

**PRODUCT SPECIFICATION (CANADA)**



# ICYNENE

**1. PRODUCT NAME**

Icynene® and The Icynene Insulation System® are registered trademarks for light density, open celled, flexible, all water blown Polyurethane foam insulation manufactured by Icynene Inc. Icynene® spray formula is a 8 kg/m<sup>3</sup> (0.5 lbs/ft<sup>3</sup>) density, free rise, open-celled material.

**2. MANUFACTURER**

Icynene® is made on site from liquid components manufactured by Icynene Inc. Installation and on-site manufacturing are supplied by independent Icynene Licensed Dealers.

**3. PRODUCT DESCRIPTION**

Icynene® is a combination insulation and air barrier material. Icynene®'s performance is less installation sensitive than factory manufactured insulation materials. Icynene® is an effective "breathing", (Vapour Permeable), air barrier that can move with the building to maintain the air barrier characteristic against energy-robbing air leakage for the life of the building. Convective air movement inside cavities is virtually eliminated, providing more uniform temperatures throughout the building. The result is superior quality construction, with higher comfort levels and lower heating and/or cooling costs. Energy savings will vary depending on building purpose, design, location, etc.

Icynene® is applied by spraying liquid components into an open wall, crawl space, ceiling surface or cathedral ceiling. There it expands 100:1 in a matter of seconds to provide a flexible foam blanket of millions of tiny air cells, filling building cavities and sealing cracks and crevices in the process. It adheres to virtually all construction materials, and therefore, eliminates air infiltration and or exfiltration through the building envelope. Excess material is easily trimmed or "scarfed", leaving a surface ready for drywall or other finishes.

**4. TECHNICAL DATA**

(Based on Core Samples)

**Thermal Performance**

Thermal resistance R<sub>s</sub>/25.4mm @ 24°C  
(R/in @ 75°F).  
ASTM C518: R<sub>s</sub> 0.66 m<sup>2</sup> °C/W  
(R3.7 hr. ft<sup>2</sup> °F/BTU)

Average insulation contribution in stud wall:  
38mm x 89mm = R<sub>s</sub> 2.3 ( 2" x 4" = R13)  
38mm x 140mm = R<sub>s</sub> 3.5 (2" x 6" = R20)

The Icynene Insulation System® provides improved performance over traditional air permeable insulations at equivalent R-values. Icynene® is not subject to loss of R-value due to aging, windy conditions, settling, convection or air infiltration; nor will it be prone to traditional moisture intrusion via convective air flow.

**Air Permeance/Air Barrier/Air Seal**

The Icynene Insulation System® fills any shaped cavity, and adheres to virtually all building materials, creating assemblies with very low air permeance. Additional interior or exterior air infiltration protection is subject to applicable codes.

Air permeability of core foam:  
ASTM E283 data  
0.0049 L/S-m<sup>2</sup> @75 Pa for 133.4mm (5.25")  
0.0080 L/S-m<sup>2</sup> @75 Pa for 82.6mm (3.25")

All buildings insulated and air sealed with The Icynene Insulation System® must be designed to include adequate mechanical ventilation/air supply. See HRAI (Heating, Refrigeration and Air Conditioning Institute of Canada) Digest, ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers) Guidelines, or other acceptable good engineering practice.

**Water Vapour Permeance**

Icynene® is water vapour permeable and allows moisture to diffuse through the insulation and dissipate from the building envelope. It will not trap moisture in materials to which it is applied.

Water vapor transmission properties:  
ASTM E96 data- (Desiccant Method)  
1218 ng/(Pa•s•m<sup>2</sup>) @ 25.4mm (21 Perms @ 1")  
941 ng/(Pa•s•m<sup>2</sup>) @ 76mm (16 Perms @ 3")  
565 ng/(Pa•s•m<sup>2</sup>) @ 127mm (10 Perms @ 5")

Computer modeling of moisture movement in walls using a program (MOIST) developed by Doug Burch of the National Institute of Standards and Technology (NIST) suggested that a 1.0 perm rating was not required when Icynene® insulation was used, except in climates as cold or colder than 4167 Heating degree days - Based on 18°C. This conclusion was in general agreement with other computer modeling of moisture movement in building envelopes performed in Canada. The inclusion of a vapour barrier material with The Icynene Insulation System® is subject to applicable building codes and where required, a vapour barrier paint is typically recommended.

**Water Absorption Properties**

Icynene® is hydrophobic and therefore does not absorb or wick water. Water can be forced into the foam under pressure because it is open celled. Water will drain by gravity and upon drying, all chemical and physical properties are fully restored.

**Acoustical Properties**

Performance in a 38mm x 89mm wood stud wall @ 400mm O.C., Single layer 15.9mm gypsum (2"x4" wood stud wall @16" OC, Single layer 5/8" gypsum):

STC Sound Transmission Class - 37
Hz. Freq. 125 250 500 1000 2000 4000
ASTM E90 19 30 31 42 38 46

NRC Noise Reduction Coefficient - 70
Hz. Freq. 125 250 500 1000 2000 4000
ASTM C423 .11 .43 .89 .72 .71 .67

**Burn Characteristics**

Icynene® is a combustible product and is therefore, consumed by flame, but will not sustain flame upon removal of the flame source. It leaves a charcoal residue. It will not melt or drip. The Icynene Insulation System® is subject to all applicable National and or Provincial building codes regarding fire prevention and requirements for Thermal Barrier coverings must be met as per the applicable building code having jurisdiction.

CANADA Specifications  
CAN/ULC-S127-04  
Flame Spread (FSC2) 450  
CAN/ULC-S102  
Smoke Development 275



## ICYNENE® – Spray Formula

### Electrical Wiring

Icynene® has been evaluated with both 14/3 and 12/2 residential wiring (max. 50°C/122°F). It is chemically compatible with standard electrical wiring coverings. Note: For any insulation of knob and tube wiring, please reference local electrical code.

### Corrosion

Icynene® did not cause corrosion when evaluated in contact with steel, under 85% RH and 48 ± 3°C (119 ± 38°F)

### Bacterial or Fungal Growth and Food Value

Independent testing conducted by Texas Tech University has confirmed that Icynene® is not a source of food for mould; and as an air barrier, Icynene® reduces the airborne introduction of moisture, food, and mould spores into the building envelope. It has no food value for insects.

### Environmental / Health / Safety

Icynene® contains no formaldehyde or PBDE's. It has been thoroughly evaluated for in-situ emissions by industry and government experts. VOC emissions are below 1/100th of the safe concentration level (TLV) within hours following the application of Icynene®.

A one-day occupancy period is recommended after installation of The Icynene Insulation System® as per The University of Saskatchewan Toxicological report. Not intended for exterior use. Not to be installed within 75mm (3") of heat emitting devices, where the temperature is in excess of 70°C (158°F), or in accordance with applicable codes.

### 5. INSTALLATIONS

The Icynene Insulation System® is installed by a network of Licensed Dealers, trained in the installation of Icynene®. Installation is generally independent of environmental conditions. It can be installed in hot, humid or freezing climates where appropriate measures are taken to ensure proper application of the foam.

### 6. AVAILABILITY

Check regional Yellow Pages™ or contact Icynene Inc. at 800-758-7325 or our website at [www.icynene.com](http://www.icynene.com).

### 7. WARRANTY

WHEN INSTALLED PROPERLY IN ACCORDANCE WITH INSTRUCTIONS, THE COMPANY WARRANTS THAT THE PROPERTIES OF THE PRODUCT MEET PRODUCT SPECIFICATIONS AS OUTLINED IN THIS PRODUCT SPECIFICATION SHEET.

### 8. TECHNICAL

Icynene Licensed Dealers and Icynene Inc. provide support on both technical and regulatory issues.

### 9. REGULATORY

For regulatory issues concerning The Icynene Insulation System® in Canada please see CCMC (Canadian Construction Materials Centre) Evaluation Report I2070-R, The NBCC (National Building Code of Canada) or applicable Provincial Building Codes.

### 10. RELATED REFERENCES

All physical properties were determined through testing by accredited third party agencies. Icynene Inc. reserves the right to change specifications in its effort of continuous improvement. Please confirm that technical data literature is current.

### 11. PACKAGING AND STORAGE

Packaging -208 L (55 U.S. gallon) open top steel drums

Component 'A' -250kg (550 lb.) per drum  
Base Seal® - Polyisocyanate MDI  
Component 'B' -226 kg (500 lb.) per drum  
Gold Seal® - Resin

#### Storage

Base Seal® (Component A) and Gold Seal® (Component B) ideally should be stored between 15°C (60°F) and 32°C (90°F). Base Seal® (Component A) should be protected from freezing and Gold Seal® (Component B) will separate during storage and must be mixed thoroughly prior to use.

### 12. INSTALLATION SPECIFICATIONS

Refer to the Icynene Installer's Manual for expanded information.



## The Icynene Insulation System®

Healthier, Quieter, More Energy Efficient®

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