



BNZ Materials, Inc.

Marinite® M

Refractory Products

Fireproof Marine Joiner Panels



Marinite M Fireproof Marine Joiner Panels are lightweight, non-asbestos 4' x 8' sheets designed to provide structural strength and high thermal and acoustical insulating values in a variety of interior marine applications. Formed from calcium silicate with inert fillers and reinforcing agents, Marinite M panels are easily handled and cut to required shapes and sizes.

In addition to high strength and insulating values, Marinite M panels combine ease of erection, fire safety, durability, attractive appearance, and low maintenance for use as bulkheads, linings or ceiling material for new construction and reconversion of passenger vessels, cargo ships, tankers, drill rigs and platforms, plus for new construction and reconversion of U.S.C.G. and Navy vessels.

For greater design flexibility, Marinite M panels can be faced with a variety of decorative finishes including sheet metals and hard or soft plastic laminates. The panels provide an excellent base for melamine veneers, often preferred for their appearance and damage resistance.

Standard Sizes

Marinite M 4' x 8' panels, with a sanded finish on both sides, are available in thicknesses of 1/2", 3/4", 7/8" and 1." The nominal panel density is 46 lbs/ft³.



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History

On September 8, 1934, the U.S. flag passenger ship *Morro Castle* burned off the coast of New Jersey, resulting in the death of 137 persons. Subsequent subcommittee investigations reconfirmed the 1929 SOLAS (Safety of Life at Sea) Convention recommendation of fire-resistant bulkheads to confine the fire. It was then that Marinite panels were developed to fill the recognized need for noncombustible, fire-resistant bulkheads for U.S. flag ships built under U.S.C.G. regulations.

Typical Applications

Marinite M panels comply with U.S. Coast Guard requirements for noncombustibility, and for divisional bulkheads and linings. They can also be used for the overhead to obtain a rated ceiling.

Advantages

Easy to Erect. Large Marinite M panels are easy to handle and fabricate. They can be erected by standard, approved marine joiner systems.

Fire Safety. Marinite M panels have flame spread and smoke developed ratings of 0, 0.

Low Overall Cost. The use of monolithic Marinite panels can result in both material and installation savings over composite constructions.

Damage Resistant. Marinite panels are highly resistant to damage from installation and service abuse. Because of their composition the panels are non-corroding.

Saves Space. Marinite M panels as thin as 3/4" meet U.S. Coast Guard B-15 bulkhead requirements. Sheets carry U.S. Coast Guard Certificate of Approval 164.008/94/1. They also meet Canadian Coast Guard B-15 bulkhead requirements and are approved per Certificate No. C1-175.

Finishes

Marinite M panels can be painted either in the as-received condition or after suitable surface preparation if aesthetics are extremely critical. Dents, scratches, and sander marks should be pre-moistened and filled with a drywall patching compound. For a surface entirely free of sander marks and other blemishes, it is advisable to treat the entire surface with a wall glaze.

The same painting systems used for interior plaster walls are suitable: polyvinyl acetate, acrylic or latex emulsions, which are self-priming with a wall primer-sealer. The prime coat should be followed with one or two coats of a flat, semi-gloss or gloss topcoat finish.

Typical Data

Properties

Density , pcf (kg/m ³)	46 (737)
Moisture Content , (normal),* % of dry weight	3
Modulus of Rupture , (dry),* psi (kg/cm ²)	**800 (56)
Modulus of Elasticity , (dry), psi (kg/cm ²) (From Modulus of Rupture Test)	300,000 (21,092)
Compressive Strength , psi (kg/cm ²)	
For 5% deformation	1000 (70)
For 10% deformation	1350 (95)
Tensile Strength , (normal), psi (kg/cm ²)	
Normal to face of sheet	55 (3.9)
Parallel to face of sheet	200 (14.1)
Shear Strength , (normal), psi (kg/cm ²)	
Normal to face of sheet	1000 (70)
Parallel to face of sheet	405 (28)
Pandux , Durometer hardness	60
Brinell Hardness No. , (dry) 45.5 kg load, 19.05 mm ball, 15 sec.	1.2
Charpy Impact Resistance , ft.lb ASTM D 256 Method B 5" x 1/2" x 7/8" sample	0.27
Screw Holding Strength , (normal), lb (kg)	
1/2" penetration	75 (34)
7/8" penetration	200 (91)
Dimensional Change Due to Moisture , in/in	
Shrinkage – normal to dry	0.0011
Expansion – normal to 90% RH	0.0013
Expansion – dry to saturated	0.0026

* (normal) refers to normal conditions of 75°F and 50% R.H.
(dry) refers to oven-dried material.

** Value may be somewhat lower for thicknesses over 1". Also, moisture pickup will cause some drop-off from the dry value.

Thermal Conductivity, Btu-in/ft², hr, °F (W/m²°K)
per ASTM C 177

Mean Temperature, °F (°C)	
75 (24)	0.88 (.13)
300 (149)	0.83 (.12)
400 (205)	0.81 (.12)
500 (260)	0.80 (.12)
600 (316)	0.79 (.11)
700 (371)	0.80 (.12)
800 (425)	0.81 (.12)
900 (482)	0.83 (.12)
1000 (538)	0.86 (.12)

Specific Heat

Temperature, °F (°C)	Btu/°F/lb
200 (93)	0.28
400 (205)	0.30
600 (316)	0.32
800 (425)	0.34

Dimensional Tolerances, inches (mm)

Length and Width	Thickness	Squareness (max. difference between diagonals)
± 1/32 (± 0.79 mm)	± 1/32 (± 0.79 mm)	1/8 (3.175 mm)

Thermal Expansion, in/in/°F 2.3 x 10⁻⁶

Fire Hazard Classification

Listed under Underwriters' Laboratories Inc. Label Service Guide o. BQJT

Surface Burning Characteristics

Flame Spread [†]	0
Smoke Developed	0

[†] This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

Specifications

Marinite M is approved by the U.S. Coast Guard for use aboard all vessels that must comply with U.S.C.G. regulations. When installed with approved erection members, a 3/4" core thickness meets U.S. Coast Guard B-15 bulkhead requirements, and may also be used as a component in Class A-60 bulkhead construction.

Marinite M panels carry U.S. Coast Guard Certificate of Approval 164.008/94/1. Marinite M is approved by the Canadian Coast Guard for B-15 bulkhead requirements per their Certificate No. C1-175.

Sound Transmission Loss

The previous product Marinite XL, very similar in composition and the same density as Marinite M, was tested for sound transmission loss according to ASTM E 90. For a 7/8" thickness tested as a single panel, the sound transmission class (STC) calculated by ASTM E 413 was 31. The STC value was governed by the maximum deficiency criteria in any single band of 8 decibels. If this were eliminated, the STC value would become 33.

A similar panel consisting of 3/4" thick Marinite XL with 1/16" melamine veneers bonded to both faces (overall thickness of 7/8") had an STC value of 32 when installed as a B-15 marine bulkhead using Jamestown Metal's joiner system.

Individual values for transmission loss in decibels at various frequencies were as follows:

Frequency (HZ)	7/8" Marinite XL	
	Single 7/8" thick Panel	B-15 Marine Bulkhead System
100	23	23
125	26	26
160	28	26
200	28	27
250	29	28
315	31	30
400	32	30
500	34	30
630	35	30
800	35	31
1000	33	32
1250	27	32
1600	27	32
2000	32	33
2500	36	35
3150	39	37
4000	41	37
5000	44	37

The physical and chemical properties of BNZ's Marinite M represent typical average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.



BNZ Materials, Inc.

BNZ Materials manufactures and is a worldwide supplier of a range of speciality industrial insulations. Our calcium silicate insulation has been manufactured continuously at Billerica, Massachusetts for over 50 years. Prior product identification was under the Johns-Manville JM trademark.

In addition to our calcium silicate product line, BNZ also manufactures Insulating Fire Brick and refractory specialties at the world's most advanced IFB plant located in Zelienople, PA. Over sixteen types of IFB are available for use in applications from 2000°F to 3200°F to meet the specific needs of a variety of industries.

Contact BNZ for more information on these products and their applications.

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Billerica

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(800) 888-0061
FAX: (978) 663-2735

Insulating Fire Brick Plant Location

Zelienople

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Warranty

BNZ Materials warrants that its products are manufactured in accordance with its applicable material specifications and are free from defects in workmanship and materials using BNZ's specifications as a standard. Every claim under this warranty shall be deemed waived unless in writing and received by BNZ within thirty (30) days of the date the defect was discovered and within one (1) year of the date of the shipment of the product.

BNZ MAKES NO OTHER REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, IN FACT OR IN LAW, INCLUDING WITHOUT LIMITATION, THE WARRANTY OF MERCHANTABILITY OR THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, OTHER THAN THE LIMITED WARRANTY SET FORTH ABOVE.

Limitation of Liability

It is expressly understood and agreed that the limit of BNZ's liability shall be the resupply of a like quantity of non-defective product and that BNZ shall have no such liability except where the damage or claim results solely from breach of BNZ's warranty.

IT IS ALSO AGREED THAT BNZ SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGES FOR ANY ALLEGED NEGLIGENCE, BREACH OF WARRANTY, STRICT LIABILITY, OR ANY OTHER THEORY, OTHER THAN THE LIMITED LIABILITY SET FORTH ABOVE.