2/12/2014 Spray Foams TDS

Spray Foams are a unique blend of properties which yield excellent mechanical and thermally efficient structures. SIM FR foams deliver high compressive/shear strength, insulating capacity, overall toughness and impact resistance. Their high performance strength to weight ratio densities produce a wide range of applications for very diverse industries. As an energy saving material yielding very high insulating values, paralleled with its sound absorbing capability it has seen much use in the architectural and construction industries. Rigid foams are applied in spray or casting formats. Pour casting diversifies its uses to the areas of consumer products manufacturing, mold making, marine docks, floatation, void fill, artwork carving and many industrial and commercial industries. All of our foams may be subsequently color top-coated, textured and clear coated to handle extensive outdoor rugged environments using the WBAE-2 Epoxy system. These materials maintain dimensional stability and will not deform or distort within operating temperature of -100F to 200F. Fire retardancy formulations are used in structural public buildings and warehouses.
Installation cure times range from 30 sec. to 30 min. depending on application method (spray vs. pour), ambient temperature and humidity. Pour foam applications require longer cure times and caution must be taken for large castings due to inherent exothermic reaction process. SIM FRs utilize a standard 2-component liquid pumping machine for both the spray and pour methods of dispensing. Volumetric expansion of SSFR may be formulated up to 140x relative to its original volume depending on required application densities. Particular densities have been tested to MIL-P21929C.

The Rigid Building Foams are water or gas blown (245 or Pentane) fast-set materials typically used for air-tight insulation applications due to their closed-cellular nature. These foams are premium building products which contribute structural integrity with moisture, air and chemical vapor barrier integrity. High insulating values are attributed with these foams and as such are commonly in roof, wall and floor insulation applications, commercial freezers and all energy saving applications where high thermal insulating requirements are mandated. Values vary relative to foam densities. Foam coverage per sq.ft. will vary relative to the density also as governed by expansion characteristics, the ambient spray temperature and the substrate temperature.

Please contact our Customer Service and Technical Support Group for any questions or to provide direction with specific selection of a material system, questionable target surfaces, operational procedures, material pumping/spray machines, spray/pour guns, safety protection gear and cleanup kits.

RIGID BUILDING FOAMS PHYSICAL PROPERTIES ASTM

DENSITY (PCF)	D1622	0.5	1.0	1.5(1.5)	2(2.0)	2.5(2.5)	3(3)	6(6)	10(10)
Fire Rating	ASTM E84	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Thermal Resistance (Rvalue)	ASTM C518	3.6	4	4.5(5.7)	4.7(6.8)	4.7(6.8)	4.7(6.5)	4.7(5.5)	4.7(5.0)
Compressive Strength (psi)	ASTM D1621	12	14	15	25	37	50	100	201
Shear Strength (psi)	ASTM C273	15	17	18	22	26	35	85	127
Shear Modulus	ASTM C273	185	195	207	231	253	312	788	1011
Tensile Strength (psi)	ASTM D1623	20	25	30	40	44	62	165	227
Flexual Strength (psi)	ASTM C203	35	40	45	55	65	123	204	312
Flexual Modulus	ASTM C203	111	145	164	522	963	2356	4785	7055
Water Absorption (%vol)	ASTM D2842	<5.0	<5.0	<1.0	<0.5	<0.1	<0.1	<0.1	<0.1
Water Vapor (perm-in)	ASTM E96	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fungi Resistance	ASTM C 1338	None	None	None	None	None	None	None	None
Closed Cell Content (%)	ASTM D2856	Open	>40	>60	>75	>90	>95	>95	>95

NOTE: Gas-Blown foam property values are indicated (value)

TECHNICAL APPLICATION DATA

Both Specialized Industrial Materials types require a two component dispensing machine. Rigid foams may also be hand batch mixed in small volumes. Large volume batch mixing requires special formulation. Cure times of for spray Elastomerics range from 20-30s while rigid spray foams range 10-60s. During application, to obtain heavier build thickness, it is important to apply a heavy one-pass delivery. Do not dispense multi-passes as pin holing will occur. For best foaming results, it is best to pre-heat material in drums to 75°F and proportional machine to 110°F. Substrate must be dry while relative humidity < 85%. Volumetric expansion of Elastomerics provide up to 4x original volume while rigid foams may expand up to 100x depending on foam density. Elastomeric foams may be applied from 40°F to 100°F in high humidity climates with target surfaces clean and moisture free. Rigid foams may be applied from 70 F up to 100 F under the same conditions. Both foams may be formulated to fire retardant Class 1 E84 ASTM standard for industrial use. Rigid foam will handle 200 F service operation temperatures while Elastomerics may extend up to 250 F. These foams yield excellent adhesion characteristics and are extremely water repellent. Elastomerics retain a high resiliency to impact and foot traffic compared to rigids which exhibit compression set under load. Both foams require a UV protective top-coating for exterior weather ability applications.

Adhesion Results of Typical Substrates per ASTM D-4541 Elcometer

EPDM- Primed	**>300 psi**	**Cohesive failure; excellent substrate bonding**
Concrete- clean	**>300 psi**	**Cohesive failure; excellent substrate bonding**
Steel- clean	**>1000 psi**	**Cohesive failure; excellent substrate bonding**
Wood- dry/dust free	**>250 psi**	**Wood failure; excellent substrate bonding**

Preparation of substrate surface prior to primer is extremely important as durability is only as good as the weakest link in the coating system.
Concrete must be fully cured and should be treated with a sandblasting depending on the severity of the concrete surface condition. For patching, use our calcium carbonate filled fast-set Acrylic Modified Epoxy applied by trowel. For expansion joints, use our Joist Seal applied by hand cartridge dispensing gun. Metals must be prepared and standardly prepped to be clean. If surface deterioration is evident a general shot blasting is required.

Rigid Building Foams

Wood must dry and tree or dust before applying any type or the epoxy-based primers. Depending on the nature or a roam, plastic or composite primers should be tested to achieve a secure cohesive failure. Please call or email our Technical Support Group for any questions regarding material, application or prospective uses.