Natural-Therm® LIGHT

High Yielding Open Cell Spray Foam

NATURAL POLYMERS

ER-584

Technical Data Sheet

Natural-Therm® LIGHT is a 100% water blown, two-component, semi-rigid spray polyurethane foam insulation with a nominal 0.40 pcf in place density. This product provides superior energy efficiency and air infiltration control as a high performance building envelope insulation system. **Natural-Therm® LIGHT** offers a self-adhering, seamless insulation that can be used in many areas of the building envelope, including, open wall cavities, crawlspaces, perimeter rim joists, cathedral ceilings and garage ceilings. **Natural-Therm® LIGHT** offers higher yields for greater coverage and a wider processing window when compared to typical low density foam systems.

THERMAL RESISTANCE: R-Values (Aged 90 days):	**TEST METHOD**	**VALUES**
R-Value at 1”	ASTM C-518	R-3.7
R-Value per inch ≥4”	ASTM C-518	R-14.8
TYPICAL PHYSICAL PROPERTIES:		
DENSITY	ASTM D-1622	0.40
COMPRESSIVE STRENGTH	ASTM D-1621	23 lbf
TENSILE STRENGTH	ASTM D-1623	6.0 psi
DIMENSIONAL STABILITY: (% by volume)	ASTM D-2126	
	0.20°F	-0.80
	158°F Dry	-60
	158°F 100% R.T. Humidity	-0.96
VAPOR PERMEANCE	ASTM-E96	Class III
SOUND TRANSMISSION CLASS	ASTM E-90	39
	ASTM C-423	75
OPEN CELL CONTENT	ASTM D-6226	>90%
AIR LEAKAGE	ASTM E-283	Meets Criteria
VOC CONTENT	CA 01350	Exceeds Criteria
FUNGI RESISTANCE	ASTM C-1338	No growth
BIO BASED CONTENT	ASTM D-6866	15%
FIRE PERFORMANCE CHARACTERISTICS:	Flame Spread	<15
ASTM E-84: Class A (Class I)	Smoke	<300
NFPA 286 Appendix X	Without a Coating	Meets Criteria
NFPA 286	With 14 mills DC-315	Meets Criteria

www.naturalpolymersllc.com
mail@naturalpolymersllc.com
Phone: 888-563-3111

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Natural Polymers, LLC
4N325 Powis Road
West Chicago, IL 60185
Supersedes 10/21/18

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SURFACE PREPARATION

Surfaces to receive **NATURAL-THERM® LIGHT** must be clean and dry, free of dirt, oil, solvent, grease, loose particulates, frost, ice and other foreign matter which could inhibit adhesion. Moisture content and substrate condition are critical to adhesion of **NATURAL-THERM® LIGHT** and need to be verified by the installing contractor in small test areas before proceeding with full application.

Plywood, OSB, and lumber shall not have greater than 18% moisture content. Generally, a primer is not required for these surfaces. On substrates where the moisture content cannot be determined or exceeds 15%, a suitable primer is recommended. Adhesion spray tests may be performed with insulating foam and the interface line checked upon cure for good cell structure and adhesion. Warming of these surfaces during winter conditions may increase adhesion.

CMU, structural and poured-in-place concrete must have a minimum 28-day cure and moisture content below 18%. Residential footings, stem-walls, and basements generally do not require priming. Commercial controlled atmosphere structures, cold storage, and freezer buildings require an appropriate primer to insure adequate adhesion where curing agents may have been used. Recommend using, a two-component epoxy primer designed to seal and provide adhesion to concrete surfaces. Contact a Natural Polymers representative for suggested primer options.

Painted Steel, galvanized steel, and aluminum panels: check surfaces for mill oil used in the manufacturing process. All oil must be removed and the surface clean and dry before priming. Washed and dry painted steel panels may not require priming. All aluminum and galvanized panels must be primed using **Cardinal 4860-420** or **Sherwin Williams® DTM Wash Primer.**

PROCESSING CHARACTERISTICS

Machine Mix at recommended processing temperatures

Cream Time seconds	1-2
Tack Free Time seconds	5-6
Initial Cure Time	<1 Hour**

The nominal physical properties reported were achieved using a Graco H25 Proportioner and Fusion gun with #02 module with a static proportioner pressure setting of 1200 psi. Older equipment may be upgraded with “Arctic Booster Pack” heaters or minimum E-20 proportioners are required to adequately pre-heat the components. Spray guns such as; D-gun, GAP gun, GX-7, Fusion gun, or Probler guns fitted with smaller output tips (15-18 lbs./min.) for better spray control for stud wall applications at recommended processing temperatures are recommended.

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

PRODUCT APPLICATION:

Natural-Therm® LIGHT should only be applied to approved substrates in 1-inch to 6-inch lifts. This procedure is in accordance with the manufacturer’s recommendations detailed in the application manual.

RECOMMENDED SUBSTRATE TEMPERATURES

Minimum	32°F
Maximum	120°F

For applications below 32°F, Natural Polymers, LLC technical personnel should be consulted. Flash passes should be avoided.

CLIMATIC CONDITIONS & HUMIDITY

Moisture in the form of rain, dew, and frost can seriously affect the quality and adhesion of the **NATURAL-THERM® LIGHT** to the substrate or itself. Natural Polymers does not recommend the spraying of this system when the relative humidity (RH) exceeds 85% or 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.

INITIAL PROCESSING RECOMMENDATIONS:

(Ambient)	30-65°F	65-80°F	>80°F
Component A	140°F	135°F	120°F
Component B	140°F	135°F	120°F
Hose	140°F	135°F	120°F

These temperatures are typical of those required to produce acceptable product using conventional Gusmer or Graco equipment. It is the responsibility of the applicator to determine the specific temperature settings to match the environmental conditions and specific spray equipment.

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RECOMMENDED PROCESSING TEMPERATURE RANGE:

Component A	120-145°F
Component B	120-145°F
Hose	120-145°F

Processing temperatures are critical to achieve viscosity to allow balanced pressure during spraying. Balanced chemical output pressures are important to producing good mix. Foam output pressures greater than 50 psi differential indicate either improper chemical temperatures, or worn gun/packing parts. Unequal pressures will cause poor chemical mixing through the module and uneven backpressure. A critical requirement for good spray mixing requires appropriate tip/ module sizing to the proportioner and adequate heating capacity. Unequal pressure (>50 psi) can cause excessive pump wear.

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 ad-equate main heating capacity to deliver heated and pressurized materials up to 150°F. Heated hose must be able to maintain pre-set temperatures for the full length of the hose. Minimum 2:1 on the A side and 1:1 on the B side ratio feeder pumps are required to supply stored materials through minimum ½-inch supply hos-es. Pressurized and heated tanks systems may be used if sized appropriately to provide adequate flow at maximum operating capacity and temperatures.

Guns such as **D-gun, Gap Pro, Fusion-gun, Probler** with tip size approximately 16 lbs./min are suitable for most residential appli-cations. Commercial cold storage, freezer applications, and large metal buildings may utilize higher output guns.

Spraying:

Thin “flash passes” to very cold surfaces are not recommended. Thin passes (1/4” or less) should be avoided. They may result in reduced yield and loss of adhesion. It is recommended that the total design thickness be completed each day.

This spray system should be applied in uniform minimum pass thickness of 1-inch, maximum pass thickness 10-inches. Application temperatures below 32°F may require reduction in single pass application thickness. Additional thickness may be applied. Yield and in place density is dependent upon the temperature of the substrate, ambient air temperature, gun speed application, gun tip size, and the output of the proportioning unit. **NATURAL-THERM® LIGHT** is designed to provide maximum yield when sprayed in 6” thick passes. Excessive pass thickness can reduce density and physical properties, and cause local overheating and possible fire.

Recirculating the ‘B’ component is recommended if the drum temperature is below 65°F. The recirculating of the ‘B’ component can be used as a means of warming the material. If recirculating the ‘B’ component the material must be agitated with a mixer while the material is being recirculated. When recirculating do not set preheaters above 90°F. Polyurethane foams will burn when exposed to fire. Caution during application must be observed with signs posted for other trades, “Caution Combustible Insulation, No Welding or Hot Work Allowed”. On a daily basis remove all debris and shavings from the job site leaving a clean work area. In freezing conditions [below 32°F], jobsite air temperature must be maintained above 32 degrees F. during the cure cycle so extreme temperature drops to the curing foam is not experienced.

Job Site Ventilation:

During SPF application a minimum of 30-60 ACH is recommended. Cross ventilation is required with negative pressure in the spray area and exhaust to a secured empty area. For increased ventilation rates a commercial unit is recommended. For more detailed information, please visit http://polyurethane.american-chemistry.com/Spray-Foam-Coalition/Guidance-on-Ventilation-During-Installation-ofInterior-Applications-of-High-Pressure-SPF. pdf

Precautions:

Read and understand the Safety Data Sheet (SDS) for this product before use. The numerical flame spread and all other data pre-sented is not intended to reflect the hazards presented by this or any other material under actual fire conditions. Polyurethane foam may present a fire hazard if exposed to fire or excessive heat (i.e. cutting torches). The use of polyurethane foam in in-terior applications on walls or ceiling presents an unreasonable fire risk unless protected by an approved fire resistant thermal barrier with a fire rating of not less than 15 minutes. A UBC or IRC code definition of an approved “thermal barrier” is a material equal in fire resistance to ½” gypsum board. Each firm, person, or corporation engaged in the use, manufacture, or production or application of the polyurethane foams produced from these resins should carefully examine the end use to determine any po-tential fire hazard associated with such product in a specific use and to utilize appropriate precautionary and safety measures. Consult with local building code officials and insurance agency personnel before application.

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When using fuel fi ed heating units the exhaust must be vented directly outdoors to prevent unsafe carbon monoxide conditions in the work area. Electric heating units are preferred. All heaters must be turned off before the application of foam begins. Natural Polymers Technical Personnel should be consulted in all cases where application conditions are marginal.

Worker exposure hazards - Both Components A and B can cause severe inhalation and skin sensitization. For interior applications: full body protection required. For more information, visit https://polyurethane.americanchemistry.com/Spray-Foam-Co-alition/Guidance-on-Best-Practices-for-the-Installation-of-Spray-Polyurethane-Foam.pdf.

Storage & Shelf Life

Both components should be stored in their original containers and away from excessive heat and moisture, especially after the seals have been broken or some materials have been used. Drums must be stored indoors and jobsite tanks maintained between 50°F and 90°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. Materials stored at temperatures below 50°F will increase viscosity and some application equipment may not reach adequate spray temperature set points. Supply pumps and hoses must be sized to provide adequate supply when materials are cold and at a higher viscosity. Shelf Life: Excessive low or high temperatures may decrease shelf life. When stored in the original unopened container at 50°F-90°F, the shelf life of the "Part B" component is six months. Temperature above 90°F decreases the shelf life. The "Part A" component has a shelf life of 12 months in unopened containers when stored at 50°-90°F.

Disclaimer of Warranties:

The Limited Warranty is IN LIEU OF any other warranties express or implied including but not limited to any implied warranty of MERCHANTABILITY or fitness for a particular purpose, and we, the manufacturer, shall have no further liability of any kind including liability for consequential or incidental damages resulting from any defects or any delays caused by replacement or otherwise. Furthermore, all polyurethane foam burns in varying degrees, which in turn liberates toxic gasses and should be evaluated in its final form for compliance to existing standards in your industry. The information presented herein is based on our own research and that of others and is believed to be correct, however, no warranty is expressed or implied. No statement herein extends any license, either expressed or implied, in connection with any patents issued or pending which may be the property of Natural Polymers or others. The manufacturer shall not be liable (regardless of fault) to the vendor's employees, or anyone for any direct, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy or furnishings of such information.

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® LIGHT should be sprayed in uniform passes of 1" to 10" thickness. While following the technical information is based on the results of actual tests conducted by Natural Polymers, it 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 responsibility of the user.

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mail@naturalpolymersllc.com
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Made in the USA

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