

ULTRA-PURE® CLOSED CELL SPRAY FOAM

Ultra-Pure® Closed Cell is a zero-ODP, low-GWP blowing agent, two-component, semi-rigid spray polyurethane foam insulation with a nominal 2.0 PCF in-place density. This product provides energy efficiency and air infiltration control as a high-performance building envelope insulation system. Ultra-Pure® Closed Cell offers a self-adhering, seamless insulation that can be used in many areas of the building envelope, including open wall cavities, crawl spaces, perimeter rim joists, cathedral ceilings, and garage ceilings.

Features

- Low VOC[1]
- Low GWP Blowing Agent
- R-Value (> 7.0 per inch)
- Air Seal
- FEMA Class 5 Flood Resistance[2]

1 UL GREENGUARD Gold Certificate Number 260412
2 https://www.fema.gov/sites/default/files/2020-07/fema_tb_2_rev1.pdf

Standards, Codes Compliance

- Meets ICC-ES AC377 Type I-IV and V-B
- Code Evaluation Report IAPMO ER-800
- UL GREENGUARD Gold Certificate Number 260412
- Compliant with State HFC Regulations

Applications

- Wall Cavities
- Vented Attics
- Unvented Attics
- Ceilings
- Unvented Crawl Spaces
- Vented Crawl Spaces
- Rim Joists
- Floors

Packaging, Storage, and Shelf Life

A Component: 55 US Gallon, Closed-Top Steel Drum — 500 lb. net wt.

B Component: 55 US Gallon, Closed-Top Steel Drum — 475 lb. net wt.

Store containers between 50°F and 80°F. Containers should be opened carefully to allow any pressure buildup to be vented safely while wearing full safety protection. Excessive venting of the B Component may result in higher density foam and reduced yield.

Shelf Life: 6 months when stored in the original unopened container at 50°F–80°F.

Excessive low or high temperatures may decrease shelf life.

Processing: Drum temperatures should be conditioned to 70°F–80°F before application to ensure optimal viscosity and mixing.

Equipment

The proportioning equipment must be manufactured specifically for heating, mixing, and spray application of polyurethane foam and be able to maintain 1:1 metering with a +/-2% variance and adequate main heating capacity to deliver heated and pressurized materials up to 150°F.

Physical Properties[3]

PROPERTY	TEST METHOD	VALUE
Thermal Resistance	See Thermal Resistance Chart	-
R-Value at 1 inch	ASTM C518	7.2
At 3.5 inches		25
Core Density	ASTM D1622	Nominal 2.0 PCF
Compressive Strength[4]	ASTM D1621	37.98 psi
Tensile Strength[4]	ASTM D1623	16.05 psi
Dimensional Stability[4] 158°F 100% RH (168 h)	ASTM D2126	2.22%
Air Permeance (>1 inch)	ASTM E2178	Meets Criteria
Vapor Permeance (>1.1 inch)	ASTM E96	<1.0 perms (Class II)
Closed Cell Content	ASTM D6226	> 90%
FIRE TEST RESULTS[5]		
Flame Spread Smoke Developed	ASTM E84 (Complies with Class 1)	< 25 < 450
Thermal Barrier[6]	NFPA 286/UL 1715	Pass with 14 mils (wet) DC 315 Pass with 16 mils (wet) No-Burn Plus ThB
Ignition Barrier[6]	NFPA 286 AC 377 Appendix X	Pass without an intumescent coating
Wall Assembly	NFPA 285	Pass — Type Class I-IV, V-B Construction

3 Properties shown are representative values for 1-inch-thick material, unless otherwise specified.
4 Value at yield or 10% deflection, whichever occurs first.
5 These laboratory tests are not intended to describe the hazards presented by this material under actual fire conditions.

Thermal Resistance[6]

THICKNESS (IN.)	R-VALUE (°F*FT²*H/BTU)
1	7.2
2	14
3.5	25
4	28
5	35
5.5	39
6	42
7	49
7.5	53
8	56
9	63
9.5	67
10	70

For SI: 1 inch = 25.4 mm, °F *ft²*h/Btu = 0.176 K*m²/W
6 Nominal R-values are calculated based on tested K values at 1-inch and 3-inch thickness for Ultra-Pure® CC.

Safety and Handling

Exposure — Read and understand the Safety Data Sheet (SDS) for this product before use. Personnel must use appropriate respiratory, skin, and eye Personal Protective Equipment (PPE) when handling and applying polyurethane spray foam systems (eg. full body chemical-resistant suit, full-face supplied air respirator, nitrile gloves, chemical safety goggles, required ventilation, emergency eyewash). Both Components A and B can cause severe inhalation and skin sensitization. For interior applications: full body protection required. A comprehensive review of SPF safety and handling can be found on the CPI website.

Fire — Polyurethane foam may present a fire hazard if exposed to fire or excessive heat (i.e., cutting torches). Polyurethane foam systems should not be left exposed and must be protected by a minimum 15-minute thermal barrier or other code-compliant material as prescribed by applicable building code(s). Proper authorities with jurisdiction over a particular area should always be consulted for additional or specific requirements prior to beginning any project.



Ventilation and Implications for Re-Entry/Re-Occupancy

During application of Natural Polymers Ultra-Pure® Closed Cell, a minimum of 10 ACH is recommended and maintained for **at least two hours post spraying prior to re-entry** of trade workers and **24 hours for re-occupancy.** Cross-ventilation is required with negative pressure in the spray area and exhaust to a secured empty area. If recommended ventilation rates cannot be achieved, a 24-hour re-entry time and re-occupancy time is recommended for trade workers and building occupants. For more detailed information, please visit American Chemistry Council.

Temperature and Humidity

Recommended substrate temperatures:

Minimum 40°F[7] Maximum 120°F

Moisture in the form of rain, dew, and frost can seriously affect the quality and adhesion of the Ultra-Pure® Closed Cell to the substrate or itself. Natural Polymers does not recommend the spraying of this system when the relative humidity (RH) exceeds 85% or when temperatures are less than 5°F above dew point. When heating the interior of a building, the relative humidity can change dramatically and should be constantly monitored to ensure proper application.

7 For applications below 40°F, consult Natural Polymers, LLC technical personnel.

Surface Preparation

Ultra-Pure® CC must be applied to surfaces that are clean and dry, and free of dirt, oil, solvent, grease, loose particulates, frost, ice, and other foreign matter that could inhibit adhesion.

SUBSTRATE	CONSIDERATIONS	PRIMING
Wood (OSB, Plywood, Lumber)	Moisture < 18%	Not required unless porosity or moisture issues exist[8]
Concrete (CMU, Structural, Pour-in-Place)	28-day min. cure	Not required unless specified or adhesion testing supports[8]
Metal (Steel, Painted, Aluminum,[8] Galvanized[8])	Clean of oils, dry	May be required based on adhesion testing; recommended for aluminum, galvanized surfaces[8]
Plastics (PVC, CPVC)	Compatible	Not required

8 SPFA-143 — Primers for Spray Polyurethane Foam Insulation and Roofing Systems.

Spraying

Ultra-Pure® Closed Cell is designed to provide optimal yield when sprayed in 2-to-3-inch-thick passes. Excessive pass thickness above 3 inches can reduce physical properties and cause local overheating and possible fire. Additional thickness may be applied with a 5-to-10-minute waiting period between lifts. Ultra-Pure® Closed Cell will cool down fast, so you may spray multiple passes over the same lift. Yield and in-place density is dependent upon the temperature of the substrate, ambient air temperature, gun speed of application, gun tip size, and the output of the proportioner to provide maximum yield when sprayed in 3-inch-thick passes. In freezing conditions, job site air temperature must be consistently maintained above 32° to ensure proper curing.

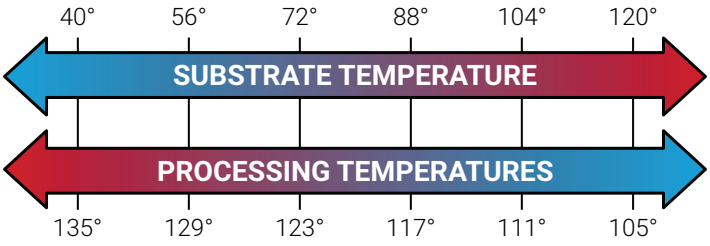
Processing Guidance

AMBIENT TEMPERATURE	50°F–100°F
Machine Setting Temperatures	105°F–135°F
A Component Pre-Heaters	
B Component Pre-Heaters	
Hoses	
Spray Pressure (Dynamic)[9]	1100–1500 psi (HVLP 250psi)[10]
Processing Characteristics	
Cream Time (seconds)	0.5–2 (seconds)
Tack-Free Time (seconds)	5–6 (seconds)
Initial Cure Time	<1 Hour[11]

9 Higher pressures improve mixing and influence physical property performance.

10 High-volume low-pressure application

11 Complete cure will depend on temperature, humidity, and degree of ventilation. Complete cure usually occurs within 24–72 hours.



Certifications and Sustainable Features

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260412

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