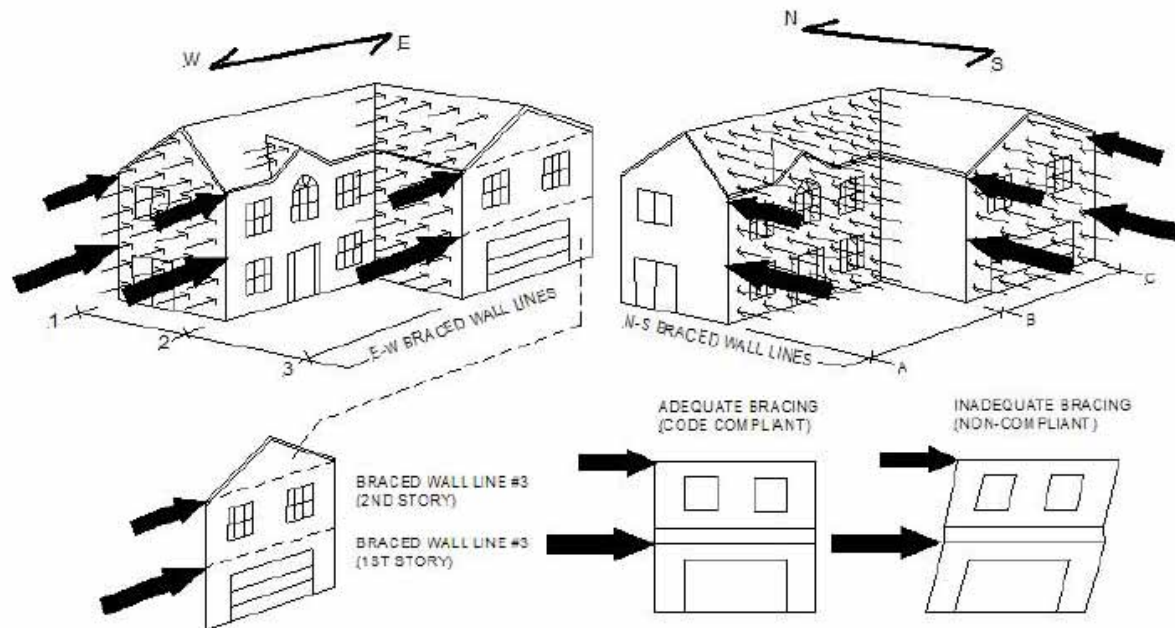
**Home Builder Executive 2009** Green Building Product Awards

**Styrofoam SIS**  
Structural Insulated Sheathing  
Patent Pending

# Structurally Equivalent to IRC Method 3 (OSB) Wall Bracing



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- IRC R602.10.1 IBC 2308.3 – Wall Bracing
- ICC-ES Acceptance Criteria 269 – Racking Shear Evaluation



# 5x the “R” value of Wood Structural Sheathings, To Reduce Conductive Heat Loss



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***Conductive  
heat loss***

# Most Cavity Insulation Holds Moisture, Which Can Lead to Mold and Wood Rot



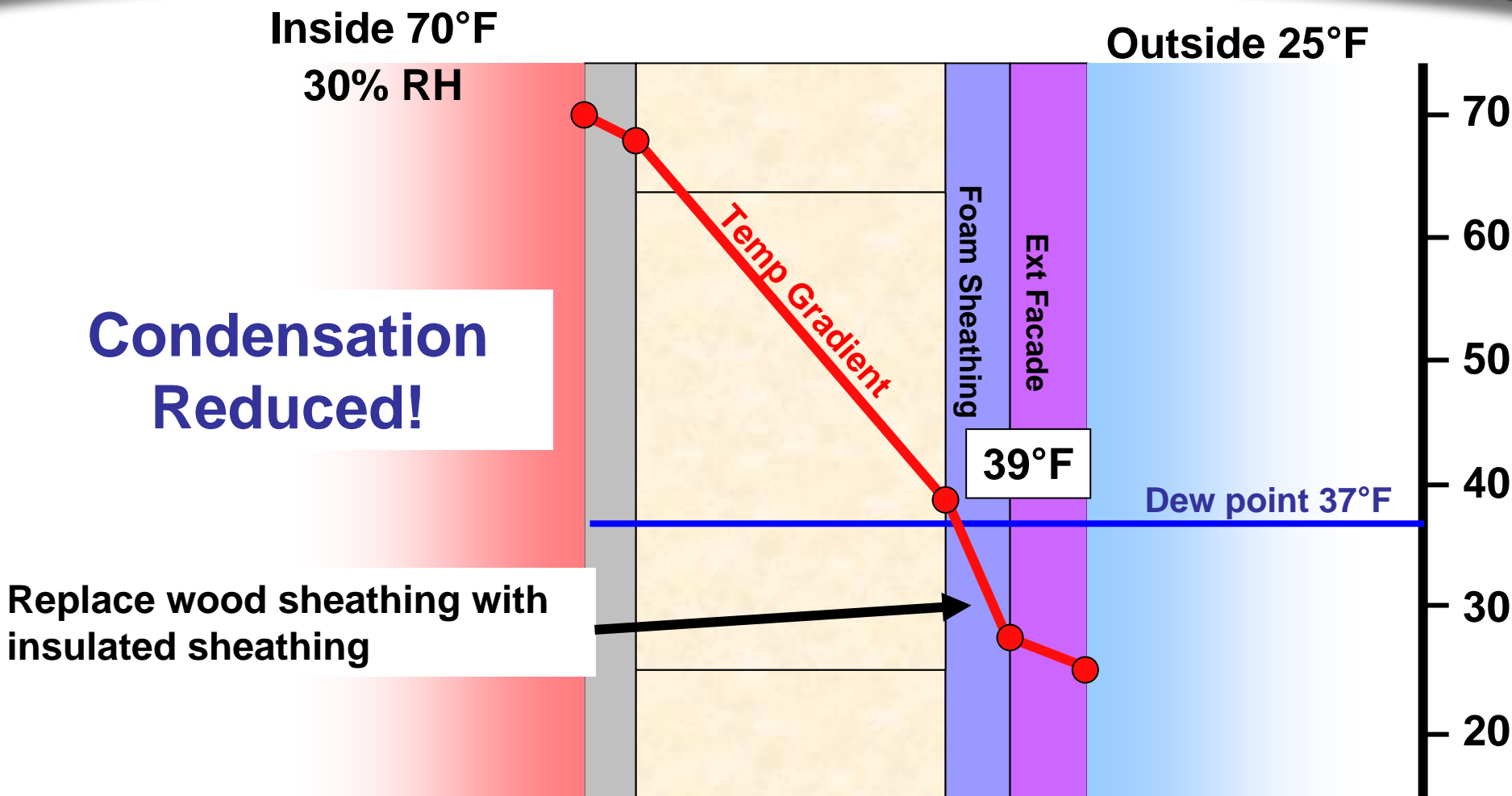
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# And Reduce Condensation Potential in Wall Cavity



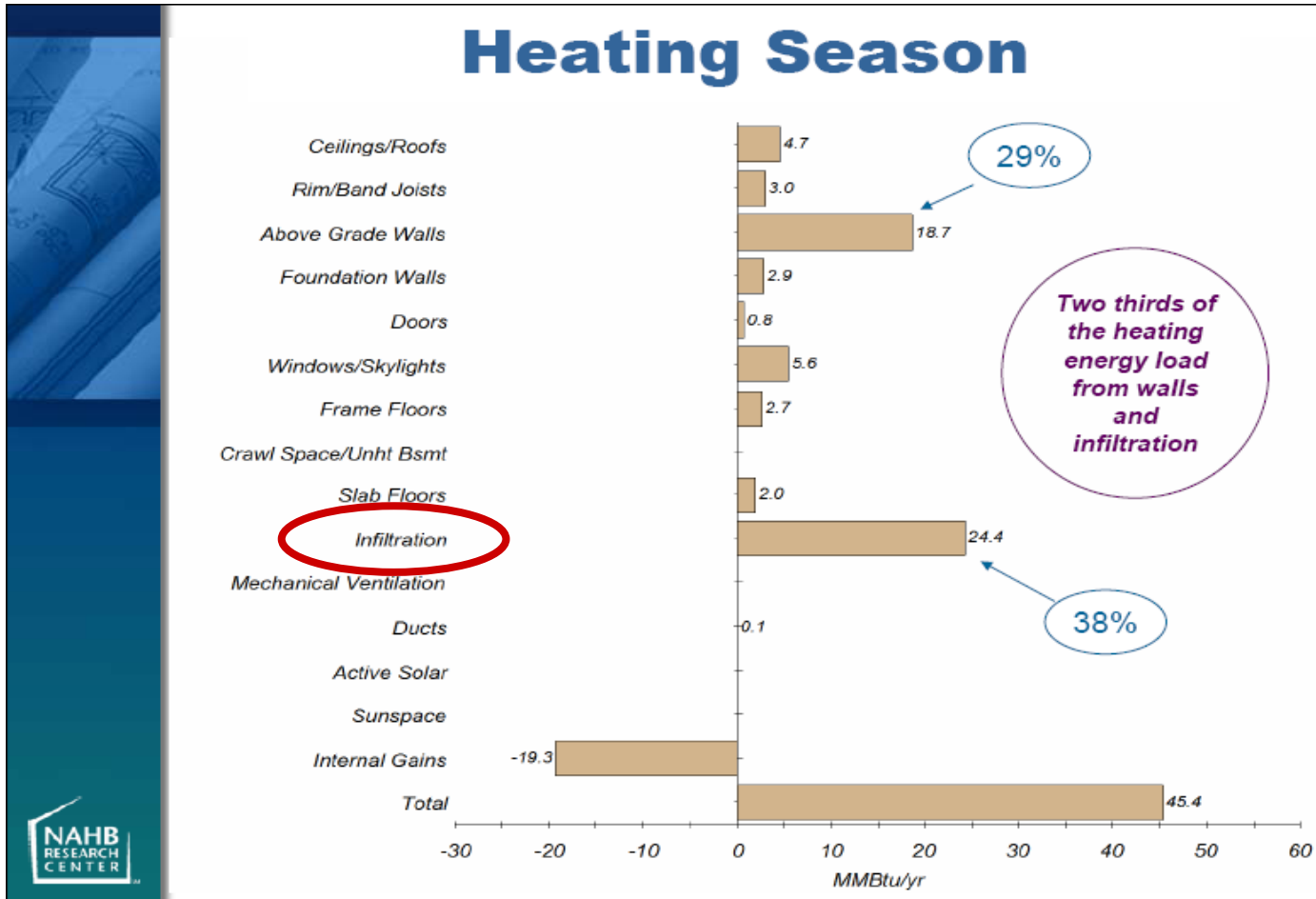
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# 2/3 of Heat Loss Is Through Above Grade Walls. 1/3 due to Infiltration (Convection)



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Source: High Performing Wall Systems, NAHB-RC



# Air Infiltration - Convection Heat Loss



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- **Typical 2,500 sq. ft. home has  $\frac{1}{2}$  mile of cracks and gaps that allow air infiltration. (Air Barrier Association of America)**
- **Enough air escapes from a typical house every day to fill two Goodyear blimps.\*\* Sealing air leaks is the first step in a program to improve the energy efficiency of your home.**



\*\**(source: DOE)*

# Does SIS™ Seal as Well as OSB + House wrap?



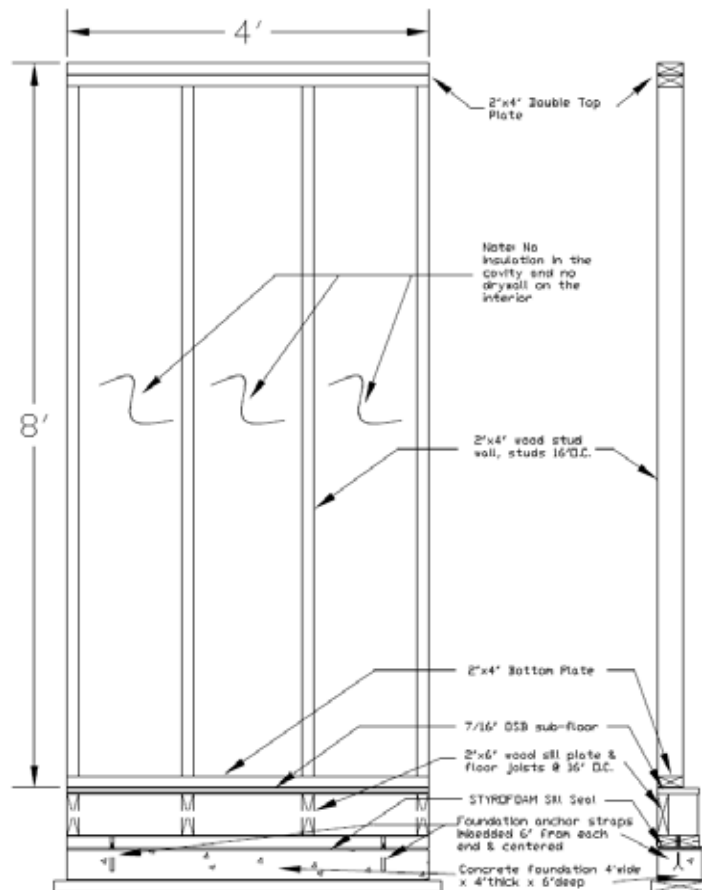
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# ASTM E283 - 3<sup>rd</sup> Party Air Infiltration Testing Wall Assembly



www.dow.com

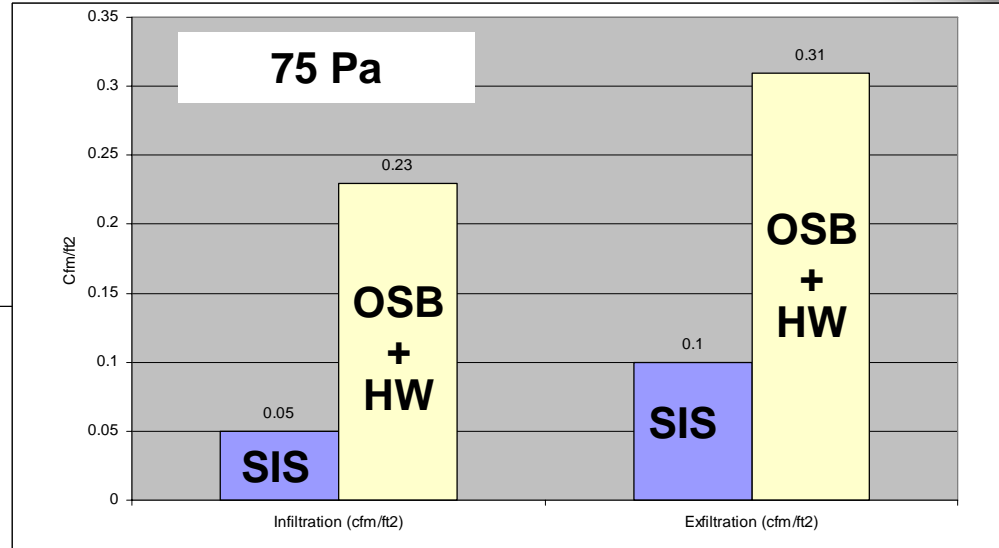
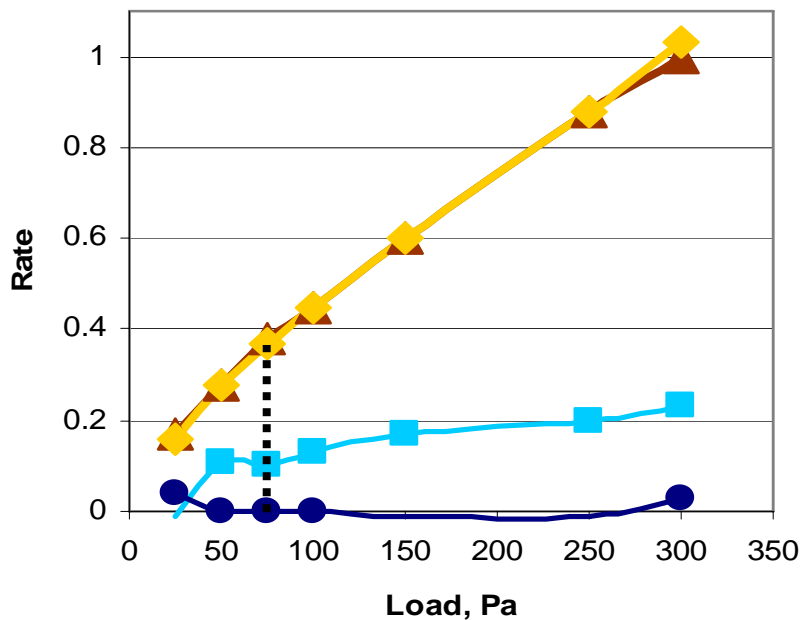


# SIS™ Seals 3x tighter than OSB+HW



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## Negative Air Infiltration



- ▲— OSB/HW
  - ◆— OSB/HW-tp
  - SIS-tp
  - SIS-tp + SPF
- tp: seams taped



# With 1/2" of Closed-Cell Poly Iso Foam Outboard, SIS™ meets the industry's most stringent water testing.



[www.dowsis.com](http://www.dowsis.com)

Test	STYROFOAM SIS™ AC 382	"House wraps" AC 38
Freeze Thaw	X	
Water-resistance (Humidity/Heat)	X	
UV Exposure, Accelerated Aging, Hydrostatic	X	X
Water Absorption	X	
Water Vapor	X	X
Structural, Racking, Restrained Environmental, Water Penetration	X	
Environmental, Racking	X	

# SIS™ Water Resistant Barrier Testing AC 382 - Test #3 (6"x10" Hand Scale)



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## 3) Freeze Thaw – 10 Cycles

- Heating” **120° F**, 8hr
- **Submerge** H<sub>2</sub>O: 70° F, 8hr
- Freeze: **-20° F**, 16hr



Freeze Thaw “after” Picture



PHOTO 4: Small specimens after freeze-thaw testing in accordance with AC212 Section 4.2.

Conditions of Acceptance

*No surface changes or delamination.*

# SIS™ Water Resistant Barrier Testing AC 382 - Test #5 (8'x8' Wall Scale)



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## 5) Environmental, Racking, Water Penetration

### Transverse Load

- 10 load cycles

### Environmental – 5 cycles

- H<sub>2</sub>O Spray, 24hr
- Heating 120F, 24 hr

### Racking

- 10 load cycles

### Water Penetration

- ASTM E331
- 2.86 PSF suction
- 320 gallons/hr spray rate



PHOTO 2: Transverse load test setup

# SIS™ Water Resistant Barrier Testing AC 382 - Test #5 (8'x8' Wall Scale)



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## 5) Environmental, Racking, Water Penetration

### Transverse Load

- 10 load cycles

### Environmental – 5 cycles

- H2O Spray, 24hr
- Heating 120F, 24 hr

### Racking

- 10 load cycles

### Water Penetration

- ASTM E331
- 2.86 PSF suction
- 320 gallons/hr spray rate

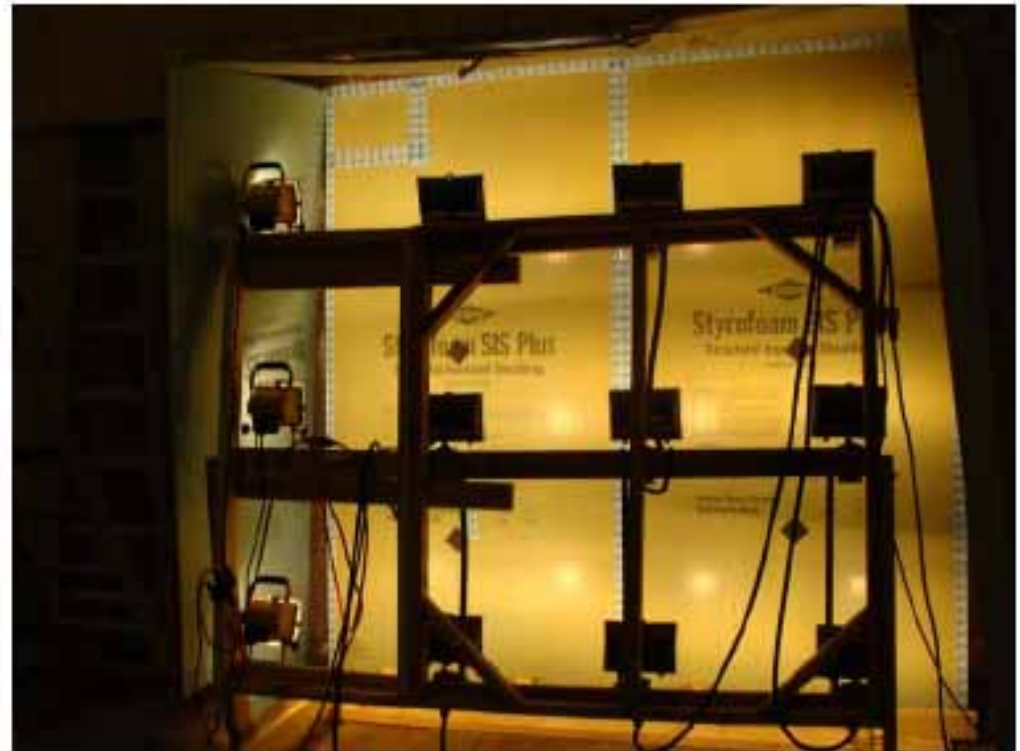


PHOTO 3: Restrained environmental cycling test setup – radiant heating



# SIS™ Water Resistant Barrier Testing AC 382 - Test #5 (8'x8' Wall Scale)



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## 5) Environmental, Racking, Water Penetration

### Transverse Load

- 10 load cycles

### Environmental – 5 cycles

- H2O Spray, 24hr
- Heating 120F, 24 hr

### Racking

- 10 load cycles

### Water Penetration

- ASTM E331
- 2.86 PSF suction
- 320 gallons/hr spray rate



PHOTO 11: General test setup for racking load testing in accordance with ASTM E 72.

# SIS™ Water Resistant Barrier Testing AC 382 - Test #5 (8'x8' Wall Scale)



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## 5) Environmental, Racking, Water Penetration

### Transverse Load

- 10 load cycles

### Environmental – 5 cycles

- H<sub>2</sub>O Spray, 24hr
- Heating 120F, 24 hr

### Racking

- 10 load cycles

### Water Penetration

- **ASTM E331**
- **2.86 PSF suction**
- **320 gallons/hr spray rate**



PHOTO 12: Specimen with spray rack for water penetration testing in accordance with ASTM E 331.

### Conditions of Acceptance

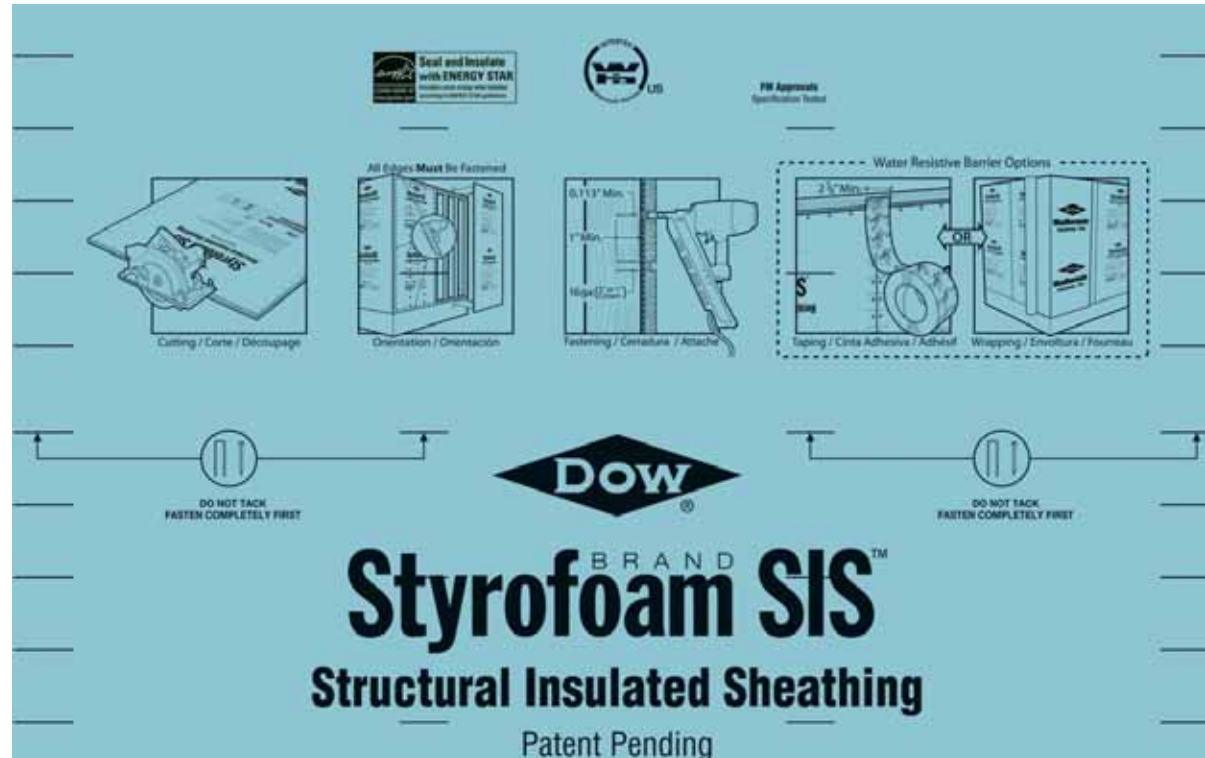
**Zero water penetration after 15 min.**

# Ease of Installation Light Weight & Instructions On Every Sheet



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- ✓ 1/3 Weight of OSB\*
- ✓ Circular Saws
- ✓ Orient foam side out.  
Fasten all edges
- ✓ Use 16 ga 1/2" or 1" crown staples or 0.113 shank nails at 3/6 or 3/3 spacing. Countersinking into foam is allowed.
- ✓ For WRB: Tape sheathing joints with 2-7/8" construction tape or use house wrap



\*Based on 1/2" STYROFOAM SIS™

# High Recycled Content + Energy Savings = **GREEN**



[www.dow.com](http://www.dow.com)

- ✦ **Up to 80% Post Consumer Recycle Content**
- ✦ **\$200 - \$500 Energy Savings\*\***
- ✦ **Light Weight**
- ✦ **Manuf. in Lower Midwestern US**
- ✦ **Excellent for Panelization**



\*\*Savings will vary depending on heating/cooling system, geographical location, energy cost, wall assembly configuration, and thickness of insulation installed.



# STYROFOAM SIS™

## Don't You Deserve More?



[www.dowsis.com](http://www.dowsis.com)

### 1. Structural

- ✓ Lateral Bracing
- ✓ Transverse Loads

### 2. Water Barrier

- ✓ Eliminates House Wrap

### 3. Insulation

- ✓ Conductive loss
- ✓ Air Infiltration

### 4. Sustainability

- ✓ High Recycle Content (80% PCRC)
- ✓ Light Weight (1/3 x OSB)
- ✓ Easy to Install
- ✓ Saves Energy





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