ROOFARMOR HEAT SHIELD

Rigid Polyurethane Roofing Foam

PRODUCT DESCRIPTION

ROOF ARMOR - HEAT SHIELD is a two component spray-in-place rigid mono-lithic polyurethane foam insulation. This product can be formulated in a variety of densities to accommodate a broad range of applications. ROOF ARMOR - HEAT SHIELD contains no ozone-depleting chemicals.

USES

ROOFING: ROOF ARMOR - HEAT SHIELD is used extensively as a superior thermal insulation and waterproofing product for new and remedial roofing.

COLD STORAGE: ROOF ARMOR - HEAT SHIELD is the insulation of choice for maintaining the rigid climatic conditions of many cold storage buildings.

TANK INSULATION: ROOF ARMOR - HEAT SHIELD is an excellent insulation for hot and cold storage vessels.

BUILDING AND FIRE CODES

Local Building Authority's should be consulted if ROOF ARMOR - HEAT SHIELD is used as an insulation material on interior applications.

ROOF ARMOR - HEAT SHIELD is listed and complies with the California State Fire Marshall

ROOF ARMOR - HEAT SHIELD is evaluated and listed by ICC-ES in ESR 3239. Additionally ROOF ARMOR - HEAT SHIELD meets the "Standard Test Methods for Fire Tests of Roof Coverings" and exceeds ASTM E84/UL 790 (A) and ASTM E108/UL 723 fire ratings.

Fire Hazard Classifications*

SURFACE BURNING ASTM E-84/UL 723		FLAMMABILITY ROOF DECK CONSTRUCTION ASTM E-108/UL 790	
Flame Spread	<75	Class A	New Construction
		Class A	Maintenance and Repair

*These numerical flame spread ratings are not intended to reflect hazards presented by this or any other material under actual fire conditions.

Liquid Component Properties

PROPERTY	DENSITY 2.5	DENSITY 2.7	DENSITY 3.0
Viscosity @ 25**°C:**			
Component A	200	200	200
Component B	500	550	625
Specific Gravity @ **25°C:**			
Component A	1.24	1.24	1.24
Component B	1.19	1.19	1.18
Mix ratio by volume (A/B)	50/50	50/50	50/50

ROOF ARMOR – HEAT SHIELD

Processing Characteristics

PROPERTY	72°F(HAND MIX)			SPRAYED*		
	Winter	Regular	Summer	Winter	Regular	Summer
Cream Time	4 Sec.	5 Sec.	6 Sec.	1-2 Sec.	1-2 Sec.	1-2 Sec.
Rise Time	15-16 sec.	19 sec.	22 sec.	4-5 sec.	5-6 sec.	6-7 sec.
Tack Free	On Rise	On Rise	On Rise	On Rise	On Rise	On Rise

*Nominal 1" thickness sprayed through Gusmer Model H-11 proportioner with GX-7 Gun: preheat set at 110°F, hose heat set to maintain110ºF at the spray gun. Reaction times are influenced by mix efficiency of the spray gun, temperature of the components, ambient conditions and thickness of the foamed mass.

Nominal Cured Physical Properties

PROPERTY	ASTM TEST METHOD	DENSITY 2.5	2.7	3.0
Sprayed-in-place Density	D-1622	2.5	2.7	3.0
K-factor Aged	C-518	.15	.15	.16
Compressive Strength	D-1621	40-45 psi	46 psi	50-60 psi
Tensile Strength	D-1623	60 psi	75 psi	90 psi
Shear Strength	C-273	45 psi	50 psi	50-60 psi
Closed Cell Content	D-1940	95%	95%	98%
Water Vapor Transmission	C-355	1.8 perms	1.8 perms	1.8 perms
Water Absorption	D-2842	.017	.017	.017
Wind Uplift	FM-4470	>I-450	>I-450	>I-450

This information is intended only as a guide for design purposes. The values shown are the average values obtained from laboratory prepared samples and results may vary with application conditions, equipment and technician.

K-Factor varies depending on age and use conditions.

The information contained herein is for purposes of identifying the product and does not constitute a warranty that the product will conform to that description. Product specifications and performance will vary depending on application methodologies, raw materials and other factors

Dimensional Stability Properties
ASTM D-2126

DAYS	°F	°C	%R.H.	AV
28	-20	-29	DRY	N/C
28	158	70	100%	+7%
28	158	70	DRY	+1%

SHELFLIFE

Shelf life of ROOF ARMOR - HEAT SHIELD is 6 months from the date of manufacture when stored in original unopened containers at tempera-tures between 50º - 75º F. Temperatures above 75º F may decrease shelve life.

FREIGHTCLASSIFICATION

Liquid Plastic Material -- NOIBN

CAUTION

The use of foamed plastic in interior applications on walls or ceilings may present an unreasonable fire hazard unless the foam is protected by an approved, fire-resistive thermal barrier which has a finish rating of not less than 15 minutes.

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ROOF ARMOR – HEAT SHIELD

Processing Guide

DESCRIPTION AND GENERAL USE

ROOF ARMOR - HEAT SHIELD systems are light density spray polyurethane insulations designed to be fluid-applied to construction surfaces to effect a permanent, monolithic and dimensionally stable thermal insulation.

ROOF ARMOR - HEAT SHIELD systems are a sophisticated plural component building product which should be applied only by trained and manufacturer-approved insulation experts familiar with the proper-ties of this material.

ROOF ARMOR - HEAT SHIELD systems are specifically designed as insulation for construction applications where the end use ambient temperature range will be maintained between -100ºF and 225ºF. When considering any other use for this product, consult **Polysource Industries Inc.** for specific application recommendations.

SUBSTRATE PREPARATION

For optimum results, surfaces to receive ROOF ARMOR - HEAT SHIELD should be clean and dry, free of dirt, oil, solvent, grease, loose particles, peeling coating and other foreign matter. Untreated ferrometallic substrates should be sandblasted in accordance with SSPC-SP6. Sandblasted surfaces should be primed immediately with an approved primer.

Galvanized and stainless steel surfaces should be treated with an appropriate wash primer prior to the application of ROOF ARMOR - HEAT SHIELD.

Porous substrates such as wood and concrete may not require priming if surfaces are clean and dry with less than 10% moisture content. **FOR BEST RESULTS ON SURFACES WHERE MOISTURE CONTENT CANNOT BE DETERMINED OR CONTROLLED, PRIMING IS RECOMMENDED.** Consult **Polysource Industries Inc.** for specific application requirements.

SUBSTRATE TEMPERATURE

ROOF ARMOR - HEAT SHIELD systems may be applied to surfaces with temperatures as low as 50 deg. in most instances. Please consult with Polysource Industries Inc. techincal representatives for certain requirements.

AMBIENT AIR TEMPERATURE

Winter	Regular	Summer
50 - 60ºF	65 - 85ºF	Above 90ºF

POLYSOURCE INDUSTRIES INC. TECHNICAL SERVICE PERSONNELSHOULD BE CONSULTED IN ALL CASES WHERE APPLICATION CONDITIONS ARE MARGINAL.

EQUIPMENT

Proportioning equipment shall be manufactured by Gusmer, Graco or Glas-Craft. Mixing ratio by volume is 50 parts "A" to 50 parts "B". Equipment shall be heated airless type, capable of maintaining 120ºF to 140ºF mixed material at the spray gun. Optimum spraying temperature will vary as a function of substrate and ambient conditions.

SPRAYING

ROOF ARMOR - HEAT SHIELD systems should be deposited in uniform passes ranging from 1/2" to 1 1/2". Pass thicknesses will vary as a function of substrate temperature, ambient air temperature and machine output. ROOF ARMOR - HEAT SHIELD systems bond best to them-selves when the previous pass is still warm (above 70ºF). ROOF ARMOR - HEAT SHIELD performs best when coated the same day of application, however it may be left exposed for up to 24 hours. In the event that ROOF ARMOR - HEAT SHIELD is exposed for a period greater than 24 hours, please contact **Polysource Industries Inc.** for recommendations.

CLIMATIC CONDITIONS:

No spraying should be done when moisture is present in the form of rain, dew or relative humidity greater than 80%, or when there is wind in excess of 15 m.p.h.

PROTECTIVE COATING

ROOF ARMOR - HEAT SHIELD, when applied to exterior weathering surfaces, must be top coated with an approved elastomeric coating. All coatings shall be applied in accordance with **Polysource Industries Inc.** or other coating manufacturer's instructions.

FIRE AND THERMAL BARRIER

ROOF ARMOR - HEAT SHIELD polyurethane insulation systems are combustible under many fire conditions. A fire and thermal protection have a UL rated 15-minute finish rating should be used to cover all ROOF ARMOR - HEAT SHIELD systems used on interior wall or ceiling applications.

SPECIAL NOTE

*Particular attention must be paid to coating selection In applications where a vapor drive may be present. Consult **Polysource Industries Inc.** technical service personnel for specific sys-tem recommendations.*

STORAGE

Both liquid components of ROOF ARMOR - HEAT SHIELD systems should be stored in original unopened containers at temperatures between 50ºF and 75ºF Note: Storage for prolonged periods of time at high temperatures may alter the reactivity profile of the product. Additionally storing the B component at increased temperatures or in direct sunlight for prolonged periods may cause a buildup of pressure in the storage vessel. Use caution in opening containers of ROOF ARMOR - HEAT SHIELD. Containers should be opened slowly to allow the release of any pressure buildup.

Safety, Health & Toxicity Data

A Material Safety Data Sheet (MSDS) has been prepared on the ROOF ARMOR - HEAT SHIELD systems. All personnel who will come in contact with the product should read and understand the MSDS.

PROTECTIVE EQUIPMENT

Since the ROOF ARMOR - HEAT SHIELD systems are atomized into a very fine particle distribution during spray application, it is essential that maximum effort is made to protect the spray mechanic and others near the workplace from undue exposure. Component "A" ULTRA-THANE systems are polymeric isocyanate and, as such, can be very sensitizing, particularly from the standpoint of **VAPOR INHALA-TION**. Some other ingredients may be sensitizing from the stand-point of **SKIN CONTACT OR EYE CONTACT**.

VAPOR INHALATION

The best form of protection against isocyanate or potentially sensitizing vapors in the workplace is a fresh air supply. Numerous manufacturers, including the 3M Company and MSA, make full face fresh air masks. For maximum protection, we recommend use of NIOSH/MSHA approved self-contained breathing apparatus with a full-face piece operated in a positive pressure mode. In well-ventilated application conditions, the use of Type C organic vapor cartridge respirators may be acceptable.

SKIN CONTACT

To prevent excessive skin contact with the sprayed product, the use of fabric overalls and fabric gloves is recommended.

EYECONTACT

Wear a full face mask or OSHA-compliant protective goggles.

PROTECTION OF THE WORKPLACE

Overspray from ROOF ARMOR - HEAT SHIELD systems can carry consider-able distances and attention should be given to the following:

1. Post warning signs a minimum of 100 feet from the work area.
2. Cover all intake vents near the work area.
3. Minimize or exclude all personnel not directly involved with the spray application.
4. No welding, smoking or open flames.
5. Have CO_2 or other dry chemical fire extinguisher available at the jobsite.
6. Provide adequate ventilation.

FIRST AID CONSIDERATION

Vapor inhalation problems are characterized by coughing, shortening of breath and tightness in the chest. Anyone exhibiting these types of symptoms should be immediately removed from the workplace and administered oxygen or fresh air. If the condition is prolonged or extreme, **SUMMON EMERGENCY TRAINED MEDICAL ATTENTION IMMEDIATELY**.

Skin contact with liquid components can result in a rash or other irritation. Wash any affected skin area with clean water. Wipe residual liquid from the skin with a clean cloth, then wipe the affected area with a 30% solution of rubbing alcohol. Follow the alcohol wipe with repeated washings using soap and water. If a rash or other irritation develops, **SEE A PHYSICIAN**.

Eye contact with liquid or sprayed components can result in corneal burns or abrasions. Upon exposure, eyes should be flushed with water for an extensive period. **SUMMON EMERGENCY TRAINED MEDICAL ATTENTION IMMEDIATELY**.

The information herein is believed to be reliable, but unknown risks may be present. ***Polysource Industries Inc.*** *warrants only that the material shall be of merchantable quality; this warranty is in lieu of all other written or unwritten, expressed or implied warranties, and* ***Polysource Industries Inc.*** *expressly disclaims any warranty for a particular purpose, or freedom from patent infringement. Accordingly, Buyer assumes all risks whatsoever as to the use of these materials and Buyer's exclusive remedy as to any breach of warranty or negligence claim shall be limited to the purchase price of the materials. Failure to strictly adhere to recommended procedure shall relieve* ***Polysource Industries Inc.*** *of all liability with respect to the materials or the use thereof.*