



Insulfrax® Marine Blanket

Introduction

Insulfrax® Marine Blanket from Unifrax is a totally inorganic, flexible, high-temperature insulation blanket specifically designed to provide passive fire protection for marine applications. The calcium, magnesium, silicate chemistry is designed to enhance biosolubility. Unifrax's proprietary fiber spinning technology combined with mechanical needling of the fibers eliminates the need for binders in the product. This results in a material with high tensile strength and superior thermal and acoustical properties. Insulfrax Marine Blanket is chemically stable and its thermal properties are unaffected after exposure to water immersion or high humidity.

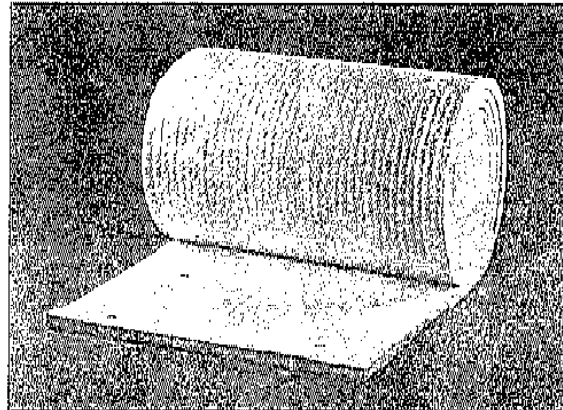
Insulfrax Marine Blanket provides fire protection insulation for a variety of rated assemblies on marine structures and vessels. Thin, lightweight systems combined with a flexible product form result in lower installation costs and significant weight savings. This offers builders and owners reduced structure weight, which may yield increased vessel speed, fuel savings and available payloads. Insulfrax Marine Blanket provides the following product features:

- U.S. Coast Guard approved for steel and aluminum structures
- Complies with SOLAS Safety Objectives and new IMO FTP Code fire test requirements
- Fire protection systems for bulkheads and decks
- Significant weight savings versus mineral wool systems
- Flexible blanket is easy to cut and install

Applications

Insulfrax Marine Blanket is utilized to insulate bulkheads and decks on passenger and vehicle fast ferries, cruise ships, commercial and military vessels, and offshore oil platforms. Tested systems are in compliance with U.S. Coast Guard regulations, now defined under IMO Res. A.754(18). Typical applications include:

- Aluminum and steel bulkheads and decks
- Vehicle loading areas, engine rooms, storage areas, etc.
- Various H-Rated offshore structures
- Non-combustible insulation



Typical Product Properties

Melting Point	2300°F (1260°C)
Temperature Grade	1832°F (1000°C)
Loss On Ignition (LOI)	0%
USCG Certifications	Structural Insulation Noncombustible
Surface Burning Characteristics (per ASTM E-84)	Flame Spread Rating = 0 Smoke Developed Rating = 0

Typical Product Parameters

Thickness	1.0", 1.5" and 2.0" (25mm, 38mm, 50.8mm)
Density	6 lbs./cu.ft. and 8 lbs./cu.ft. (96 kg/m ³ , 128 kg/m ³)
Product Availability ¹ :	1.0" x 24" x 25LF (25mm x 610mm x 7620mm) 1.5" x 24" x 12.5LF (38mm x 610mm x 3810mm) 2.0" x 24" x 12.5LF (50mm x 610mm x 3810mm)
Facings	Contact Unifrax for availability

Data are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

¹For availability of nonstandard sizes and thicknesses, contact our Customer Service Department at 716-278-3800.

Refer to the product Material Safety Data Sheet (MSDS) for recommended work practices and other product safety information.



Installation

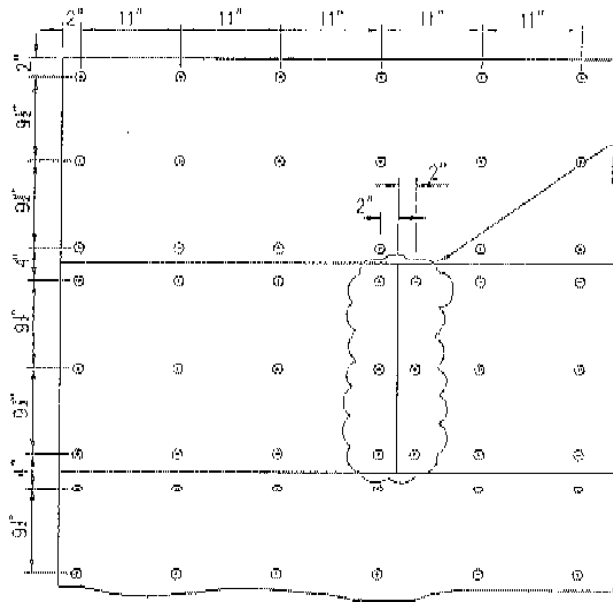
Insulfrax Marine Blanket is available in a variety of thicknesses and densities. The material parameters chosen depend upon the specific application and the Fire Rating Class required. Refer to the list of U.S. Coast Guard Certifications for details on tested systems and material components. The blanket's flexibility enables it to be easily contoured around beams and fit into tight spaces. No special tools or pre-cutting is required.

For steel bulkheads and decks, mild steel, .118 inch (3mm) CD insulation pins are utilized to permanently attach the blanket to the surface. The pin length should be equal to the total insulation thickness plus 1.0 (25mm) inch. The pins are welded to the steel surface with a standard capacitor discharge welding system. Pin spacing is typically maximum 11 inches (279mm) on center with additional pins located within 2.0 inches (50.8mm) of any material joints or termination points. See Figure 1 for details.

Insulfrax Marine Blanket is impaled over the insulation pins and can be easily cut to the necessary length and width using a straightedge and sharp knife. All blanket butt joints are compressed a minimum 1.18 inches (30mm) during the installation process – e.g., 24 inches (610mm) wide blanket compressed to 22.8 inches (580mm) as shown in Figure 2. In multiple-layer systems, the joint in each layer must be offset by approximately 12 inches (305mm), thus maximizing the thermal integrity of the insulation system. A corresponding round or square speed clip or washer is installed over the pins to permanently attach the blanket in place. Bend over excess pin length to eliminate hazards.

For aluminum bulkheads and decks, a similar pin and washer system is used, except the mild steel pin is supplied with an aluminum base, which is welded to the aluminum surface.

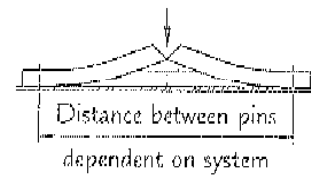
Figure 1.
Pin Layout



See compression joint detail

Figure 2.
Compression Joint Detail

Compress during installation



U.S. Coast Guard Certificates of Approval

Approval Number	Structure Type	Rating Class	# of Layers	Nominal Product Thickness	Nominal Density	Expiration Date
Reference						
System Certs.	Noncombustibility	N/A	N/A	1", 1.5", 2"	6, 8pcf	N/A
164.107/13	Aluminum Bulkhead Restricted Applications	A-60	1	2.0"	6pcf	March 18, 2007
164.107/12	Aluminum Bulkhead fire 2 sides	A-60	1	2.0"	6pcf	March 18, 2007
164.107/12	Aluminum Deck	A-60	1	2.0"	6pcf	March 18, 2007
164.107/12	Aluminum Deck	A-30	1	2.0"	6pcf	March 18, 2007
164.107/11	Steel Bulkhead Restricted Applications	A-60	1	1.5"	6pcf	March 18, 2007
164.107/10	Steel Bulkhead fire 2 sides	A-60	2	1.5" plus 1"	8pcf	March 18, 2007
164.107/10	Steel Deck	A-60	1	1.5"	6pcf	March 18, 2007
164.107/10	Steel Deck	A-30	1	1.0"	6pcf	March 18, 2007

For a list of all current USCG Certifications as well as additional documentation on available global certifications, refer to the Unifrax Web Site at www.unifrax.com.