

PRODUCT SPECIFICATION



ICYNENE™

1. PRODUCT NAME

Icynene® is a registered trademark for polyicynene insulation manufactured by Icynene Inc. Icynene® pour fill formula is a 1/2 lb 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 is supplied by independent Icynene Licensed Dealers.

3. PRODUCT DESCRIPTION

Icynene® insulates and air seals at the same time. Its performance is less installation sensitive than factory manufactured insulation materials. It is an effective “breathing” air barrier that can adjust with the building to maintain a seal 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 cooling costs. Energy savings vary depending on building design, location, etc.

Icynene® pour fill material is applied by injecting liquid mixture through holes into a closed cavity. There it expands 60:1 in just minutes to provide a flexible foam blanket of millions of tiny air cells, completely filling building cavities and sealing cracks and crevices in the process. It adheres to virtually all surfaces, sealing out air infiltration.

4. TECHNICAL DATA

(Based on Core Samples)

Thermal Performance

Thermal resistance R/in. (Rsi/25mm)
 ASTM C518: R4.0 hr. ft² °F/BTU
 Rsi 0.7 m² °C/W

Average insulation contribution in stud wall:
 2" x 4" = R14 2" x 6" = R22

Icynene® provides more effective performance than the equivalent R-value of air permeable insulation materials. Icynene® is not subject to loss of R-value due to aging, windy conditions, settling, convection or air infiltration; nor is it likely to be affected by moisture related conditions. A FACT SHEET with R-value data is available upon request.

Air Permeance/Air Barrier / Air Seal

Icynene® fills any shaped cavity, and adheres to most construction materials, creating assemblies with very low air permeance.

Air permeability of core foam:
 ASTM E283 data
 0.0049 L/S-m² @75 Pa for 5.25"
 0.0080 L/S-m² @75 Pa for 3.25"

In all buildings, adequate mechanical ventilation/air supply should be provided for optimum IAQ (Indoor Air Quality). See ASHRAE guidelines.

Water Vapor Permeance

Icynene® is water vapor permeable and allows structural moisture to diffuse and dissipate. It will not entrap moisture in materials to which it is applied.

Water vapor transmission properties:
 ASTM E96 data
 6 perms 360 ng/(Pa•s•m²) @ 3" (76mm) thick
 4 perms 240 ng/(Pa•s•m²) @ 5" (127mm) thick

Because of its low air permeance, Icynene® is not infiltrated by moisture-laden air. 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 vapor retarder was not required when Icynene® insulation was used, except in climates as cold or colder than Madison, Wisconsin (7500 Heating degree days). This conclusion was in general agreement with other computer modeling of moisture movement in building envelopes performed in Canada. In those situations that warrant a vapor barrier, the use of low vapor permeable paint on the interior drywall is adequate.

Water Absorption Properties

Icynene® is hydrophobic and does not exhibit capillary properties. It does not wick and is water repellent. Water can be forced into the foam under pressure because it is open celled. Water will drain by gravity rather than travel horizontally or vertically through the foam. Upon drying, thermal performance is fully restored.

Acoustical Properties

Performance in a 2"x4" wood stud wall:
 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

Actual performance is superior than reported test results because of Icynene®'s ability to control air leakage.

Burn Characteristics

Icynene® will be 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. It must be applied in accordance with applicable building codes.

<u>U.S.A. Specifications</u>	
Surface Burning Characteristics of Icynene® ASTM E84	
Flame spread*	<20
Smoke Development	<400
Fuel contribution	0
Oxygen Index ASTM D2863	23%
*Flame spread rating not intended to reflect hazards under actual fire conditions.	

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

Electrical Wiring

Icynene® has been evaluated with both 14/3 and 12/2 residential wiring (max. 122°F/50°C). It is chemically compatible with all 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% relative humidity conditions.

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 mold; and as an air barrier, Icynene® reduces the airborne introduction of moisture, food, and mold spores into the building envelope. It has no food value for insects or rodents.

Environmental / Health / Safety

Icynene® contains no PBDEs and has no detectable VOCs after 30 days. It has been thoroughly evaluated for in-situ emissions by industry and government experts. VOC emissions are below 1/100 of the safe concentration level within hours following the application of Icynene®. A 24 HR waiting period is recommended for highly sensitive people prior to occupancy.

Not intended for exterior use. Not to be installed within 2" (50 mm) of heat emitting devices, where the temperature is in excess of 200°F (93°C).

5. INSTALLATIONS

Icynene® 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 conditions. Surface preparation is generally not necessary. Within minutes, the foaming process is complete.



ICYNENE™

HEALTHIER, QUIETER, MORE ENERGY EFFICIENT*

Telephone: 905.363.4040
Toll Free: 800.758.7325
Facsimile: 905.363.0102
Website: www.Icynene.com
E-mail: inquiry@Icynene.com

6. AVAILABILITY

Check regional yellow pages or contact Icynene Inc. at 800-758-7325 or our website at 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. Architectural specifications in CSI 3-Part format are available upon request.

9. 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 to enhance quality features. Please confirm that technical data literature is current.

10. PACKAGING AND STORAGE

Packaging - 55 U.S. gallon open top steel drums

Component 'A' - 550 lb. per drum
Base Seal® - Polyisocyanate MDI

Component 'C' - 500 lb. per drum
Gold Seal® - Resin

Storage

Component A should be protected from freezing.

Component C can be frozen but must be protected from overheating (120°F/49°C) and prolonged storage above 100°F/38°C. Component C separates during storage and should be thoroughly mixed prior to use.

11. INSTALLATION SPECIFICATIONS

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

