

JOHNS-MANVILLE
INDUSTRIAL
MARINITE®

*structural-insulating
fireproof panels*

*Build and Insulate
in the same operation*

OSOL

Johns-Manville Marinite Panels are...

FIREPROOF and STRONG

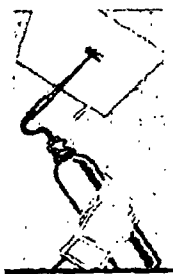
will not burn

Marinite panels will not burn because they are composed of incombustible asbestos fibers, diatomaceous silica and a hydrothermally-produced inorganic binder. Every sheet of Marinite carries the Underwriters' Laboratories, Inc. label with the following Fire Hazard Classification (based on 100 for untreated Red Oak):

Flame Spread 0
Fuel Contributed Negligible
Smoke Developed 0

Marinite is also approved by the Board of Standards and Appeals of the City of New York, meeting the requirements of C26-58, a Administrative Building Code as an incombustible material.

J-M Marinite was originally developed to insulate and prevent the spread of shipboard fires. It has been used extensively for over a quarter of a century for new construction and the reconstruction of American passenger vessels and cargo ships, as well as U.S. Naval vessels.



Marinite panels will withstand the heat of a propane torch without cracking or spalling or becoming disintegrating.

light and rugged

Large panels of Marinite are light weight, yet surprisingly rugged and strong, making them ideal for oven and drier construction.

load-bearing ability of Marinite-36 panels*

uniform load			
Panel Size, feet	Thickness, Inches	Ultimate Load, psi	Center-Point Deflection, inches
4 x 8	3/4	75	Under 20 psi
4 x 8	3/2	125	Under 20 psi
4 x 8	3/4	175	Under 20 psi
4 x 8	3/4	225	Under 20 psi
4 x 8	1-1/2	275	Under 20 psi
4 x 8	3/4	325	Under 20 psi
4 x 8	3/4	375	Under 20 psi
4 x 8	3/4	425	Under 20 psi
4 x 8	3/4	475	Under 20 psi
4 x 8	3/4	525	Under 20 psi
4 x 8	3/4	575	Under 20 psi
4 x 8	3/4	625	Under 20 psi
4 x 8	3/4	675	Under 20 psi
4 x 8	3/4	725	Under 20 psi
4 x 8	3/4	775	Under 20 psi
4 x 8	3/4	825	Under 20 psi
4 x 8	3/4	875	Under 20 psi
4 x 8	3/4	925	Under 20 psi
4 x 8	3/4	975	Under 20 psi
4 x 8	3/4	1025	Under 20 psi
4 x 8	3/4	1075	Under 20 psi
4 x 8	3/4	1125	Under 20 psi
4 x 8	3/4	1175	Under 20 psi
4 x 8	3/4	1225	Under 20 psi
4 x 8	3/4	1275	Under 20 psi
4 x 8	3/4	1325	Under 20 psi
4 x 8	3/4	1375	Under 20 psi
4 x 8	3/4	1425	Under 20 psi
4 x 8	3/4	1475	Under 20 psi
4 x 8	3/4	1525	Under 20 psi
4 x 8	3/4	1575	Under 20 psi
4 x 8	3/4	1625	Under 20 psi
4 x 8	3/4	1675	Under 20 psi
4 x 8	3/4	1725	Under 20 psi
4 x 8	3/4	1775	Under 20 psi
4 x 8	3/4	1825	Under 20 psi
4 x 8	3/4	1875	Under 20 psi
4 x 8	3/4	1925	Under 20 psi
4 x 8	3/4	1975	Under 20 psi
4 x 8	3/4	2025	Under 20 psi
4 x 8	3/4	2075	Under 20 psi
4 x 8	3/4	2125	Under 20 psi
4 x 8	3/4	2175	Under 20 psi
4 x 8	3/4	2225	Under 20 psi
4 x 8	3/4	2275	Under 20 psi
4 x 8	3/4	2325	Under 20 psi
4 x 8	3/4	2375	Under 20 psi
4 x 8	3/4	2425	Under 20 psi
4 x 8	3/4	2475	Under 20 psi
4 x 8	3/4	2525	Under 20 psi
4 x 8	3/4	2575	Under 20 psi
4 x 8	3/4	2625	Under 20 psi
4 x 8	3/4	2675	Under 20 psi
4 x 8	3/4	2725	Under 20 psi
4 x 8	3/4	2775	Under 20 psi
4 x 8	3/4	2825	Under 20 psi
4 x 8	3/4	2875	Under 20 psi
4 x 8	3/4	2925	Under 20 psi
4 x 8	3/4	2975	Under 20 psi
4 x 8	3/4	3025	Under 20 psi
4 x 8	3/4	3075	Under 20 psi
4 x 8	3/4	3125	Under 20 psi
4 x 8	3/4	3175	Under 20 psi
4 x 8	3/4	3225	Under 20 psi
4 x 8	3/4	3275	Under 20 psi
4 x 8	3/4	3325	Under 20 psi
4 x 8	3/4	3375	Under 20 psi
4 x 8	3/4	3425	Under 20 psi
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4 x 8	3/4	4025	Under 20 psi
4 x 8	3/4	4075	Under 20 psi
4 x 8	3/4	4125	Under 20 psi
4 x 8	3/4	4175	Under 20 psi
4 x 8	3/4	4225	Under 20 psi
4 x 8	3/4	4275	Under 20 psi
4 x 8	3/4	4325	Under 20 psi
4 x 8	3/4	4375	Under 20 psi
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4 x 8	3/4	5075	Under 20 psi
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4 x 8	3/4	5225	Under 20 psi
4 x 8	3/4	5275	Under 20 psi
4 x 8	3/4	5325	Under 20 psi
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4 x 8	3/4	14375	Under 20 psi
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4 x 8	3/4	14475	Under 20 psi
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4 x 8	3/4	14925	Under 20 psi
4 x 8	3/4	14975	Under 20 psi
4 x 8	3/4	15025	Under 20 psi
4 x 8	3/4	15075	Under 20 psi
4 x 8	3/4	15125	Under 20 psi
4 x 8	3/4	15175	Under 20 psi
4 x 8	3/4	15225	Under 20 psi
4 x 8	3/4	15275	Under 20 psi
4 x 8	3/4	15325	

J-M Marinlite Panels provide... **FAST, ECONOMICAL ERECTION** **and LONG SERVICE LIFE**

easy to erect

Marinlite panels are light and easy to handle. You need no special tools or skills to erect any size housing. This sturdy material is easy to cut and drill, permitting observation doors, ports, etc., to be readily incorporated into the equipment. In fact, doors can be cut with a sober saw from the interior of a Marinlite panel, with the cut piece used as the door. Regardless of the size or complexity of the job, Marinlite panels can be applied by your own personnel without special training.

If desired, the Marinlite panels can be precision cut to your exact specifications by one of the many local J-M Casters and Fabricators.

saves you money

When you construct ovens, drivers or other insulated housings with Marinlite, you build and insulate in one step. This speeds construction, keeps labor costs at a minimum, reduces the time required to put your equipment into operation.

maintenance-free

Because Marinlite is completely inorganic, it is immune to decay and does not attract vermin or rodents. It will not support the micro-organisms that cause mold growth. Marinlite retains its attractive appearance without special care and will last indefinitely.



This modern hand oven for baking crucibles and crucible products operates efficiently and economically, thanks to its Marinlite construction. The panels are collected by the crucibles to which insulated metal parts are susceptible and, hence, require publicity in maintenance. Since is the operating sub-density red of the type "B" used, manufactured by the Thomas L. Green Co., Inc., Indianapolis, Indiana.

473551

HIGH INSULATING EFFICIENCY

holds heat

In housings made of insulated metal panels, there is a large amount of heat loss caused by through-metal. By "through-metal" is meant metal which extends from inner to outer surface, thus providing the required structural support but also offering a massive path for heat to escape. Therefore, the thermal conductivity of Marinlite cannot be directly compared with glass or mineral fiber insulation, whose conductivity in-place is drastically affected by the through-metal in the supporting panel in which it is encased.

Marinlite panels, being self-supporting, and applied with broken-joint construction, eliminate all through-metal supports. This reduces heat loss, prevents localized "hot spots" and provides uniform temperature control throughout the equipment.

thermal conductivity

Material	100	200	300	400	500	600	700	800	900	1000
Marinlite-23	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.65	0.66	0.67
Marinlite-36	0.75	0.77	0.78	0.79	0.80	0.81	0.82	0.84	0.85	0.86
Marinlite-65	1.7	-	-	-	-	-	-	-	-	-

Conductivity, Btu in. per sq ft per F per hr

specific heat

Material	Temperature, F	100	500	900
Marinlite-23	0.25	0.25	0.31	0.34
Marinlite-36	0.25	0.25	0.31	0.34
Marinlite-65	0.25	0.25	0.31	0.34

SAFETY: Use of Marinlite is safe.

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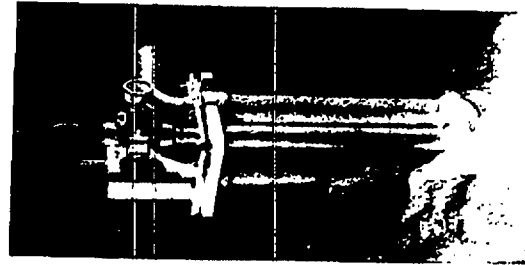


Marinette speeds finishing of textiles, reduces maintenance-replacement costs to a minimum in this 75-hp centrifugal pump.



The high humidity encountered in textile dyeing operations will never affect the Marinette pump used to combine the agent.

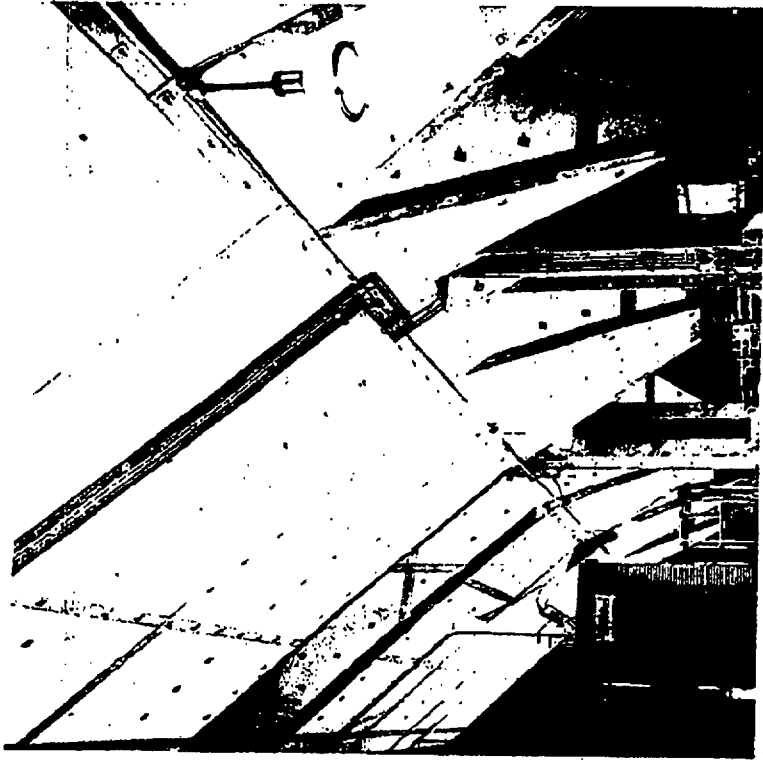
Marinette has stood on this pump manufactured by United Pumping Services, Inc., Cleveland, Ohio, protects the upper mechanism from temperature of water at 100° F. below.



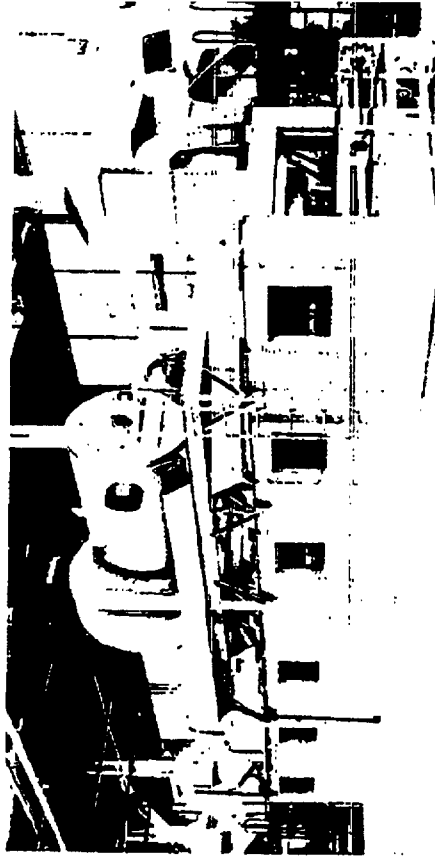
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*J-M Marinette
Pumps have...*

**A WIDE
RANGE OF
USES**



Large pumps of this type, combining simplicity and efficiency, quickly covered the larger area under the electrician's protection at the Cleveland Electric Machinery Company.



Open for drying pilot cooling, standard of Cleveland Electric Machinery Company and excellent building program.

473554

J-M Marinite Panels give you...

10 MAJOR BENEFITS FOR OVENS AND DRIERS

There are ten major reasons why Marinite is the most economical ... most practical ... and longest-lasting material for constructing ovens and driers.

Most drying and baking processes create extremely moist atmospheres which are very corrosive to sheet metal. This condition is so serious that manufacturers are resorting to aluminized steel and stainless steel linings which are quite costly.

Performance records prove that Marinite is not affected by moisture or high humidity.

It is difficult to effectively seal the lining of an insulated sheet metal housing, because the expansion of steel from room to operating temperature causes the liner to buckle and distort. This creates openings for the leakage of air and the entrance of moisture, which increases the heating load and corrodes the outer shell from the inside out, thus reducing the insulating value of the fibrous insulation.

Marinite effectively resists air leakage and moisture entry, permitting only a small amount of moisture to diffuse through the panel to the outside atmosphere.

A Marinite housing can be designed with practically no through-metal, eliminating localized hot spots and making it more thermally efficient than ovens built from insulated metal panels. Metal panels are rigidized with metal channels around their edge and metal stiffeners across the faces. Even though these members are punched with slots to reduce through-metal, considerable conducting metal remains to short-circuit heat through the housing. The only through-metal in Marinite construction are the bolts which hold the panels to the supporting framework. These prevent negligible cross-sectional area compared with the much more massive continuous sections of structural metal.

non-corroding

moisture resistant

minimum through-metal

473537

uniform temperature control

optimum heat capacity

no refractory lining needed

simple, fast erection

minimum maintenance

superior quality end products

fireproof

Marinite is a solid material that does not settle or sag, thus eliminating the danger of voids within the housing and ensuring uniform temperatures throughout.

The laser 1" thick layer of Marinite has over four times the heat capacity of a sheet metal lining. This prevents localized fluctuations in temperature, providing a concentrated and steady heat impact on the charge. (See table of specific heat on page 6.)

Because Marinite provides a uniform heat sink of optimum heat capacity, no expensive refractory lining is required. Marinite will heat up much faster than a dense refractory lining, too.

Marinite saves construction time because you build and insulate with one material. Marinite fabricates readily and requires no special tools or know-how. Installed cost is low.

Marinite requires little or no maintenance ... needs no painting or other preservative treatment.

Marinite ovens are more sensitive to heat control, affording considerable flexibility and permitting a variety of products to be handled in the same oven. Baked goods are uniform and of superior quality.

A Marinite housing will not be damaged by a highly inflammable product that is subject to occasional flaming.

473558

DESIGN and FABRICATION TIPS for Marinite Housings

- The simpler the design the better. Refer to the construction details on pages 14 and 15 for recommended methods of installation. You will note that all Marinite panels are framed with a light supporting steel framework. Staggered joint construction is used wherever possible.
- Because Marinite is self-supporting, use a minimum number of bolts to hold it to the steel members. Drill holes in the Marinite $\frac{1}{4}$ " oversize. Tighten nuts only until home — do not compress the Marinite.
- Put the Marinite panels inside the steel framework to protect the metal from heat or corrosive atmosphere. This minimizes expansion and contraction, and prevents rusting of the steel.
- Use a thickness indicated by the table, below. Many masons and drivers operate at 500°F and under, so a 2" thickness is often adequate; a 1" thickness is sufficient for low operating temperatures.

THICKNESS OF MARINITE REQUIRED TO GIVE INDICATED SURFACE TEMPERATURE

	(18" x 24" x 1" Ambient 50°F Air)					
	Operating Temperature, F					
	200 100 350	400 150 400	500 250 500	600 300 600	700 350 700	800 400 800
125°F Surface Temperature: (Heat Transmission: 87 Btu/hr sq ft) Marinite-36	7/8 1-3/16	1-1/8 2-1/8	1-3/4 3-1/8	2-1/4 4-1/8	2-3/4 5-1/8	3-1/4 6-1/8
150°F Surface Temperature: (Heat Transmission: 141 Btu/hr sq ft) Marinite-33	7/8 1-3/16	1-1/8 2-1/8	1-3/4 3-1/8	2-1/4 4-1/8	2-3/4 5-1/8	3-1/4 6-1/8
175°F Surface Temperature: (Heat Transmission: 201 Btu/hr sq ft) Marinite-33	1-1/4 3/4	1-3/8 1-1/2	1-7/8 2-1/8	2-1/4 3-1/8	2-3/4 5-1/8	3-1/4 6-1/8

- Refer to the table below for guidance in minimizing warpage at high temperatures. All insulating materials, including Marinite panels, shrink slightly at temperatures above 250°F. When heat is applied to only one side, the inner face of each layer will have a higher temperature, and, consequently, will shrink slightly more than the outer face. This may cause the sheet to have outward at the center. The greater the differential in temperature between the inner and outer face, the greater will be the warpage. Also, larger panels will bow more than smaller ones.

To control the extent of bowing:

1. Use subbottom layers to reduce the differential in temperature between the inner and outer face of each layer.
2. Reduce the largest panel dimension.

Largest panel dimension, feet	Operating Temperature, F					
	100 to 250	201 to 350	351 to 500	501 to 650	651 to 800	801 to 950
2	1	1	1	1	1	1
4	1	1	1	1	1	1
6	1	1	1	1	1	1
8	1	1	1	1	1	1
10	1	1	1	1	1	1

470559

CUTTING, WORKING and PAINTING RECOMMENDATIONS

Marinite should be cut and worked dry. For straight cuts, a circular saw with the cutting wheel located beneath the table is recommended. Abrasive wheels have been found to work best, of a type such as C-202-15-33 (Safety Wheel) or C16-14-X (Steel Center) manufactured by G. H. Bellard Co., Wrentham, Mass. Wheel speeds of 3500 rpm are recommended for Marinite-33 and 1600 rpm for Marinite-36 and 65. A total thickness of up to 5" of Marinite-33 and 36 can be cut at one time; up to 2 1/2" of Marinite-36. Cutting dust should be removed by an exhaust system to eliminate air contamination. For field cuts, where only limited cutting will be done, a portable power saw may be used. Holes may be made with a high speed drill in a drill press or power drill.

SCREW SECUREMENT

Sheet metal screws are recommended in preference to wood screws. Preliminary holes should always be drilled, as follows:

Type A Sheet Metal Screw Size	Drill Size
No. 6 (0.1307)	No. 36 (0.1097)
No. 8 (0.1387)	No. 20 (0.1367)
No. 10 (0.1917)	No. 20 (0.1367)
No. 12 (0.2167)	No. 18 (0.1697)

To prevent stripping of the thread in Marinite, screws should not be turned after they are "home."

While Marinite for interior use requires no further preservative treatment, it can be painted to further enhance its appearance. Type B (surface impregnated) should be used. Dents or scratches in the surface can be filled with a wall patching compound or "spackle."

The same finishing systems used for interior plaster walls are suitable. When painting the outside of a dryer housing, however, a flat, breathing-type — such as one of the water emulsion paints described below — should be used. Otherwise, trapped moisture will cause it to blister and peel.

The following paint systems are recommended in order of preference:

WATER EMULSION PAINTS — These paints made with polyvinyl acetate, acrylic or latex emulsions can be applied directly without the use of special primers, as a one or two-coat finishing system. They have the advantage of being non-inflammable, free of solvent odor, and fast drying.

INTERIOR SYNTHETIC RESIN PAINTS — These paints, such as the alkyd type, require one coat of a wall primer-sealer, followed by one or two coats of a flat, semi-gloss or gloss topcoat finish.

RUBBER-BASE SOLVENT TYPE MASONRY PAINTS — These paints, made with chlorinated rubber or rubber resin, are applied directly as a two or three-coat finish.

ALUMINUM PAINTS — The pure aluminum paint may require preliminary application of a clear sealer coat. Alkyd-based aluminum paints of heavier body usually can be applied directly. Aluminum paints are vapor barriers and will blister and peel if applied to the inside of a dryer housing.

working

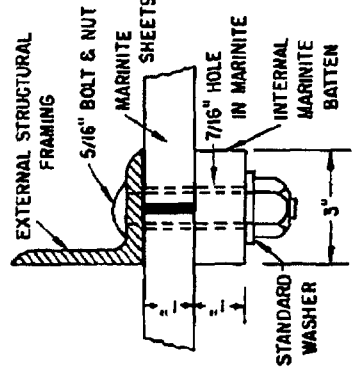
painting

RECOMMENDED DRIER CONSTRUCTION

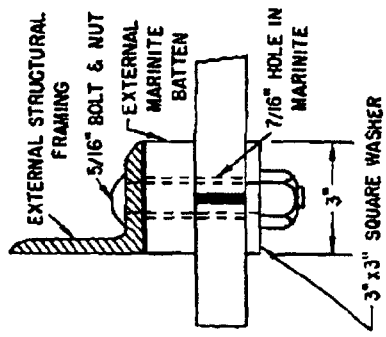
with J-M Marinite Panels

single layer construction

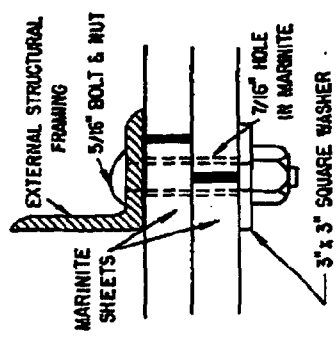
INTERNAL BATTEN CONSTRUCTION



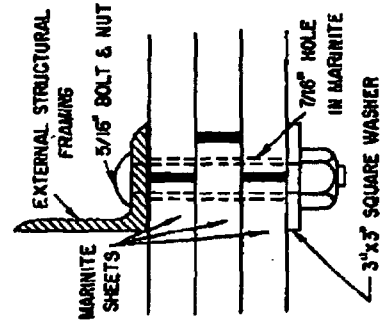
ALTERNATE-EXTERNAL BATTEN



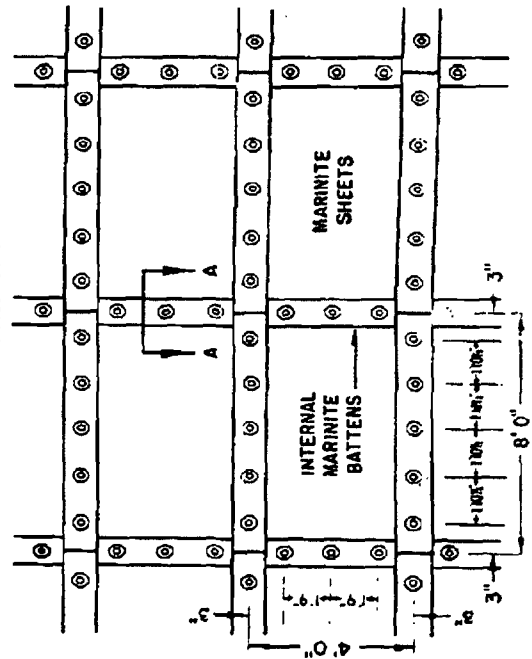
two layer staggered-joint construction



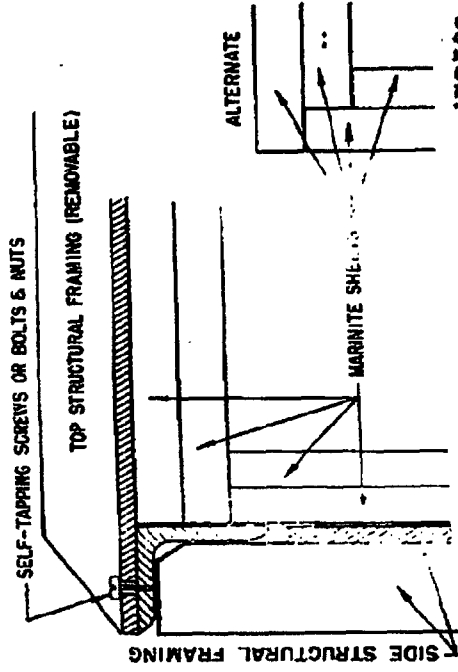
three layer staggered-joint construction



SECTION A-A



corner construction



473561

473562

Use Molten Metal Marinite for...

CONVEYING NON-FERROUS MOLTEN METALS

Johns-Manville Molten Metal Marinite is an ideal material for conveying and metering molten metals up to 1500°F. Molten aluminum, zinc, lead and other non-ferrous metals do not wet its surface. They do not adhere, even when they cool and solidify, so there is no metal contamination.

Better metal quality and yield — Because Molten Metal Marinite has a high thermal insulating value, it holds metals at uniform temperature, permitting them to be cast at lower temperatures. It doesn't have to be preheated before each pour. This improves the quality of the metal and the yield.

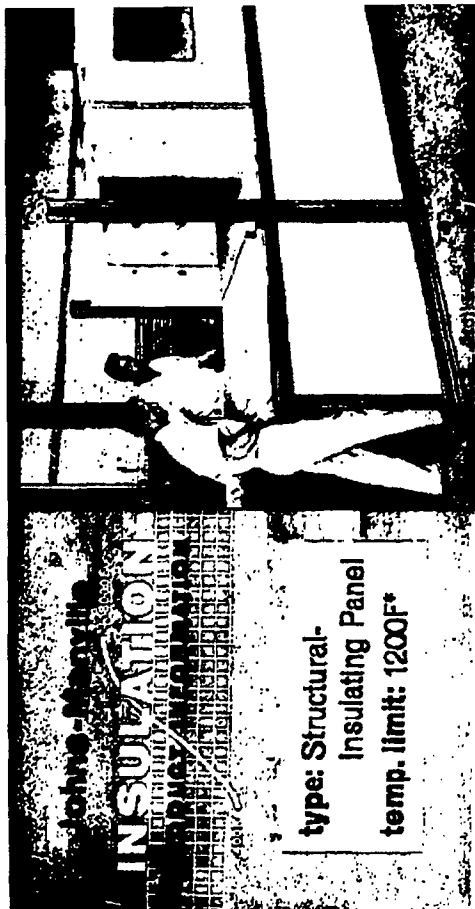
Variety of applications — Molten Metal Marinite is widely used for ladlers and troughs, trough hangers, distribution boxes, pouring boxes, pouring spouts, floating baffles, and ingot mold liners. The entire metal-feed systems of many continuous casting machines are made from Molten Metal Marinite.

Johns-Manville

22 East 40th Street • New York, N. Y. 10016
Sales Offices in Principal Cities



473593



J-M MARINITE® structural-insulating fireproof panel

■ ADVANTAGES:

Structural and Insulating Material

Builds and insulates in one operation. Only a light supporting steel framework required. Panels are lightweight, yet surprisingly rugged and strong.

Fireproof

Will not burn. Every sheet of Marinite carries the Underwriters' Laboratories, Inc., label with the following Fire Hazard Classification (based on 108 for untreated Red Oak):

Flame Spread	0
Fuel Contributed	Negligible
Smoke Developed	0

Also approved by the Board of Standards and Appeals of the City of New York, meeting the requirements of C-26-59.2 Administrative Building Code as an insurable building material.

Easy to Erect

Large, easy-to-handle sheets can be installed as quickly and easily as plywood. Excellent thermal properties reduce heat loss and provide uniform temperature control.

Requires No Maintenance

Completely inorganic and not affected by moisture. Will not rust or corrode... lasts indefinitely.

473534

■ **DESCRIPTION:** Johns-Manville Marinite is a fireproof structural-insulating panel that builds and insulates in one operation. Composed of asbestos fiber, diatomaceous silica, and a hydrothermally produced inorganic binder, it combines great structural strength with light weight, excellent thermal properties and ease of erection. Marinite is non-corroding and will not disintegrate even after prolonged immersion in water.

■ **AVAILABLE FORMS:** Marinite is furnished in three densities: 23, 36 and 65 lbs. per cu. ft. All are supplied in two types: Type A, with a sandblast finish on both sides; Type B, sandblast both sides and treated with an inorganic impregnant, ready for priming and painting or veneering. Marinite sheets range in size from 36" x 96" to 48" x 120", and in thickness from 1/2" to 2", depending on density. Thicknesses up to 4" are available on special order.

■ **USES:** Because it is both a structural and an insulating material, Marinite offers many economic advantages in the construction of roofs, floors, and other involved structures for the retention and control of heat. In addition, it can be readily machined into various shapes for all types of local applications.

The Johns-Manville company is a leading manufacturer of asbestos products and is a member of the Asbestos Manufacturers Association.

