

SUBSTRATUM 4F

Polyurethane Rigid Foam System

Substratum 4F is a two-component polyurethane rigid foam. This product is excellent for lifting settled pavement, stabilizing weak soil, and the filling or encapsulating of various voids. It has been specially formulated utilizing a fully EPA approved, non-CFC, non-HFC, zero ozone depleting blowing agent.

Substratum 4F is inherently hydrophobic and is capable of being directly injected into water. Due to the hydrophobic nature, this product is excellent for lifting and/or stabilizing in areas with a high level of moisture content. The low viscosity of the system allows for easy penetration into soil and displaces water without losing product integrity as it stabilizes and lifts.

Storage and Handling

Substratum 4F has a shelf life of 1 yr when stored in the original, sealed container at a temperature of 65° F - 85° F with humidity levels not greater than 85% and also not in direct sunlight. The "A" component is very sensitive to moisture and caution must be taken to ensure moisture is not introduced. Prolonged storage at temps below 60° F can affect both the "A" and "B" components.

Should the materials be subjected to temperatures at or below 40° F, there may be layering in the B-side containers. Should this occur, gradually raise the temperature to 70° F and use a drum or tote mixer for 30 minutes or more. The material will go back into the proper solution and is then usable.

Containers of Component-A should be kept properly closed and stored indoors at ambient temperatures (20-25° C) (65-80° F) in a well-ventilated area. Storage at low temperatures (below 5° C, 40° F) may lead to some crystallization; this material must, therefore, be protected from frost. If crystallization does occur, the material should be heated but not to exceed 70° C, 158° F, to melt it out, and should then be thoroughly agitated before use. Note that the product will decompose and give off gas above 230° C, 446° F.

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CALL CARLISLE POLYURETHANE SYSTEMS FOR TECHNICAL QUESTIONS. (314) 872-8700.

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Typical Physical Properties

Property	Substratum 4F	Test
Closed Cell Content	>85%	ASTM D 6226
Tensile Strength (PSI)	95	ASTM D 1623
Dimensional Stability	<2%	ASTM D 2126
Compressive Strength (PSI)	63	ASTM D 1621
Compressive Modules (PSI)	2100	ASTM D 1621
Tensile Modules (PSI)	2100	ASTM D 1623
Shear Strength	47	ASTM C 273
Shear Modulus	945	ASTM C 273
Flexural Strength	95	ASTM D 790
Flexural Modulus	2100	ASTM D 790
Water Absorption	<2%	ASTM D 2842
Core Density	3.90-4.10	

* Data generated under controlled laboratory conditions. Actual performance may vary due to environmental conditions.

Liquid Components as Supplied

	A (ISO)	B (Resin)
Specific Gravity @74°F (23°C)	1.22	1.04
Viscosity (Brookfield) @74°F (23°C), CPS	220-250	400-500
Mixing Ratio By Volume	1	1

Common Chemical Resistance

Chemical	Resistance
Water	Excellent
Toluene	Excellent
Gasoline	Excellent
Sulfuric Acid 10%	Excellent
Hydrochloric Acid 10%	Excellent
Isopropanol	Excellent
Benzene	Excellent
Motor Oil	Excellent
Acetone	Poor
Ethyl Alcohol	Poor
Methyl Alcohol	Poor

