

NATURAL-THERM® ZERO

Natural-Therm® Zero is a hybrid cell zero-ODP, low-GWP, two-component, semi-rigid spray polyurethane foam insulation with a nominal 1.75 PCF in-place density. This product provides energy efficiency and air infiltration control as a high-performance building envelope insulation system. Natural-Therm® Zero 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 6.3/inch (Nominal)
- Air Seal

1 UL GREENGUARD Gold Certificate Number 130431

Standards, Codes Compliance

- Meets ICC-ES AC377 Type V-B
- Code Evaluation Report IAPMO ER-527
- UL GREENGUARD Gold Certificate Number 130431
- 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 Gallons, Closed-Top Steel Drum – 500 lb. net wt.
B Component: 55 US Gallons, 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.

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

PROPERTY	TEST METHOD	VALUE
Thermal Resistance	See Table Below	
R-Value at 1 inch[1, 2]	ASTM C518	6.3
R-Value at 3.5 inches		24
Core Density	ASTM D1622	Nominal 1.75 PCF
Tensile Strength[3]	ASTM D1623	21.2 psi
Dimensional Stability	ASTM D2126	
158°F 100% RH (168 h)		1.23%
Air Permeance (1 inch)	ASTM E283	<0.02 L/s/m^2
Vapor Permeance (1 inch)	ASTM E96	<30 perms (Class III)
Closed Cell Content	ASTM D6226	> 50%
SURFACE BURNING CHARACTERISTICS[4]		
Flame Spread	ASTM E84 (Complies with Class 1)[4]	< 25
Smoke Developed		< 450
Thermal Barrier	NFPA 286	Pass with 14 mils (wet) DC 315/No-Burn
Ignition Barrier	NFPA 286 AC 377 Appendix X	Pass without an intumescent coating

1 Properties shown are representative values for 1-inch-thick material, unless otherwise specified.
2 R means the resistance to heat flow; the higher the value, the greater the insulation power. This insulation must be installed properly to get the marked R-value.
3 Value at yield or 10% deflection, whichever occurs first.
4 These laboratory tests are not intended to describe the hazards presented by this material under actual fire conditions.

Thermal Resistance — R-Values[1]

THICKNESS (INCHES)	°F*FT^2*H/BTU
1	6.3
2	13
3.5	24
4	27
5	33
5.5	37
6	40
7	47
7.5	50
8	53
9	60
9.5	63
10	67

For SI: 1 inch = 25.4 mm, °F *ft2*h/Btu = 0.176 K*m^2/W
1 R-values are calculated based on tested K values at 1-inch and 4-inch thickness for Natural-Therm® Zero.

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.



Full-bodied chemical-resistant suit | Full-face supplied air respirator | Nitrile or equivalent gloves | Chemical saftey goggles | Minimum 10 ACH ventilation | Emergency eyewash or portable eyewash bottle

Job Site Ventilation

During SPF application, a minimum of 10 ACH is required. Cross ventilation is required with negative pressure in the spray area and exhaust to a secured empty area. For more detailed information, please visit American Chemistry Council.

Temperature and Humidity

Recommended substrate temperatures:
Minimum 32°F Maximum 100°F

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

Surface Preparation

Natural-Therm® Zero 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 issue exist[1]
Concrete (CMU, Structural, Pour-in-Place)	28-day min. cure	Not required unless specified or adhesion testing supports[1]
Metal (Steel, Painted, Aluminum,[1] Galvanized[1])	Clean of oils, dry	May be required based on adhesion testing; Recommended for Al, Galvanized Surfaces[1]
Plastics (PVC, CPVC)	Compatible	Not required

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

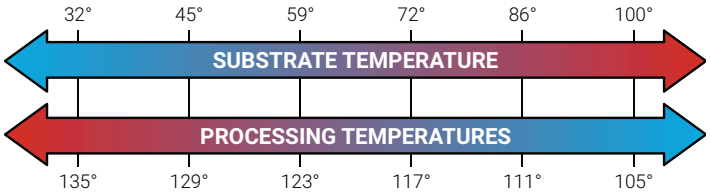
Spraying

Natural-Therm® Zero is designed to provide optimal yield when sprayed in 2-inch 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 10-minute waiting period between lifts. Natural-Therm® Zero will cool down fast, so you may spray multiple passes over the same lift. Yield and in-place density are dependent upon the temperature of the substrate, ambient air temperature, gun speed of application, gun tip size, and the output of the proportioner.

Processing Guidance

AMBIENT TEMPERATURE	50°F–100°F
MACHINE SETTING TEMPERATURE	
A Component Pre-Heaters	105°F–135°F
B Component Pre-Heaters	
Hoses	
Spray Pressure (Dynamic)[1]	1,100–1,500 psi [HVLP 250 psi][2]
PROCESSING CHARACTERISTICS	
Cream Time	0.5–2 (Seconds)
Tack-Free Time	5–6 (Seconds)
Initial Cure Time	<1 Hour[3]

1 Higher pressures improve mixing and influence physical property performance.
2 High-Volume Low-Pressure Application
3 Complete cure will depend on temperature, humidity, and degree of ventilation. Complete cure usually occurs within 24–72 hours.



Certifications and Sustainable Features

IAPMO ES 0527 | QCC Quality Control Consultants | GREENGUARD GOLD 130431 | Insulation Contractors Association of America | International Fireproof Technology Inc.

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The data presented here should only be used as a guide since the actual foam properties are influenced by the efficiency of the spray gun, component temperatures, foam thickness, and ambient conditions. Natural-Therm should be sprayed in uniform passes of 2-inch to 4-inch-thick passes. The technical information contained herein should only be used as a guideline for typical chemical and physical properties. The user must test and qualify the product. Final determination of suitability is the sole responsibility of the user.

For more information, visit:
www.owenscorning.com/naturalpolymers

NATURAL POLYMERS, LLC
14438 E. NORTH AVE., CORTLAND, IL 60112
1-800-GET-PINK

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