Product Data Sheet

SPF EF 2.8

DESCRIPTION

Revision Date: Feb 2021

SPF EF 2.8 is an HFO-blown, *Zero Ozone-Depleting (Zero-ODP), spray polyurethane foam (SPF) system designed for roofing applications. SPF EF 2.8 is compatible with most common construction materials, but can only be processed with SPF Part A ISO.

*Complies with Montreal protocol and the US Environmental Protection Agency's (EPA) Significant New Alternatives Program (SNAP) according to Clean Air Act of 1990 that evaluates ozone-depleting substances.

TYPICAL PHYSICAL PROPERTIES

PROPERTY(1)	METHOD	TYPICAL VALUE
Resin:		
Specific Gravity @ 70°F	ASTM D1638	1.18
Viscosity @ 70°F (cps)	Brookfield	200 – 500
Cured Foam:		
Mix Ratio (volume: volume)	1:1	
Density(pcf)	ASTM D1622	2.7 – 2.9
Thermal Resistance (aged)		
k-factor (Btu in/ft^2 hr °F)	ASTM C518	0.161
R-value (ft^2 hr °F/Btu in)(2)	Calculated	6.2/in
Compressive Strength (psi)	ASTM D1621	45 +/- 5 psi
Tensile Strength (psi)	ASTM D1623	90 – 110
Shear Strength (psi)	ASTM C273	40 – 60
Closed Cell Content (%)	ASTM D6226	>90
Water Vapor Transmission – Permeability (perm-inch)	ASTM E96	0.95
Surface Burning Characteristics:		
Flame Spread Index(3)	ASTM E84	<75
Flame Spread Value (FSV)	CAN/ULC –S102 Including –S127	<500

(1) 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, pass thicknesses, 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 equipment configurations pertinent to lab conditions. Parameters can be obtained upon request.

(2) 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 building and fuel use patterns. 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.

(3) 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 in interior applications 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 (AHJ) over an area for additional or specific requirements prior to beginning any project.

GENERAL INFORMATION

SPF EF 2.8 is a technically advanced SPF system intended for use by qualified contractors trained in the processing and application of SPF roofing 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. Mule-Hide Technical Department should be consulted in all cases where application conditions are questionable.

SPF EF 2.8 Series SPF Roofing System Reactivity Grades	
Reactivity Grade	Ambient Temperature Range
F (Fast)	50°F to 75°F
R (Regular)	65°F to 90°F
S (Slow)	85°F to 120°F

SPF EF 2.8 has an estimated theoretical yield range of 3,200 – 3,400 board feet per set. Actual coverage can be in excess of or below the referenced estimated theoretical range based on factors affecting density including, however, not limited to: multiple lifts, substrate texture, substrate temperature, overspray loss, windy conditions, altitude, container residue, equipment characteristics & temperatures, applicator technique, etc. For help estimating yield for this and other spray foams, please consult Spray Polyurethane Foam Alliance's SPFA-121 SPF Estimating Reference Guide.

CAUTIONS AND RECOMMENDATIONS

SPF EF 2.8 is designed for an application rate of 1/2 inch minimum to 1-1/2 inches maximum per pass. Once installed and material has cooled it is possible to add additional applications in order to increase the overall installed thickness of SPF. Thicker installations are allowed based on large scale testing. This application procedure is in compliance with the Spray Polyurethane Foam Alliance (SPFA).

SPF EF 2.8 is NOT designed for use as an INTERIOR insulation system. Cold-storage structures such as coolers and freezers demand special design considerations with regard to thermal insulation and moisture-vapor drive. SPF EF 2.8 should NOT be installed in these types of constructions unless the structure was designed by a design professional for specific use as cold storage.

SPF EF 2.8 is designed for installation to most standard construction materials such as wood, wood-based products, plastics, metal and concrete. Applications can be done at approximately 50°F and warming using special cold weather application techniques. For heat sink-materials such as metal or concrete, SPF EF 2.8 can be sprayed onto substrates down to 60°F, using a flash pass method. Mule-Hide recommends the use of mock ups or sample spray before starting the full-scale project. This will provide an opportunity to see how all materials are installed and evaluate their properties prior to proceeding. Please contact Mule-Hide Technical Department for further information about applications using our liquid compounds.

In addition to reading and understanding the SDS, 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 related industry and best practice documents published by organizations such as Spray Polyurethane Foam Alliance (SPFA), OSHA, Spray Foam Coalition (SFC) and American Chemistry Council/Center for the Polyurethanes Industry (CPI).

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 an appropriate 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 SPF EF 2.8 or any polyurethane foam. The insulation must not be used in areas that have a maximum service temperature greater than 180°F(82°C).

Important Material Preparation Note: Product should be stored at 50 - 80°F. Materials should be prepared for processing by being warmed to 70°F minimum at least 24 hours prior to installation and maintained at 70°F during the install process.

EQUIPMENT SETTING GUIDELINES– SPF EF 2.8		
Climate	A side, B side, Hose Temp (Adjust in +/- 5° increments)	Proportioner set pressure (Spraying pressure)
Colder	120°F – 135°F	1150 – 1450 psi (900 – 1200 psi)
Warmer	110°F – 125°F	1150 – 1450 psi (900 – 1200 psi)
Mule-Hide's SPF systems are formulated to produce foam with physical properties representative of our published data sheets within the factory set tolerances of commercially available fixed ratio proportioner units.		

SHELF LIFE AND STORAGE CONDITIONS

SPF EF 2.8 S(slow) reactivity has a shelf life of approximately three(3) months and SPF EF 2.8 R(regular) and SPF EF 2.8 F(fast) reactivities have a shelf life of approximately five(5) months from the date of manufacture when stored in original, unopened containers at 50°F - 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.

PROTECTION & SAFETY

Mule-Hide maintains Safety Data Sheets on all of its non-exempt products. Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees and customers. Mule-Hide's Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Mule-Hide products in your facilities.

ADDITIONAL INFORMATION

The information given on this PDS is subject to change without notice. Always check the Mule-Hide website at www.mulehide.com for the latest information, changes and updates or contact Mule-Hide Products Company at 800-786-1492.

DISCLAIMER

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Warning: These products can be used to prepare a variety of polyurethane products. Polyurethanes are organic materials and must be considered combustible.