PLAINTIFF'S
EXHIBIT
K-1472

+3000F

SULATION

type: Brick
temp limit: 3000F

J-M INSULATING FIRE BRICK

■ **DESCRIPTION:** Johns-Manville produces six types of Insulating Fire Brick to provide operators and builders of high temperature equipment six opportunities to get the one insulating fire brick that's right for a given service.

Each type of J-M Insulating Fire Brick has the correct balance of thermal and physical properties for its recommended service. All six types offer light weight, low conductivity and high structural strength.

Made from high quality refractory clays (plus alumina in the case of JM-3000), these insulating fire brick contain a carefully graded organic filler which is burned out during manufacture to give a uniform, controlled pore structure.

■ **AVAILABLE TYPES:**

JM-3000*—for temperatures to 3000F exposed.

JM-28—for temperatures to 2800F exposed.

JM-26—for temperatures to 2600F exposed.

JM-23—for temperatures to 2300F exposed.

JM-20—for temperatures to 2000F exposed.

JM-1620—for temperatures to 1600F exposed; to 2000F back-up.

*JM-3000 Insulating Fire Brick is the newest of the six types. It provides long-life insulation at a full 3000F, in back-up or direct exposure service, and is molded from specially selected kaolin clays plus alumina.

■ **USES:** Recommended for use as refractory lining or as back-up insulation behind other refractory protection in kilns, furnaces, flues, refining vessels, regenerators, gas producers and mains, soaking pits, stress-relieving furnaces, reactor chambers and similar high temperature industrial equipment.

■ **ADVANTAGES**

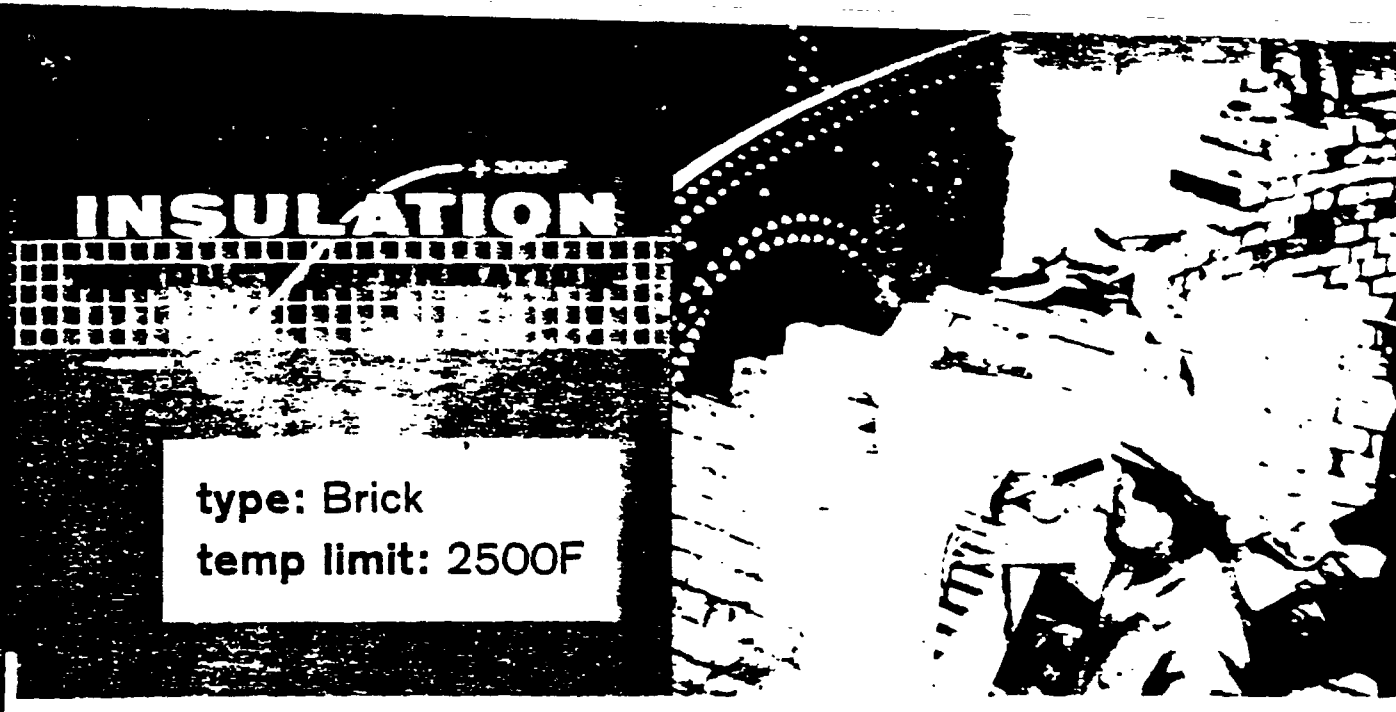
High Insulating Value

The light weight and high insulating value of J-M Insulating Fire Brick make possible thinner furnace walls, improved efficiency and lower operating costs.

Quick Heat Up

Furnaces can be brought up to operating temperatures with unusual speed, resulting in increased production.

DEFENDANT'S
EXHIBIT
OE. 41



J-M SIL-O-CEL® INSULATING BRICK

■ **DESCRIPTION:** Made from diatomaceous silica, a material composed of millions of microscopic cells that offer maximum resistance to heat flow, Sil-O-Cel Insulating Brick are particularly useful where high load-bearing characteristics are required. Sil-O-Cel Insulating Brick are furnished in three types for use as back-up insulation behind refractory fire brick linings or behind insulating fire brick linings. The new Sil-O-Cel 16L brick may also be used for exposed as well as back-up service.

■ **AVAILABLE TYPES:**

Sil-O-Cel Insulating Brick are furnished in three different types as follows:

Sil-O-Cel Super—for temperatures to 2500F back-up only.

Sil-O-Cel C-22—for temperatures to 2000F back-up only.

Sil-O-Cel 16L—for temperatures to 1600F back-up or exposed.

■ **USES:** Sil-O-Cel Insulating Brick are recommended for use as back-up insulation in furnaces, kilns, hot blast stoves, soaking pits, boiler walls, oil heaters, regenerators, and similar high temperature equipment in the steel, chemical, ceramic, power, petroleum and glass industries.

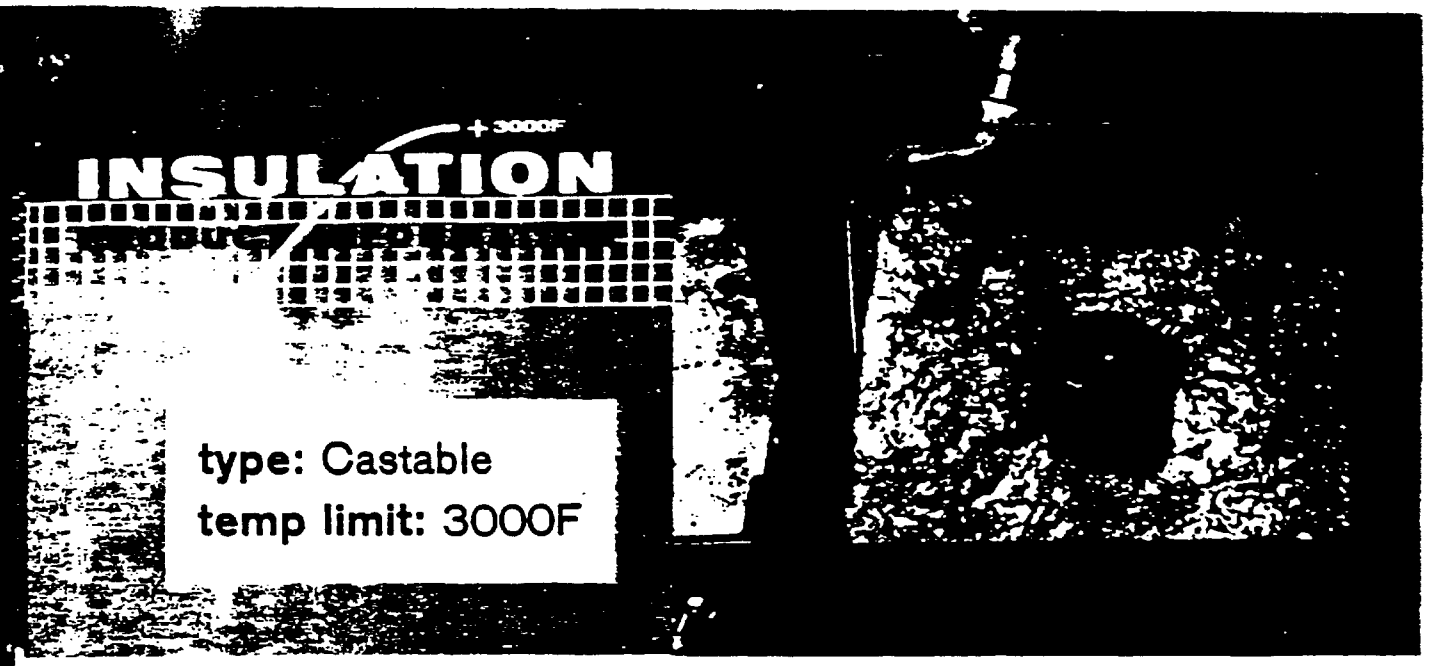
■ **ADVANTAGES**

Good Insulating Value

Used as back-up insulation, Sil-O-Cel Insulating Brick make it possible to reduce the necessary thickness of the exposed refractory as much as one-third. This results in substantial savings in furnace wall construction for all the types of high temperature equipment for which these brick are recommended.

High Load Bearing Strength

Sil-O-Cel Insulating Brick are made from diatomaceous silica, a natural fossilized material which imparts to the finished brick great strength. The Sil-O-Cel C-22 brick, for example, has a cold crushing strength of 700 lbs per square inch.



J-M FIRECRETE® hydraulic setting refractory cement

■ **DESCRIPTION:** Johns-Manville produces seven types of hydraulic setting castable refractory cements to meet practically every castable requirement for temperatures through 3000F. Each of these refractories is economical and efficient in the service range for which it is recommended. All harden rapidly and are highly resistant to spalling.

■ **AVAILABLE TYPES:**

3X Firecrete – For service to 3000F. Composed principally of high aluminous materials calcined at high temperatures. Recommended for casting thicknesses of 2 inches or more.

H.T. Firecrete–For service to 2800F. Recommended for casting thicknesses 2 inches or more.

Standard Firecrete–For service to 2500F. Develops exceptional strength on air curing. Can be used to cast thicknesses as thin as 1 inch.

L.W. Firecrete–A light weight, insulating refractory concrete for service to 2400F. 75 lbs of dry material required for one cubic foot.

CA Insulating Firecrete–A light weight, low iron content refractory for use in controlled atmospheres. For service to 2600F.

No. 20 Firecrete–Similar to L.W. Firecrete but lighter. 58 lbs of dry material required for one cubic foot. Service to 2200F.

C-31 M Refractory Cement–A chrome base castable refractory for service to 3000F.

■ **USES:** Firecrete is used extensively for monolithic furnaces and linings and is recommended for such special shapes as those required for burner rings, baffle tile, header protection tile, pipe linings, furnace bottoms and similar installations.

■ **ADVANTAGES**

Hardens Rapidly

Firecrete permits casting and use of any desired shape within 24 hours.

Resists Spalling

All seven types are highly resistant to spalling.

Negligible Shrinkage

Firecrete has no drying shrinkage and only negligible fire shrinkage at recommended temperatures.

Easy and Economical to Use

The adaptability of Firecrete makes possible the easy construction of monolithic furnaces, linings and the like which would otherwise require the use of special shapes or involve costly cutting and fitting of brick.

J-M BLAZECRETE® hydraulic setting refractory cement

■ **DESCRIPTION:** Four types of dry monolithic, hydraulic setting refractory cements have been developed and produced by Johns-Manville for gunning and slap-troweling applications.

These four refractories are especially adaptable for gun application in building new refractory linings and repairing old ones. They adhere readily with a minimum of loss when "shot" in place. Mixed with water at the gun nozzle, they are pneumatically projected with great force, resulting in a dense, homogeneous lining.

Blazecrete is equally effective for heavy patching by troweling, especially where brickwork has eroded deeply. It eliminates the laborious ramming or tamping required with "plastics," and patches need not be prefired.

■ **AVAILABLE TYPES:**

3X Blazecrete—For service to 3000F. High alumina content. Particularly adaptable for gun applicators and for heavy patching by slap-troweling.

Standard Blazecrete—For service to 2400F. Alumina silicate base.

L.W. Blazecrete—For service to 2000F. Light weight, alumina silicate base refractory. Used extensively for stack linings, heaters and other applications where gunning mix with low rebound loss is required.

C-2 Refractory Cement—For service to 2300F. Used to advantage in making a protective abrasion-resistant refractory surface over L.W. Blazecrete.

■ **USES:** Recommended for lining or patching forge furnaces, ashpits, cyclones, heaters, boilers, oil refining equipment, furnace bottoms, ladles and similar applications. L.W. Blazecrete is extensively used on tanks, structural steel and skirts for fire protection purposes.

■ **ADVANTAGES**

Hardens Rapidly

Applications ready for use within 24 hours of gunning or slap-troweling.

Resists Spalling

All four types are highly resistant to spalling.

Easy to Use

Can be applied by gunning or slap-troweling.

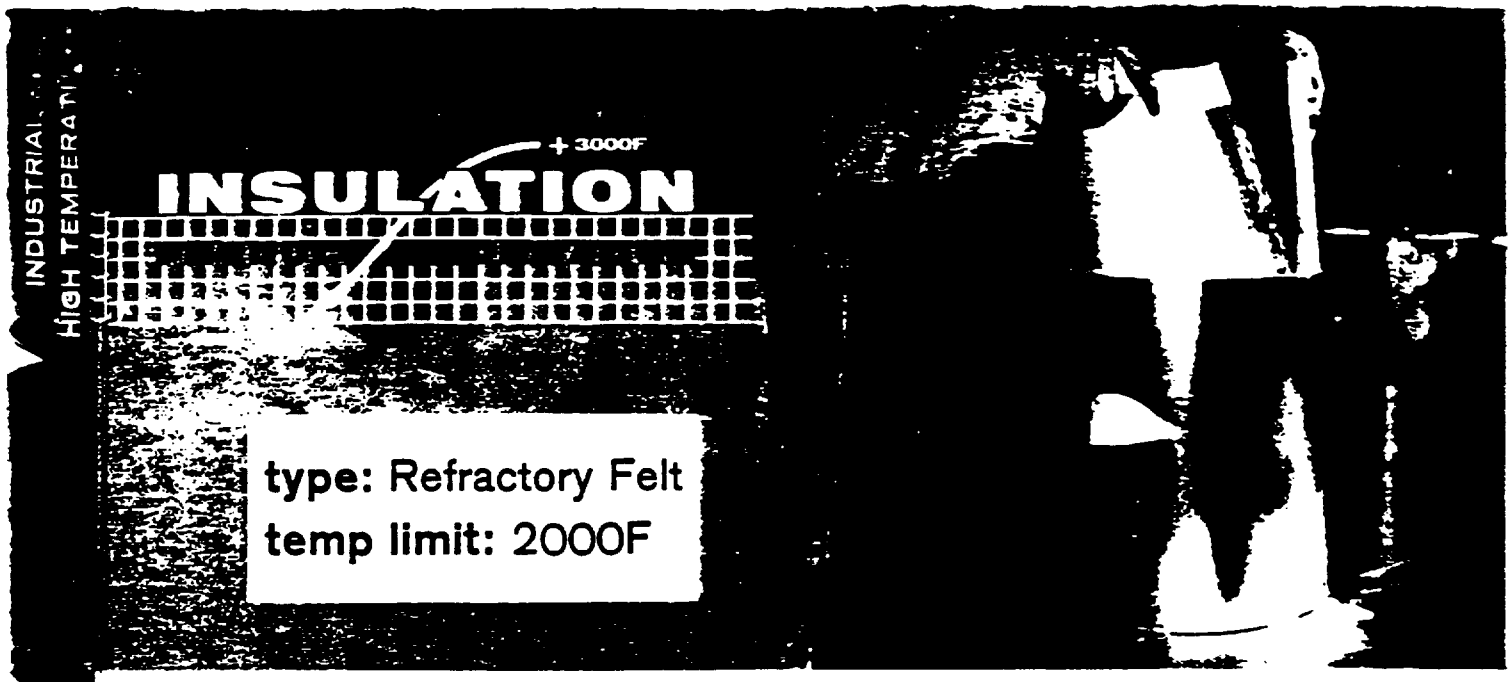
J-M AGGREGATES AND FILLS

■ **DESCRIPTION:** Johns-Manville lightweight aggregates and fills are available in a wide selection for temperatures through 2400F.

JM-2000 and JM-2400 L.W. Aggregates may be mixed with calcium aluminate cement to form an insulating refractory concrete for various operating conditions. Sil-O-Cel C-3 may be mixed with calcium aluminate or portland cement for lower temperature conditions. By selection of the aggregate, an insulating refractory concrete can be made with the characteristics desired for constructing core, japanning and enameling ovens, foundations and bases of heated equipment, furnace doors, and many special shapes. In addition, all materials listed below may be used as fills for insulating irregular spaces in high temperature equipment, making it possible to conserve heat where other forms of insulation cannot be economically installed.

AVAILABLE TYPES

Name	Composition	Temperature limit, F	Approx density to which fills are normally packed, lbs per cu ft	Packaging
JM-2400 L.W. Aggregate	al. silicate	2400	50	65-lb bags
JM-2000 L.W. Aggregate	al. silicate	2000	41	50-lb bags
Sil-O-Cel C-3	calcined, coarse-graded diatomaceous silica	2000	31	50-lb bags
Sil-O-Cel Insulating Powder	finely ground diatomaceous silica	1600	17	50-lb bags
Sil-O-Cel Coarse Grade	similar to Sil-O-Cel Insulating Powder, but more coarsely ground	1600	22	50-lb bags



J-M CERAFELT refractory fiber felt

DESCRIPTION: J-M Cerafelt is a lightweight, refractory-fiber insulation notable for its excellent thermal and chemical stability. Made predominantly of alumina and silica, it combines lightness, heat resistance, low conductivity and high sound-absorption qualities.

AVAILABLE FORMS: Furnished in densities ranging from 3 to 24 lbs per cu ft. Also prefabricated fully encased in heat-resistant metal foils or meshes to fit any industrial shape.

USES: Recommended for a great variety of high temperature applications including gas turbines, refractory linings for domestic oil burner combustion chambers, high temperature packing, and similar industrial uses.

ADVANTAGES

High Heat Resistance

Will withstand continuous exposure to a full 2000F.

Low Thermal Conductivity

Unusually low conductivity at high temperatures due to opacity of basic fibers to infra-red radiation.

Light Weight

Weighs as little as 1/40th equal volume of hard fire brick.

Chemically Stable

Non-alkaline and chemically stable. Contains no corrosion-promoting agents.

THERMAL CONDUCTIVITY

Density, lbs per cu ft	MEAN TEMPERATURE, F							
	300	400	500	600	700	800	900	1000
3	.39	.46	.55	.65	.76	.89	1.02	1.16
4	.37	.44	.52	.61	.71	.82	.94	1.07
6	.35	.41	.47	.54	.62	.71	.81	.92
8	.34	.39	.45	.51	.57	.64	.71	.80
10	.34	.38	.43	.49	.55	.61	.68	.75
12	.34	.38	.43	.48	.53	.59	.65	.72
18	.32	.36	.40	.45	.50	.55	.60	.66
24	.31	.35	.40	.44	.48	.53	.58	.63

CONDUCTIVITY: BTU IN. PER SQ FT PER F PER HR

STANDARD DENSITIES AND THICKNESSES

Type	Density, lbs per cu ft	Available Thicknesses, Inches								
		1/16	1/8	1/4	3/8	1/2	3/4	1	1 1/2	2
CRF-300	3			X	X	X	X	X	X	X
CRF-400	4			X	X	X	X	X	X	X
CRF-600	6			X	X	X	X	X	X	
CRF-800	8		X	X	X	X	X	X		
CRF-1000	10		X	X	X	X	X	X		
CRF-1200	12	X	X	X	X	X	X	X		
CRF-1800	18	X	X	X	X					
CRF-2400	24	X	X	X						

STANDARD SIZES

	Length, feet	Width, inches
CRF-300—CRF-600	4, 8 and 26	42
CRF-800—CRF-2400	4 and 8	

COPY FORM	INITIALS	DATE
	TCD	

BOX NUMBER	SEGMENT NO.	REQUESTING PARTY
P-155		BJD

NOTES