

ICYNENE[®]

PRIME^{NM}

Code Compliance: UES 1007 | Dr. J 2011-01 (W-Wall)
[Click Here For Supporting Documents](#)
Product Does Not Require Mixing. DO NOT circulate or mix other supplier's "A" or "B" components into Icynene[®] Prime NM containers.
PHYSICAL PROPERTIES

ASTM D1622	Density	0.5 lb./ft ³		
ASTM C518	Aged Thermal Resistance (R-value / ft ² h°F/BTU)	3.9 @ 1 inch	13 @ 3.5 inches	21 @ 5.5 inches
ASTM E283	Air Permeance	<0.003 L/sm ² @ 3.5 inches		
ASTM E96	Water Vapor Permeance @ 3.5 inches	<10 perms		
CAN/ULC-S774-09	VOC Emissions Standard	24 hr. re-occupancy time (see page 3 for detailed information)		
ASTM D1621	Compressive Strength	1.39 psi		
ASTM D1623	Tensile Strength	4.2 psi		
ASTM C1338	Fungi Resistance	Pass		

FIRE TEST RESULTS

ASTM E84	Surface Burning Characteristics, Class A Flame Spread Index Smoke Developed	Class A <25 <450
AC 377 Appendix X	Ignition Barrier – Compliant with IBC and IRC, and ICC-ES AC377 AC 377 Appendix X – Appendix X, for use in attics and crawl spaces. See page 2 for more details.	Pass
NFPA 286	Thermal Barrier – Compliant with the 2012, 2015, 2018, 2021, & 2024 IBC and IRC, as an interior finish with a 15 minute thermal barrier. See page 2 for more details.	Pass

LIQUID COMPONENT PROPERTIES*

Property	A-Side (ISO)	B-Side (Resin)
Color	Brown	Amber
Viscosity @77°F	180-220cps	150-300cps
Specific Gravity	1.24	1.16
Shelf Life of Unopened Properly Stored Drum	12 months	6 months
Storage Temperature	50-100°F	50-100°F
Mixing Ratio (Volume)	1:1	1:1

REACTIVITY PROFILE

Cream Time 1-2 seconds	Gel Time 3-4 seconds	Tack Free Time 6-7 seconds	End of Rise 6-7 seconds
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*See SDS for more information



THERMAL BARRIER

IRC and IBC codes require that SPF be separated from the interior (Habitable Space and Storage) of a building by an approved thermal barrier, such as 1/2 inch gypsum wall board or equivalent.

Alternatives to the prescriptive thermal barrier requirement:

- Approved coverings, typically intumescent paints, are based on fire tests specific to the SPF application. For example, covering systems that successfully pass large scale tests.
- SPF protected by 1 inch thick masonry does not need a thermal barrier.

ALTERNATIVE THERMAL BARRIER COATINGS				
Intumescent Coating Name	Minimum Thickness		Max Thickness (inches) (Underside of Roof)	Max Thickness (inches) (Wall Cavities)
DC 315 (IFTI)	18 wet mil	13 dry mil	12	8

IGNITION BARRIER

Fire protection requirements can be reduced from a thermal barrier to ignition barrier in limited-access spaces (certain attics and crawlspaces). Ignition barriers are used when the SPF is applied in areas that are not considered living/storage areas and in areas that do not communicate with living/storage areas. IRC and IBC codes recognize ignition barriers such as, but not limited to, 1/4 inch wood structural panels (plywood), 3/8 inch gypsum board or equivalent.

There are alternatives to the prescriptive ignition barrier requirement:

- Approved coverings, typically intumescent paints, are based on fire tests specific to the SPF application. For example, covering systems that successfully pass large scale tests.

ALTERNATIVE IGNITION BARRIER COATINGS				
Intumescent Coating Name	Minimum Thickness		Max Thickness (inches) (Underside of Roof)	Max Thickness (inches) (Wall Cavities)
DC 315 (IFTI)	6 wet mil	4 dry mil	16	8

Icynene Prime NM B(Resin)-Side: Mixing is not required but it is suggested during recirculation to assist in creating a uniform temperature throughout the drum if this method is used for the heating of material. Gentle mixing during the entire spray process will not damage material.

Additional product information can be found on the Huntsman Building Solutions website at www.huntsmanbuildingsolutions.com. Refer to the following documents plus this Technical Data Sheet to establish processing parameters for varying substrate and climatic conditions:

- Center for Polyurethane Industries, Guidance on Best Practices for the Installation of Spray Polyurethane Foam.
- Icynene® Prime NM B-Side Safety Data Sheet (SDS)
- Icynene® Prime NM A-Side Safety Data Sheet (SDS)
- Icynene® Prime NM Finished Foam Safety Data Sheet (SDS)

DISCLAIMER

The data presented herein is not intended for use by non-professional applicators, or those persons who do not purchase or utilize this product in the normal course of their business. The potential user must perform any pertinent tests in order to determine the product's performance and suitability in the intended application, since final determination of fitness of the product for any particular use is the responsibility of the buyer.

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Guidance For Product Application

VENTILATION

The Occupational Safety and Health Administration (OSHA) requires that engineering controls such as ventilation and enclosures be used to reduce worker exposures to acceptable levels during the installation of Spray Polyurethane Foam. During and after spray application, vapors and mists, as well as particulates and dust from trimming the foam, may linger until the area is ventilated and fully cleaned. Each job site must be evaluated to determine appropriate ventilation system design. According to OSHA regulations, SPF contractors have a legal responsibility to provide a safe workplace for all their employees. In the case of high-pressure SPF application, use of engineering controls and proper PPE in the work zone during and immediately after spraying is an important consideration to help achieve a safe workplace. The effectiveness of a ventilation system is determined by the design of the containment zone and the ventilation rate. Use Icynene® Prime NM recommended containment ventilation rate.

For more information on Ventilation Considerations for Spray Polyurethane Foam, [click here](#).

ICYNENE® PRIME NM VENTILATION RATE		
Ventilation Rate ACH (Air Changes Per Hour)	Re-Entry Period For Sprayers, Helpers, informed trade workers and contractors	Re-Occupancy Period For all others
20 ACH	1 Hour	4 Hour
0.3 ACH	Not Applicable	24 Hour

GENERAL REQUIREMENTS

Icynene® Prime NM is to be installed by approved contractors using maintained and functioning equipment.

SEASONALITY PRODUCT DESCRIPTION**			
Season	Temp Range	Product Code	Drum Temp at Processing
Summer	50° - 120°F	SPRIMENMS-DC	88°-100°F
Winter	23° - 60°F	SPRIMENMW-DC	88°-100°F

**During Transition Times (spring to summer / fall to winter) may require having BOTH Summer and Winter products on rig.

Equipment:

- Use only fixed ratio (one-to-one), volumetric positive displacement pumps connected to a common drive or gear driven systems insuring a one-to-one ratio. Mixing of Icynene® Prime NM B-Side (Resin) material is not required but is suggested during chemical re-circulation to assist in creating a uniform temperature throughout the drum if this method (re-circulation) is used for the heating of the material. Gentle mixing during the entire spray process will not damage material. The A-Side (ISO) material should not be mixed.
- Follow the spray equipment manufacturer's safe operation guidelines. Every spray unit is slightly different; you will need to adjust your primary heater and hose temperatures accordingly. Adjust your processing pressures and application technique for an appropriate spray pattern for the substrate and structure.

Ratio Assurance Type Softwares:

- Huntsman Building Solutions concurs with allowing a variance of a maximum ratio of 5%. Any deviance from that should be addressed immediately before continuing the installation. ***It should be noted that such tools and information are merely aids to spray foam contractors.***

Foam application temperatures and pressures can vary widely depending on temperature, humidity, elevation, substrate, equipment and other factors. While processing, the applicator must continuously observe the characteristics of the sprayed foam and adjust processing temperatures and pressures to maintain proper cell structure, adhesion, cohesion and general foam quality. IT IS THE SOLE RESPONSIBILITY OF THE APPLICATOR TO PROCESS AND APPLY ICYNENE® PRIME NM WITHIN SPECIFICATION.

For additional assistance, contact the Huntsman Building Solutions Technical Service Department at HBStechservice@huntsman.com.

CHEMICAL CONDITIONING

Before processing Icynene® Prime NM the B-Side (Resin) chemical needs to be warm enough for the primary heater to elevate the drum temperature to the final processing point. The chemical drums should be stored and maintained between 50°-100°F before processing at the job site. The chemicals should be heated from storage temperature to the final "conditioned" temperature by circulation through the proportioner and hoses. Circulation through the proportioner and hoses also helps to make sure the product is well mixed in the drum.

RECOMMENDED PROCESSING PARAMETERS	A-SIDE (ISO)	B-SIDE (RESIN)
Storage Temperatures	50° - 100°F	50° - 100°F
Re-circulation Temperature Set Point (prior to use)	90° - 125°F	90° - 125°F
Drum Temperature for Spray Processing	88° - 100°F	88° - 100°F
Equipment Pressures for Spray Processing	1000 - 1500psi	1000 - 1500psi
Equipment Primary Heater Setpoint	115° - 145°F	115° - 145°F

Guidance For Product Application

SUBSTRATE AND AMBIENT CONDITION CONSIDERATIONS***	
Ambient and Substrate Temperatures	23°F - 120°F
Substrate Dew Point (<i>Substrate surface temperature needs to be a minimum of 5°F above the dew point</i>)	>5°F
Humidity (Best Results)	<80%
Substrate Moisture Content (Concrete)	Dry to touch
Substrate Moisture Content (Wood)	<19%
Maximum Service Temperature	180°F
UV Stability	Not UV Stable may cause surface discoloration

***Substrate must also be free of moisture (dew or frost), grease, oil, solvents and other materials that would adversely affect adhesion of Icynene® Prime NM.

SUBSTRATE PREPARATION

All surfaces to be sprayed must be free of oil, grease, waxes, rust scale, loose dirt and water. In addition, the substrate must be structurally sound. Some metal surfaces may require sandblasting and priming prior to foam spraying to ensure adequate adhesion. Consult Huntsman Building Solutions Technical Service Representative for additional information on surface preparation. **When in doubt about the potential for adhesion to a substrate, build a mock-up and spray the foam under similar conditions to that expected in the field, then test for adhesion and cohesion.**

SUBSTRATE PREPARATION RECOMMENDATIONS FOR BEST ADHESION RESULTS	
Applying foam insulation to concrete: - Concrete and masonry must be fully cured and “dry to touch.” - Oils – wash with detergent and allow to dry - Salt or calcium deposits – wash with detergent and allow to dry - Muriatic acid can be an effective cleaning agent for preparing concrete substrates prior to spraying foam. Follow the label instructions for dilution and application.	Applying foam insulation to galvanized steel: - Oils or passivators – clean with solvent, wash with water based cleaner/degreaser, brush blasting may be necessary. - Do not use hydrocarbon solvents like mineral spirits to clean galvanized metal. - White rust – wire brushing or scrubbing with a stiff brush or abrasive pad. - Prime using a DTM (direct to metal) bonding primer suitable for galvanized metal.
Applying foam over bare steel/metal: - Rust scales – wire brushing or scrubbing with a stiff brush or abrasive pad. - Corrosion – clean then prime with suitable bonding primer. - Glossy or very smooth surfaces – sand or abrade surfaces.	Applying foam over stainless steel: Oils – wash with mineral spirits and then prime with a suitable primer. Brush blasting, sanding or abrading may be necessary as foam requires a mechanical bond.
Applying foam over aluminum: Oils, Hydrated Alumina – clean with solvent, never use a caustic solution, and prime with a high adhesion bonding primer suitable for aluminum.	Applying foam over glass: - Oils – wash with detergent - Glossy or very smooth surfaces – sand or abrade surfaces. - UV degradation – prime glass surface with suitable primer.
Applying foam over previously painted surface: Glossy surfaces – sand or abrade surfaces.	Asphalt and Tar: Solvents – allow to cure and for solvent to evaporate, prime with suitable primer.
Rigid Polyurethane Foam: UV degradation – remove surface of foam with wire brush or wire grinding wheel.	Polypropylene, polyethylene, some silicones & some ceramic surfaces: Icynene® Prime NM may not adhere without a mechanical attachment to these substrates.

Guidance For Product Application

APPLICATION METHODS AND PROCESSING TIPS

One proven method of applying Icynene[®] Prime NM is to spray perpendicular (90-degree angle) to the substrate, starting at the bottom of the cavity, holding the gun 10-14 inches away from the substrate and wetting the substrate and the vertical framing members while slowly working toward the top of the cavity. This technique also helps minimize over spray. Applying at an angle with the gun directed into the reacting mass may cause lack of adhesion, blisters, blow-off, excessive overspray, and an irregular surface finish which may affect yield and create unacceptable physical properties of the finished insulation product. Always spray perpendicular to the surface in a minimum 3 inch lift. There is no maximum thickness due to physical properties, so Icynene[®] Prime NM can be sprayed as thick as needed in a single pass without signs of blowing off from the reacting mass. Thin foam layers often result in poor physical properties, and poor chemical reaction due to low exothermic heat generated from the chemical reaction, which is needed to create proper cell formation. If touch-ups or subsequent passes are needed to achieve the prescribed thickness, allow the foam lifts to cool and release any steam generated during the spraying process. Wait at least 30-60 seconds before successive foam lifts are applied. Small blisters may form on the surface of the foam if this recommendation isn't followed.

COLD WEATHER PROCESS

The minimum substrate and ambient temperature for Icynene[®] Prime NM is 23°F. Low temperatures affect the foaming process in two ways:

1. Chemical reactions can be slowed due to reduced exothermic energy within the expanding mass, which could lead to poor cell structure, dripping and voids from slow plastic formation.
2. Due to reduced exothermic energy, this reduced temperature often leads to reduced yield.

The temperature and type of substrate have a greater influence on the quality of the foam than the temperature of the air because the rate of heat transfer from liquid to air is much slower than the rate from liquid to substrate. If the substrate temperature is too low, or it is a highly conductive material such as metal or concrete, the heat produced by the chemical reaction may be drawn into the substrate so rapidly that plastic formation and cell generation becomes very slow, thus reducing yield.

HOW TO AVOID OVER SPRAY

Over spray with open cell foams occurs for a variety of reasons such as spraying the product too cool, applying the product to a substrate that is too cold, not spraying perpendicular to the surface, and high wind conditions. Flash coating to warm the surface is not a recommended practice and may create unwanted over spray. Flash coats are very thin and may not have enough exothermic reaction to properly cure. Excessive over spray may lead to blisters or delaminating of additional foam passes or coating. Over spray can travel long distances and may adhere to objects left unprotected such as windows, buildings and automobiles. Protect anything that should not get foamed.

LIMITATIONS OF USE

Icynene[®] Prime NM is a combustible material with a maximum continuous service temperature of 180°F. Icynene[®] Prime NM should not be used in direct contact with chimneys, flues, steam pipes, recessed lighting or heat emitting devices. Consult the listing or label of such materials for clearance to combustibles. A minimum clearance of 3 inches should be maintained when applying around recessed lighting, and it's important to avoid spraying inside electric outlets or junction boxes. Properly prep and secure any material or surface that should not get insulated. If in doubt about the substrate temperature or surface conditions, a trial application should be conducted to check foam quality and spray performance. Water on the surface from rain, fog, condensation, etc. will react chemically with the isocyanate, adversely affecting the foam and physical properties, particularly adhesion.

SAFETY AND HANDLING

Respiratory protection is MANDATORY! Respiratory protection is needed to protect workers when involved with the installation and handling of spray polyurethane foam. For a copy of the Model Respiratory Protection Program developed by CPI visit their website at www.polyurethane.org. Each company is responsible for their own individual Hazard Communication and Safety and PPE Program. OSHA requires the use of personal protective equipment (PPE) to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective in reducing these exposures to acceptable levels. Employers are required to issue and determine the proper PPE that should be used to protect their workers. OSHA requires, and it is best practice, for all individuals who interact with this product, but especially those with known respiratory challenges, to consult with a medical professional prior to exposure. The materials must be handled and used with adequate ventilation. Applicators should ensure the safety of the jobsite and construction personnel.

Guidance For Product Application

For more information and to complete the free health and safety training, “Spray Polyurethane Foam Chemical Health and Safety Training” offered by the Center for the Polyurethanes Industry (CPI) before applying this product [click here](#).

REQUIRED SAFETY EQUIPMENT

 Specific Respirator A full face or a loose fitting (hooded) supplied air respirator (SAR) is required when spraying (installing) or continuously working in proximity to sprayer (installer).	 Full Body Chemical-Resistant Suit
 Specific Type of Gloves (Nitrile Butyl 4 mil or greater)	 Specific Type of Eye Protection (e.g. Chemical Safety Goggles)
 Type of Required Ventilation, with Air Changes Per Hour	 Emergency Eyewash or 15 Minute Free Flow

Do not allow anyone to enter the work area without equivalent PPE to the applicator both during application and for the period after application as noted above to avoid exposure to MDI.

Do not allow premature re-occupancy of the work area. Refer to chart on label.

Do not rely on your sense of smell to prevent exposure to MDI. MDI can cause respiratory effects at levels far below odor thresholds.

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