

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; Res.A.754(18)
- Fire Resisting Division for High Speed Craft (HSC); Res. MSC.45(65)
- Fire protection structural insulation 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:

- Steel bulkheads and decks
- Aluminum bulkheads and decks, including extruded thin plate designs (min. 2mm thick)
- 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 (IMO) Fire Resisting Division (HSC) Noncombustible
Surface Burning Characteristics (per ASTM E-84)	Flame Spread Rating = 0 Smoke Developed Rating = 0

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

Typical Product Parameters

Thickness	0.5", 1.0", 1.5", 2.0" and 2.5" (13mm, 25mm, 38mm, 55mm and 63mm)
Density	6 lbs./cu.ft. and 8 lbs./cu.ft. (96 kg/m ³ , 128 kg/m ³)
Width	Standard: 24" (600mm) Non-standard: 48" (1200mm)
Facings	Aluminum Foil (.0015") (0.038mm)

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

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

Installation

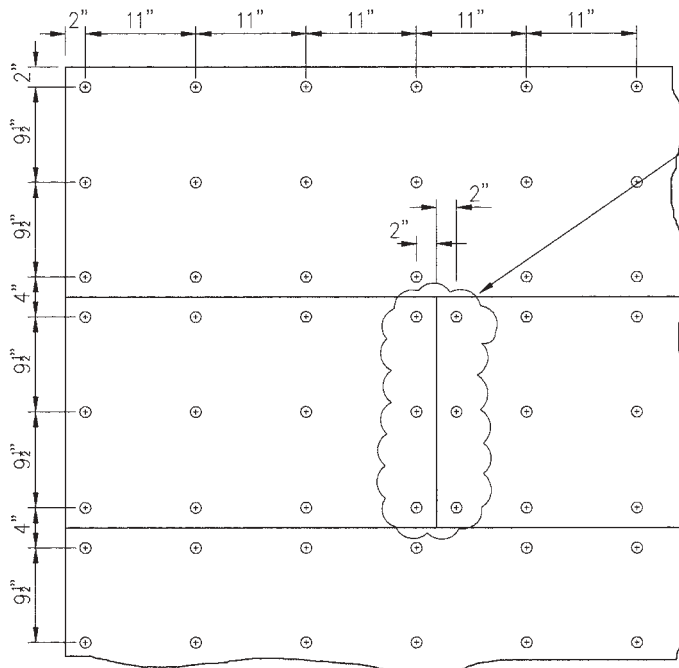
Insulfrax Marine Blanket is available in a variety of thicknesses and densities. The material parameters chosen depend upon the specific application and the Fire Rating Class required. Refer to the list of U.S. Coast Guard Certifications for details on tested systems and material components. The blanket's 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.

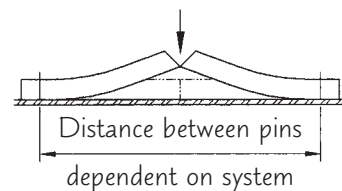
Figure 1.
Pin Layout



See compression joint detail

Figure 2.
Compression Joint Detail

Compress during installation



U.S. Coast Guard Certificates of Approval

Insulfrax Marine Blanket USCG Certificates of Approval – Reference List

Structural Insulation Per IMO FTP Code

Structure Construction	Test Criteria	Rating Class	Configuration	Plate Thickness	Insulation Thickness*	Insulation Density	No. of Layers	USCG Certification No.	Expiration Date
Noncombustible	IMO FTP Code, Annex 2	N/A	Unfaced, alum. foil faced	N/A	N/A	6pcf, 8pcf	N/A	164.109/23/0	Sept. 27, 2007
Steel	IMO FTP Code, Res.A.754(18)	A-60	Deck	N/A	1.5" (38mm)	6pcf	1	164.107/10/0	Sept. 27, 2007
Steel	IMO FTP Code, Res.A.754(18)	A-30	Deck	N/A	1.0" (25mm)	6pcf	1	164.107/10/0	Sept. 27, 2007
Steel	IMO FTP Code, Res.A.754(18)	A-60	Bulkhead (unrestricted)	N/A	2.5" (1" +1.5") (25mm +38mm)	8pcf	2	164.107/10/0	Sept. 27, 2007
Steel	IMO FTP Code, Res.A.754(18)	A-30	Bulkhead (unrestricted)	N/A	2.0" (50mm)	6pcf	1	164.107/10/0	Sept. 27, 2007
Steel	IMO FTP Code, Res.A.754(18)	A-60	Bulkhead (restricted)	N/A	1.5" (38mm)	6pcf	1	164.107/11/0	Sept. 27, 2007
Steel	IMO FTP Code, Res.A.754(18)	A-30	Bulkhead (restricted)	N/A	1.0" (25mm)	6pcf	1	164.107/11/0	Sept. 27, 2007
Aluminum	IMO FTP Code, Res.A.754(18)	A-60	Deck	5mm (min.)	2.0" (50mm)	6pcf	1	164.107/12/0	April 9, 2008
Aluminum	IMO FTP Code, Res.A.754(18)	A-60	Deck	2mm (min.)	2.0" (55mm)	6pcf	1	164.107/12/0	April 9, 2008
Aluminum	IMO FTP Code, Res.A.754(18)	A-30	Deck	5mm (min.)	1.5" (38mm)	6pcf	1	164.107/12/0	April 9, 2008
Aluminum	IMO FTP Code, Res.A.754(18)	A-30	Deck	2mm (min.)	2.0" (55mm)	6pcf	1	164.107/12/0	April 9, 2008
Aluminum	IMO FTP Code, Res.A.754(18)	A-60	Bulkhead (unrestricted)	5mm (min.)	2.0" (55mm) on both sides	6pcf	1 on each Side	164.107/12/0	April 9, 2008
Aluminum	IMO FTP Code, Res.A.754(18)	A-60	Bulkhead (restricted)	5mm (min.)	2.0" (50.8mm)	6pcf	1	164.107/13/0	April 9, 2008
Aluminum	IMO FTP Code, Res.A.754(18)	A-60	Bulkhead (restricted)	2mm (min.)	2.0" (55mm) or 1" +1.5" (25+38mm)	6pcf	1 or 2 layer option	164.107/13/0	April 9, 2008
Aluminum	IMO FTP Code, Res.A.754(18)	A-30	Bulkhead (restricted)	5mm (min.)	1.5" (38mm)	6pcf	1	164.107/12/0	April 9, 2008

Fire Resisting Divisions Per IMO for High Speed Craft

Aluminum	IMO MSC.45 (65)	A-60	Bulkhead (unrestricted)	5mm (min.)	2.0" (55mm) on both sides	6pcf	1 on each side	164.207/2/0	April 9, 2008
Aluminum	IMO MSC.45 (65)	A-60	Bulkhead (restricted)	5mm (min.)	2.0" (50.8mm)	6pcf	1	164.207/2/0	April 9, 2008
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Aluminum	IMO MSC.45 (65)	A-30	Deck	2mm (min.)	2.0" (55mm)	6pcf	1	164.207/2/0	April 9, 2008

*Actual tested insulation thickness shown in parentheses.
Minimum production thickness for 2.0" thick Insulfrax Marine Blanket is 55mm.



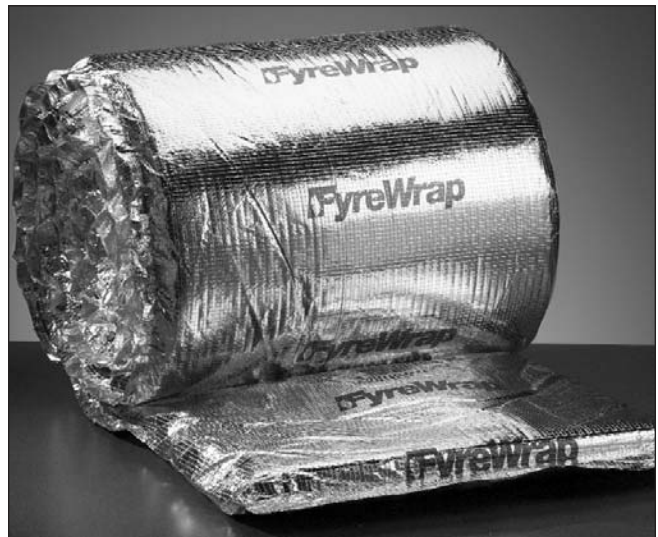
Other Fiberfrax® Refractory Ceramic Fiber Fire Protection Products and Applications

Unifrax offers many UL listed Fiberfrax® product forms for passive fire protection applications, such as:

Product	UL File Number
Fiberfrax® XFP® – Expanding Fyre Paper	R15435
Fiberfrax® Durablanket® Ceramic Fiber Blanket	R14514
Fiberfrax® Duraboard® Ceramic Fiber Board LD	E75289
Fiberfrax® Ceramic Fiber Papers (110/440)	E75289
Fiberfrax® Ceramic Fiber Papers (970)	MH7030
Fiberfrax® Lo-Con™ Felt	MH7030
Fiberfrax® Moist Pak-D®	E75289
Insulfrax® 1800 Blanket	R14514

These products offer solutions in applications such as:

- Cable Trays
- Control System Covers
- Above Ground Storage Tanks
- Bulkheads/Firewalls
- Structural Steel
- Construction Joints
- Curtain Walls/Safing
- Railroad Tank Cars
- Transit Cars
- Ships
- Expansion Joints
- Fire Doors
- Chimney Liners
- Ceiling Air Diffusers



Unifrax offers many tested and listed high-temperature product forms for passive fire protection applications. For additional information about product performance or to identify the recommended product for your fire protection application, please contact the Unifrax Application Engineering Group at 716-278-3888.

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

