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UL 2000-F BUILDING ENVELOPE INSULATION SYSTEM

2 lb. Foam

PRODUCT DESCRIPTION:

UL 2000-F is a closed-cell polyurethane system utilizing an EPA approved, zero ozone-depleting, blowing agent. It is designed for use in commercial and residential construction applications. **UL 2000-F** is compatible with most common construction materials, but can only be processed with UL ISO-F Isocyanate. The benefits of **UL 2000-F** include:

- Superior insulation performance
- Control moisture infiltration
- Controls air infiltration
- Ease of application
- Non-fibrous
- Structural properties

APPROVALS AND CREDENTIALS:

ASTM E-84/** Listed at SGS US Testing Co., Inc.

Class I
SPF Thickness 4.0 inches
Flame Spread Index 25
Smoke Development Index 350

NFPA 286

8 inch wall
12 inch ceiling
with 15 min. thermal barrier
Test Report Number: 3116019-002

ICC ESR-2642 Attic & Crawl Space

Tested at Intertek ETL Semko
Test Method SwRI 99-02
Test Report Number: 3116311-002a

* This numerical flame spread rating does not reflect hazards presented by this or any other material under actual fire conditions. 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 allowed by applicable building code(s) and Code Officials. Building Codes provide guidelines representing minimum requirements. Further information is available at www.iccsafe.org. Consult all Authorities having jurisdiction over an area for additional or specific requirements prior to beginning a project.

**ASTM E-84 is a test designed for sample thickness up to 4 inches. NFPA 286 is a building code recognized alternative test that is conducted for greater thickness applications of spray foam. These two test reports can then be used by design professionals for their product selection process for projects

TYPICAL PROPERTIES**:

PROPERTY	VALUE	TEST METHOD
<u>Liquid Resin – As Supplied</u>		
Specific Gravity @ 70°F	1.175	ASTM D 1638
Viscosity @ 70°F (cps)	1050	Brookfield
<u>As Cured</u>		
Iso:Resin Mix Ratio (vol:vol)	1:1	
Density (pcf @ 2" lift)	2.15	ASTM D 1622
Compressive Strength (psi)	22	ASTM D 1621
Tensile Strength (psi)	28	ASTM D 1623 Type C
Closed Cell Content (%)	>90	ASTM D 6226



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Initial k-factor (Btu in/ft2 hr °F)	0.145 (R=6.9/in)***	ASTM C 518
Aged k-factor (Btu in/ft2 hr °F) in conformance with ICC AC377	0.164 (R=6.1/in)***	ASTM C 518
Permeability (perm inch)	1.82	ASTM E 96
Permeance (perms)	1.82 @ 1" SPF 0.91 @ 2" SPF 0.61 @ 3" SPF 0.46 @ 4" SPF	
Air Permeance	0.00025 L/s/m2 @ 75Pa	ASTM E 22000-01
Air Leakage	0.00025 L/s/m2 @ 75Pa	ASTM E 283-99
Dimensional Stability (%Volume Change)		
	Dry Age 28 Days (158°F) 5.75% ASTM D 2126	
	Freeze Age 14 Days (-20°F) 0.30% ASTM D 2126	

** These physical property values are typical for this material as applied at our development facility under controlled conditions. SPF performance and actual physical properties will vary with differences in application (i.e. ambient conditions, process equipment and settings, material throughput, etc). As a result, these published properties should be used as guidelines solely for the purpose of evaluation. Physical property specifications should be determined from actual production material.

The above data was collected from samples prepared using the following equipment configuration:

Gusmer® H-20/35 proportioner set at 1:1 volume ratio with 50 ft of heated delivery hose
Gusmer® GX-7 spray-gun configured with a #1 mix module and #70 PCD and/or GAP spray-gun configured with a #1 mix chamber
Process temperature settings: Isocyanate 130°F; Resin 130°F; Hose 130°F
Process pressure: 1000 psig minimum while spraying

UL 2000-F has shown acceptable on-site performance with temperature settings in the range of 110°F - 130°F for Isocyanate, Resin and Hose. Every job site and set of ambient /substrate conditions are different; therefore, one set of process settings may not work for every situation. It is the responsibility of the applicator to evaluate the on-site conditions and then determine the appropriate SPF reactivity and process settings.

***The data chart shows the R-value of this insulation. "R" means resistance to heat flow. The higher the R-value, the greater the insulating power. Compare insulation R-values before you buy. There are other factors to consider. The amount of insulation will depend upon the climate, the type and size of your house, and the fuel use patterns and family size. If you buy too much insulation it will cost you more than what you will save on fuel. To achieve proper R-values, it is essential that this insulation be installed properly..

GENERAL INFORMATION:

UL 2000-F is a spray polyurethane foam (SPF) system intended for installation by qualified contractors trained in the processing and application of SPF systems, as well as the plural-component polyurethane dispensing equipment required to do so. Contractors and applicators must comply with all applicable and appropriate storage, handling, processing and safety guidelines. Ultimate Linings LTD technical service personnel should be consulted in all cases where application conditions are questionable.

CAUTIONS AND RECOMMENDATIONS:

UL 2000-F is designed for an application rate of ½ inch minimum to 2 inches maximum per pass. Once installed material has cooled it is possible to add additional applications in order to increase the overall installed thickness of SPF. This application procedure is in compliance with the Spray Polyurethane Foam Alliance (SPFA).

UL 2000-F is **NOT** designed for use as an **EXTERIOR** roofing system. Ultimate Linings LTD offers a separate line of products for exterior roofing applications. For more information please contact your sales representative.



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Cold-storage structures such as coolers and freezers demand special design considerations with regard to thermal insulation and moisture-vapor drive. **UL 2000-F** should **NOT** be installed in these types of constructions unless the structure was designed by a design professional for specific use as cold storage.

UL 2000-F is designed for installation in most standard construction configurations using common materials such as wood and wood products, metal and concrete. **UL 2000-F** has performed successfully when sprayed onto wood substrates down to 30°F. For other substrates, please consult your UL Polyurethane Foam Enterprises LLC sales or technical service representative for specific recommendations.

Foam plastic materials installed in walls or ceilings may present a fire hazard unless protected by an approved, fire-resistant thermal barrier with a finish rating of not less than 15 minutes as required by building codes. Rim joists/header areas, in accordance with the IRC and IBC may not require additional protection. Foam plastic must also be protected against ignition by code-approved materials in attics and crawl spaces. See relevant Building Codes and www.iccsafe.org for more information. The **UL 2000-F** foam systems are **NOT** recommended for medical uses; such as, splints or casts for broken bones nor other medical or pharmaceutical uses.

In addition to reading and understanding the MSDS, all contractors and applicators must use appropriate respiratory, skin and eye Personal Protective Equipment (PPE) when handling and processing polyurethane chemical systems. Personnel should review the following document published by Spray Polyurethane Foam Alliance (SPFA):

*AX-171 Course 101-R Chapter 1: Health, Safety and Environmental Aspects of Spray Polyurethane Foam and Coverings and the following document available from the Center for the Polyurethanes Industries (CPI):
Model Respiratory Protection Program for Compliance with the Occupational Safety and Health Administration's Respiratory Protection Program Standard 29 C.F.R. §1910.134*

As with all SPF systems improper application techniques should be avoided. Examples of improper application techniques include, but are not limited to excessive thickness of SPF, off-ratio material and spraying into or under rising SPF. Potential results of improperly installed SPF include: dangerously high reaction temperatures that may result in fire and offensive odors that may or may not dissipate. Improperly installed SPF must be removed and replaced with properly installed materials.

LARGE MASSES of SPF should be removed to an outside safe area, cut into smaller pieces and allowed to cool before discarding into any trash receptacle.

SPF insulation is combustible. High-intensity heat sources such as welding or cutting torches must not be used in contact with or in close proximity to **UL 2000-F** or any polyurethane foam.

SHELF LIFE AND STORAGE CONDITIONS:

UL 2000-F Series has a shelf life of approximately three months from the date of manufacture when stored in original, unopened containers at 50-80°F. As with all industrial chemicals this material should be stored in a covered, secure location and never in direct sunlight. Storage temperatures above the recommended range will shorten shelf life. Storage temperatures above the recommended range may also result in elevated headspace pressure within packages.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY:

The information herein is to assist customers in determining whether our products are suitable for their applications. Our products are only intended for sale to industrial and commercial customers. Customer



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assumes full responsibility for quality control, testing and determination of suitability of products for its intended application or use. We warrant that our products will meet our written liquid component specifications. We make no other warranty of any kind, either express or implied, by fact or law, including any warranty of merchantability or fitness for a particular purpose. Our total liability and customers' exclusive remedy for all proven claims is replacement of nonconforming product and in no event shall we be liable for any other damages.