

**PRODUCT SPECIFICATION**

**1. PRODUCT NAME**

**ICYNENE LD-R-50®**

ICYNENE LD-R-50® is a trademark for renewable based, light density, open celled, flexible, 100% water-blown polyurethane foam insulation manufactured by Icynene Inc. ICYNENE LD-R-50® is a nominal 0.5 lbs/ft<sup>3</sup> density, free rise material.

**2. MANUFACTURER**

ICYNENE LD-R-50® 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’s next generation of high performance products, ICYNENE LD-R-50® is a renewable based, 0.5 lb/ft<sup>3</sup>, 100% water-blown foam insulation and air barrier material. ICYNENE LD-R-50® exceeds ICC-SAVE and USDA BioPreferred<sup>SM</sup> standards for a renewable based product.

Using high-yield castor oil, a safe, natural ingredient also found in personal care products such as lip balm, ICYNENE LD-R-50® reduces the need for petroleum-based polyol.

ICYNENE LD-R-50® insulates and air-seals in one step for maximum energy conservation while minimizing the environmental impact during manufacturing and construction. Significantly reducing air leakage means ICYNENE LD-R-50® contributes to a healthier, quieter and more comfortable indoor environment, while reducing energy consumption and related greenhouse gas emissions by as much as 50%.

ICYNENE LD-R-50® is an effective vapor permeable air barrier material 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 wall 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 design, location, etc.

ICYNENE LD-R-50® is applied by spraying liquid components onto an open wall, crawl space, ceiling surface or cathedral ceiling. There it expands approximately 100:1 in seconds to provide a flexible foam blanket

of millions of tiny air cells, filling building cavities, cracks and crevices in the process. It adheres to most construction materials, sealing out air infiltration. Excess material is easily trimmed off, leaving a surface ready for drywall or other code-compliant finish.

**4. TECHNICAL DATA**

(Based on Core Samples)

**Renewable Content**

(ASTM D6866) ≥ 7%

**Thermal Performance**

Thermal resistance (ASTM C518)

- R/in = R3.7 hr. ft<sup>2</sup> °F/BTU

Average insulation contribution in a full fill stud wall:

- 2” x 4” = R13

- 2” x 6” = R20

ICYNENE LD-R-50® provides more effective performance than the equivalent R-value of air permeable insulation materials. ICYNENE LD-R-50® 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 air leakage.

A FACT SHEET with R-value data is available upon request.

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

ICYNENE LD-R-50® fills any shaped cavity, and adheres to most construction 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

- <0.02 L/s·m<sup>2</sup> @ 75 Pa for 3”

ASTM E2178

- 0.007 L/s·m<sup>2</sup> @ 75 Pa for 5.5”

All buildings insulated and air-sealed with ICYNENE LD-R-50® must be designed to include adequate mechanical ventilation/ outdoor air supply. See ASHRAE Standard 62 – Ventilation for Acceptable Indoor Air Quality.

**Water Vapor Permeance**

ICYNENE LD-R-50® is water vapor permeable and allows moisture to diffuse through the insulation and dissipate from the building envelope.

Water vapor transmission properties: (ASTM E96 Desiccant Method)

- 17 Perms @ 2”

In those situations that warrant a vapor retarder, a supplemental layer of polyethylene may be used. Alternately, low vapor permeance paint either directly on the foam or as a primer for the interior drywall may be used.

**Water Absorption Properties**

Water can be forced into the foam under pressure because it is open celled. Water will drain by gravity, given favorable drying potential and upon drying; all chemical and physical properties are fully restored.

**Burn Characteristics**

ICYNENE LD-R-50® is a combustible product and is therefore, consumed by flame, but will not sustain flame upon removal of the flame source. It leaves a charred foam residue. It will not melt or drip. ICYNENE LD-R-50® is subject to all applicable National/State and County building codes regarding fire prevention. Requirements for Thermal Barrier and Ignition Barrier coverings must be met as per the applicable building code having jurisdiction.

U.S. Fire Testing

Surface Burning Characteristics (ASTM E84) @ 4” thickness

Flame Spread ≤25

Smoke Development ≤450

\*Flame spread rating not intended to reflect hazards under actual fire conditions.

**Plastic Piping**

ICYNENE LD-R-50® is compatible in direct contact with CPVC piping systems, as per Paschal Engineering Study for the Spray Polyurethane Foam Alliance (SPFA).

**Bacterial or Fungal Growth and Food Value**

Independent testing conducted as per ASTM C1338 showed that ICYNENE LD-R-50® is not a source of food for mold; and as an air barrier material, ICYNENE LD-R-50® resists the airborne introduction of moisture, nutrients, and mold spores into the building envelope.

**Environmental / Health / Safety**

ICYNENE LD-R-50® is 100% water-blown and therefore contains no ozone-depleting blowing agents. It is also PBDE-free. 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 ICYNENE LD-R-50®.

Proper handling and use is required to avoid exposure to reactive chemicals in their unreacted state. For more information, contact the Spray Polyurethane Foam Alliance or the American Chemistry Council. Newly insulated areas have been shown to be safe for occupancy 12 hours after installation is complete.

ICYNENE LD-R-50® is CHPS E.Q. 2.2/ Section 01350 Compliant and listed as such in the Collaborative for High Performance Schools (CHPS) Low Emitting Materials (LEM) Table. Under LEED guidelines, products that are CHPS E.Q. 2.2/Section 01350 Compliant are considered Environmentally Preferable Products.

The reaction used to create ICYNENE LD-R-50® generates Carbon Dioxide to expand the foam. Carbon Dioxide has a very low Global Warming Potential (GWP of 1).

Not intended for exterior use. Not to be installed within 3” of heat emitting devices or where the temperature is in excess of 180°F, or in accordance with applicable codes.

**5. INSTALLATION**

ICYNENE LD-R-50® is installed by a network of Licensed Dealers, trained in the installation of ICYNENE LD-R-50®. Installation is generally independent of environmental conditions. ICYNENE LD-R-50® can be installed in hot, humid or freezing conditions. Surface preparation is generally not necessary. Within seconds, the foaming process is complete.

For information on Health and Safety, refer to the Spray Polyurethane Foam Alliance Health and Safety guidance documents at [www.spraypolyurethane.com](http://www.spraypolyurethane.com)

**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) for a local Icynene Licensed Dealer.

**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. SAVE AND EXCEPT ANY EXCLUSIONS REFERENCED IN THE WARRANTY.

**8. TECHNICAL**

Icynene Licensed Dealers and Icynene Inc. provide support on both technical and regulatory issues. Architectural specifications in CSI 3-Part format and design details are available upon request.

**9. REGULATORY**

ICYNENE LD-R-50® has been tested as per the requirements of the International Code Council – Evaluation Service’s AC308 Acceptance Criteria (June 2009).

The following evaluation reports apply to this product:

- ICC ESR-2715

Based on 3rd party test evidence that was submitted this product was found to comply with:

- IRC – 2006 – 2009
- IBC – 2006 – 2009
- IECC – 2006 – 2009

when installed in suitable thicknesses and assemblies listed in the ESR report.

**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	55 U.S. gallon steel drums
Component ‘A’	550 lb. per drum
	Base Seal® MDI
Component ‘B’	500 lb. per drum
	ICYNENE LD-R-50® Resin

**Storage**

Component A, Base Seal® MDI and Component B, ICYNENE LD-R-50® Resin ideally should be stored between 60°F and 90°F.

Component A, Base Seal®, should be protected from freezing.

Component B, ICYNENE LD-R-50® Resin, can be frozen but must be protected from overheating 120°F and prolonged storage above 100°F.

Component B, ICYNENE LD-R-50® Resin, may separate during storage and should be mixed thoroughly prior to use.

**12. INSTALLATION SPECIFICATIONS**

Must be installed by Icynene Licensed Dealers. Refer to the Icynene Installer’s Manual for expanded information.



**ICYNENE®**

Telephone: 905.363.4040  
 Toll Free: 800.758.7325  
 Facsimile: 905.363.0102  
 Website: [www.Icynene.com](http://www.Icynene.com)  
 E-mail: [inquiry@Icynene.com](mailto:inquiry@Icynene.com)

