HEAT TREATED MOLTEN METAL MARINITE - SHEETS - /month

Plant Location	4 x 8 x ½	4 x 8 x 1	4 x 4 x 1	4 x 8 x 2	4 x 4 x 2
Alcoa, Tennessee	0	40	0	9	6
Badin, North Carolina	0	12	0	10	2
Alcoa Technical Center New Kensington, Pa.	0	35	0	20	0
Cleveland, Ohio	0	6	6	6	6
Cressona, Pa.	0	18	0	0	0
Davenport, Iowa	1	1	0	3	0
Lafayette, Indiana	0	20	0	1	0
Point Comfort, Texas	1	40	0	6	0
Rockdale, Texas	0	10	0	15	0
Vancouver, Washington	0	25	0	1	0
Warrick, Indiana	0	0	0	32	0
Wenatchee, Washington	0	10	0	10	0
Vernon, California	0	50	20	1	1

PLAINTIFF'S EXHIBIT AL-850

M. J. Ryan
— L. B. Neubert

JOHNS-MANVILLE

SALES CORPORATION

[illegible]

[illegible] 40th STREET • NEW YORK [illegible] • TELEPHONE LEXINGTON [illegible] • AREA CODE 212

April 1, 1969

Mr. L. B. Neubert
Aluminum Company of America
1501 Alcoa Building
Pittsburgh, Pennsylvania 15219

Dear Mr. Neubert:

Your company uses our Molten Metal Marinite in casting aluminum ingots and billets. In fact, production is dependent on an adequate supply. This makes it mandatory that we plan to meet future customer demands.

Recent aluminum plant expansions, many of them in foreign countries, have stepped up requirements to the point where we are hard pressed to meet normal delivery schedules. While we are taking steps to overcome the current situation, an estimate of our larger customer's requirements would enable us to serve them better and assure an adequate future supply.

Will you kindly help us to do this by providing an estimate of your requirements for 1969 through 1974 in board feet (number of square feet per inch of thickness) of both Molten Metal Marinite and Heat Treated Molten Metal Marinite. We would appreciate your giving Domestic, Canadian, and Foreign requirements separately.

Thanks very much for your cooperation.

Sincerely yours,

CARL P. WEBER
Product Manager

CPW:lmz

P. S. You can be assured that all information furnished will be kept confidential.

C. P. W.

Unheat treated -
90,000 BF/yr.

Heat Treated molten metal marinite

Domestic Req'd - 202,000 BF/yr.

Suriname - 200 sheets 4x8x1 - ? 6,400 BF/yr

australia - ? 3000 BF/yr

April 9, 1969

Johns-Manville Sales Corporation
22 E. 40th Street
New York, New York 10016

Attention: Mr. K. Slater - (Weber is on vacation)

Reference: Alcoa's Estimated Usage of Heat Treated Molten Metal Marinite

Gentlemen:

As requested by Mr. Carl Weber, we have attached the monthly requirements of Heat Treated Molten Metal Marinite at our various plant locations. Your efforts will be appreciated in policing Alcoa's share of the allotment of Marinite to your distributors.

Very truly yours,

Len.

M. J. Caprio
Senior Buyer - Industrial

MJC:naf

Attachment

Also P-541918 (a Purchase Agreement for lots of stuff - 25 items)
covers MMM for Suriname's requirement thru 1st or 2nd Q 1970
Cap will make our international requirements (Suriname and Aust) known to Webber - he is in touch with him frequently.

mp

		BF
24 pcs	4x8x 1/2	~~384~~ 400
3,204 ✓	4x8x1 (32) ✓	108,300
		5,000
312	4x4x1 (16)	87,600
1368	4x8x2 (64)	201,300
180 ✓	4x4x2 (32) ✓	

200   32 / 200 / 64 00

Green –
Warrick – 50,000 BF
Massena 20,000 BF
~~20,000~~
90,000 ~~[illegible]~~







PITTSBURGH PURCHASING

INDUSTRIAL - 19

MR. LEN B. NEUBERT

PITTSBURGH OFFICE - 19

April 14, 1969

RE: ESTIMATED REQUIREMENTS FOR MOLTEN METAL MARINITE
JOHNS-MANVILLE

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Foreign Plants	10,000 Bd.Ft./Yr.	Nil

As shown above, the major portion of our requirement is in the heat treated form. These requirements will increase in direct proportion with the percentage increase in ingot casting facilities.

Early in 1967, with encouragement from Alcoa, Johns-Manville bought a second-hand gas fired muffle type furnace for approximately $50,000 to heat treat Molten Metal Marinite prior to shipment. This capital expenditure was approved by Johns-Manville's management on the basis of Alcoa's intent to purchase a minimum of 200,000 Bd.Ft./Yr. which represented a total dollar value of approximately $380,000. Today Johns-Manville's limited facilities cannot meet the demands of both primary and secondary aluminum producers for the heat treated material. The replies to Mr. Weber's inquiries will be used in planning new facilities for both fabricating and heat treating the Marinite type material. In the interim period, Mr. Weber has assured us, verbally, that Alcoa's heat treated requirements will have priority over those of other customers.

Johns-Manville has a new product, Marimet-45, which is an improvement over Molten Metal Marinite, particularly in some of our horizontal ingot casting operations. This material was developed as a direct result of Alcoa's continued pressure on Johns-Manville to upgrade Molten Metal Marinite for our ingot casting applications. Marimet-45 is not commercially available; however, we are presently negotiating our requirements for this new material so that we will have the jump on our competitors. The new facilities contemplated by Johns-Manville will be compatible for both Marinite and Marimet.

M. J. CAPRIO

MJC:naf

Attachment

April 15, 1969

RECEIVED
APR 1 1969
M. J. RYAN

Mr. Carl P. Weber, Product Manager
Johns-Manville Sales Corporation
22 E. 40th Street
New York, New York 10016

Dear Mr. Weber:

As requested in your letter of April 1, 1969, we are submitting confidential information on our total estimated yearly requirements of Molten Metal Marinite as follows:

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We would estimate a 7% annual increase in the consumption of the material for the next five years.

Through encouragement on the part of Alcoa, during early 1967, you installed a gas fired muffle type furnace to heat treat the Molten Metal Marinite, prior to shipment. This was on the basis that Alcoa would purchase 200,000 Bd. Ft. annually. It is my understanding that the consumption of this product has increased very substantially, and you are unable to take care of all the aluminum industries' requirements. Since Alcoa played a major role in the development of this product, we would anticipate that our requirements would be supplied totally during this period of shortage of heat treated capacity.

If you need additional information, please advise

Very truly yours,

L. B. Neubert

tma

FROM PITTSBURGH PURCHASING
INDUSTRIAL - 19

TO MR. LEN B. NEUBERT
PITTSBURGH OFFICE - 19

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M. J. CAPRIO

MJC:naf

Attachment

ALCOA

SF 4863-REV. 9OOM-8-68

~~M. J. Ryan~~
~~L. B. Neubert~~
M. J. Ryan
L. B. Neubert

JOHNS-MANVILLE
SALES CORPORATION
INDUSTRIAL INSULATIONS DIVISION
22 E. 40th STREET • NEW YORK 16, N. Y. • TELEPHONE: LEXINGTON 2-7600 • AREA CODE 212

comments & Estimates.

April 1, 1969

See attached mgr

Mark
I want the BF annually
Thanks
BM

Mr. L. B. Neubert
Aluminum Company of America
1501 Alcoa Building
Pittsburgh, Pennsylvania 15219

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Sincerely yours,

Carl P. Weber

CARL P. WEBER
Product Manager

CPW:lmz

P. S. You can be assured that all information furnished will be kept confidential.

C. P. W.

MMM

Notify Plants on discontinuing MMM
must order by 26 Aug 85

1- Lafayette — Bob Miessler will call back 19 July
Does not use asbestos MMM

2. Massena — does not use MMM - F. Lux
N-14 isn't working good - affect thermal properties of ingot + affects extruding + anodizing

3 Badin (J. Barbour) (Bill Gantt) —
J. Barbour will return my call 19 July 85

4 Rockdale Joe Miehl ~~will return~~ call 19 July 85
Joe will advise on their usage - - Do Not use MMM

5 NOLA - Dick Fahy notified on 19 July 85

6 Vernon - Howard March. - uses Lumi board
in plate caster

7 Vancouver - R-680 headers - + marinite - C

8 OK Wenatchee - Dean Stone 8-420-9245 will call 19 July

9 Davenport Selvin Smith will return my call 19 July
doesn't use asbestos MMM

Manville Products Corporation
P.O. Box 190
Zelienople, Pennsylvania 16063
412 452-8650

Manville

July 19, 1985

RECEIVED
JUL 23 1985
PURCHASING

Aluminum Company of America
1501 Alcoa Building
Pittsburgh, Pennsylvania 15219

Attention: M. J. Caprio,
Tech. Purch. Agent,
Refractories

Reference: DISCONTINUATION OF ASBESTOS-CONTAINING PRODUCTS
BILLERICA PLANT

Gentlemen:

Effective December 31, 1985, Manville will discontinue production and shipping of all asbestos-containing Billerica Products. This will include all grades of Molten Metal Marinite® and Marimet®.

Orders for Molten Metal Marinite and Marimet must be placed and accepted by August 23, 1985 and shipped prior to December 20, 1985.

Any orders received after August we, 1985 will be accepted subject to product availability from existing inventory and Manville's ability to ship by December 20, 1985.

While Billerica will attempt to ship in accordance with customer needs, we will reserve the right to ship at our option and all orders will be contingent on this provision. This must be done to avoid the possibility of large numbers of orders being scheduled for the last several days of the shipping period.

The discontinuance of these products is made possible by the growing number of successes we are experiencing in trials of our new MetALmover product. This material is now available and can be ordered through your district office or Billerica Plant.

Very truly yours,

MANVILLE BUILDING MATERIALS CORPORATION
Industrial Products Division

Patricia M. Keegan
Sales Representative
Refractories and Mineral Panels Department

ph

MMM

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INDUSTRIAL - 19

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Very truly yours,

L. B. Neubert

tma

J. M. Bell - Pgh.

VENDOR NO.	P.O. NUMBER	P.O. DATE	REQ'N NO.	DEL'Y REQUIRED		SHIP'T PROMISED
	P313374	7-15-63	356964	7-15-63		7-19-63

Johns-Manville Sales Corporation
P. O. Box 2429
Pittsburgh 30, Pennsylvania

SHIP TO
Aluminum Company of America
Riverdale, Iowa (Motor Freight)

Aluminum Company of America
P. O. Box 750
Davenport, Iowa (Parcel Post)

SHIP VIA	F.O.B.	TERMS	AUTH. NO.
Motor Freight	Shipping Point	Net 30 days	

ITEM NO.	QUANTITY	UNIT MEAS.	DESCRIPTION AND SPECIFICATIONS	PRICE	CODE NUMBER
			The following J-M Spirotallic Gaskets, Style 911 (Type 4Y) 3/16 in. thick, with Type 304 stainless steel for standard 125 lb. working pressure:	EACH	201714
1	50	EA	6-5/16 in. I.D. x 7-5/16 in. O.D.	$.99	
2	50	EA	4-3/8 in. I.D. x 5-3/8 in. O.D.	.89	

NOTES
A CONFIRMING VERBAL ORDER - MISS CHAPPELL - 7-11-63
DO NOT DUPLICATE

REMARKS: JB

Burner end exhaust packing gland gasket 12'x48' C.A.
Annealing furnaces J.M.Bell 7-11-63

ALUMINUM COMPANY OF AMERICA

United-rated -
90,000 BF/yr.

Heat Treated Molten metal Marinite

Domestic Rigid - 202,000 BF/yr.

Suriname - 200 sheets 4'x8'x1" - ? 6,400 BF/yr

australia - ? 3000 BF/yr

April 9, 1969

Johns-Manville Sales Corporation
22 E. 40th Street
New York, New York 10016

Attention: Mr. K. Slater - (Weber is on vacation)

Reference: Alcoa's Estimated Usage of Heat Treated Molten Metal Marinite

Gentlemen:

As requested by Mr. Carl Weber, we have attached the monthly requirements of Heat Treated Molten Metal Marinite at our various plant locations. Your efforts will be appreciated in policing Alcoa's share of the allotment of Marinite to your distributors.

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M. J. Caprio
Senior Buyer - Industrial

MJC:naf

Attachment

Jim.

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mjc

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24 pcs	4x8x 1/2	~~384~~ 400
3,204 ✓	4x8x1 (32) ✓	108,300
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1368	4x8x2 (64)	201,300
180 ✓	4x4x2 (32) ✓	

200   32 / 200 / 64 00

Green –

Norrich – 50,000 BF

Massena 20,000 BF

~~20,000~~

90,000 ~~[illegible]~~





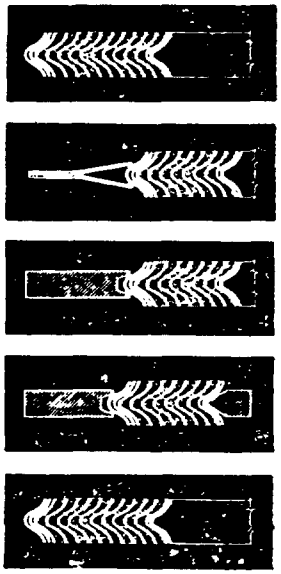


READY REFERENCE AND
Cross-Sections of J-M Metallic Gaskets

SPIROTALLIC®

General purpose, spiral-wound gaskets. Consist of preformed V-shaped strip of metal which is wound into a spiral. Metal layers are separated by an asbestos filler. Available with centering or compression limiting device.

Page 6



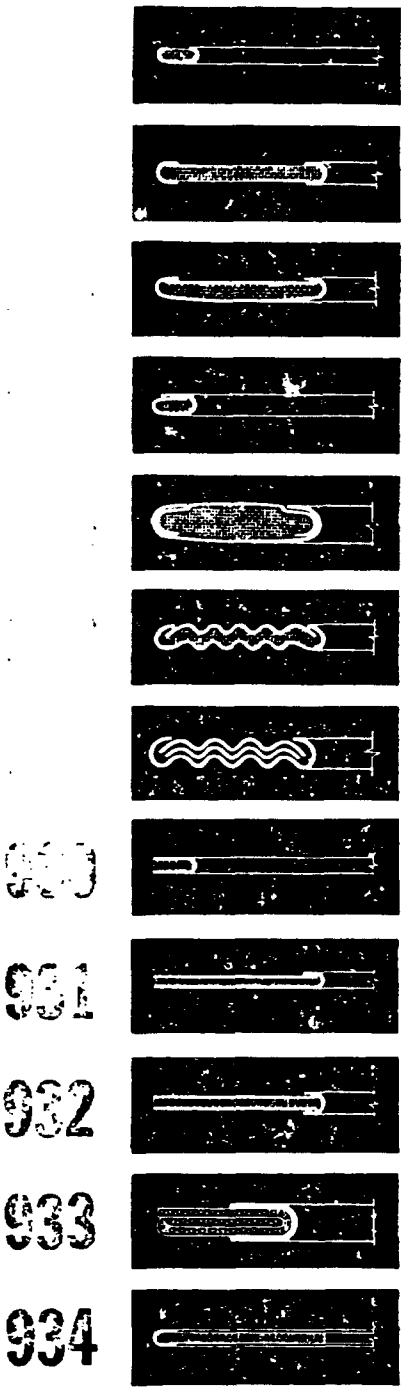
* **COLOR CODING USED ON J-M 912 and 913 SPIROTALLIC GASKETS**

Zinc Coated Steel	White
Type 304 Stainless	Yellow
Type 316 Stainless	Green
Type 347 Stainless	Blue
Monel	Orange
Copper	Brown
Aluminum	Aluminum
Plain Steel; Specials	No Color

METAL JACKETED

An early basic design. Offered today in many variations. Consist of soft compressible filler (asbestos, Teflon, etc.) partially or wholly enclosed in a metal jacket. Available in irregular or non-circular shapes.

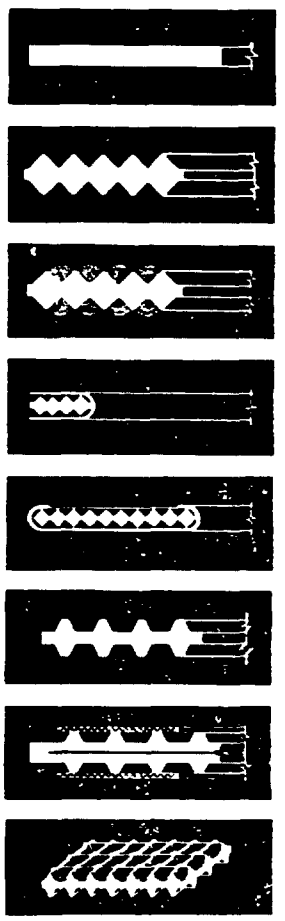
Page 8



FLAT METAL

"Brute-force" seals. Gaskets made of flat metal, relatively thin in relation to their width. Used as cut from sheet metal, or with the surface area reduced by machining for greater sealability.

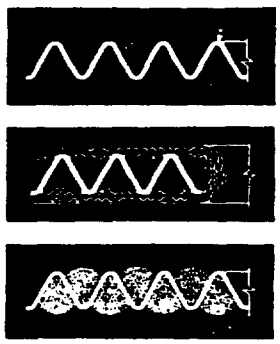
Page 13



CORRUGATED

Line contact seals. Consist of thin metal, corrugated or embossed concentric with I.D. Used plain, coated with sealing compound, with an asbestos cloth jacket, or with asbestos cord cemented into the corrugations.

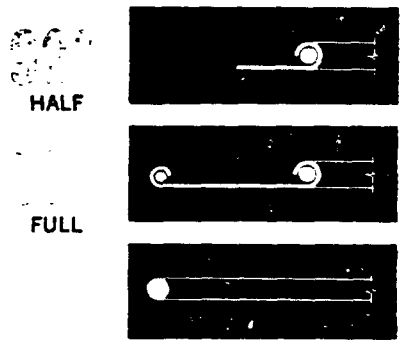
Page 11



ROUND CROSS-SECTION

Solid metal, line contact seal. Generally made from round wire of the desired diameter, cut to the length of the gasket mean circumference, then formed into a circle and welded.

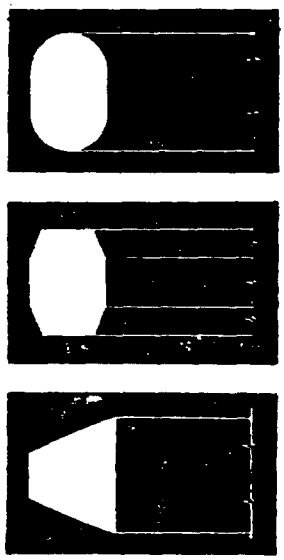
Page 15



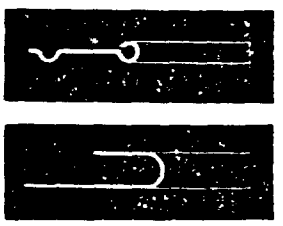
HEAVY CROSS-SECTION

Seal by line contact or wedging action. Usually rectangular or triangular shaped gaskets, machined in heavy cross-sections from solid metal for high-pressure, temperature service where operating conditions require special joint design.

Page 16



ACCESSORIES TO 950,951



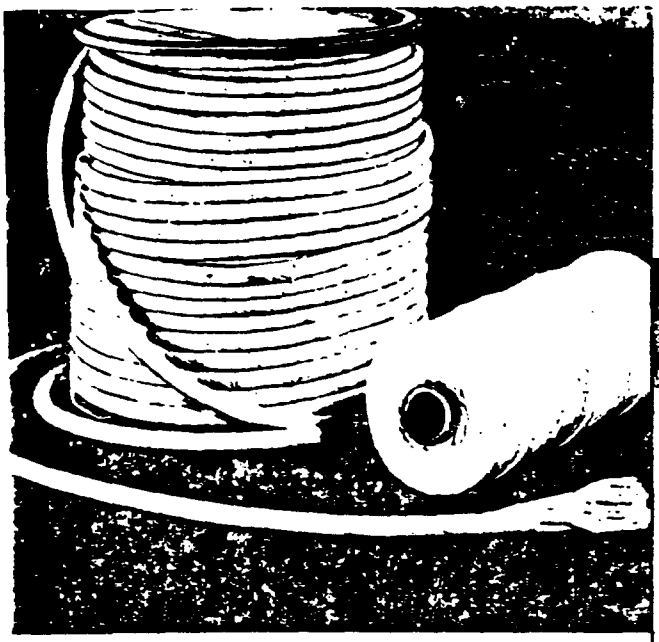
SELECTING THE RIGHT METAL IS IMPORTANT IN GASKET CONSTRUCTION

For any gasket application the choice of metal will depend upon the operating conditions, the mechanical features of the flanged assembly, and the design characteristics of the gasket.

On the following pages, reference is made to materials which are or are not used for certain gasket constructions. (Lead, for example, is not suitable in some designs because of its poor compression-recovery ratio.) Temperature plays a role. The tabulation (right) lists some of the typical metals used by Johns-Manville for metallic gaskets together with their generally accepted maximum temperature limitation for long duration exposure. Gasket style and size, and the severity of the corrosive conditions expected might increase or decrease these limits. Any nonmetallic elements in the gasket also may possibly affect upper temperature limits.

MATERIAL	MAX. TEMP. (°F)
Lead	212
The Common Brasses	500
Copper	600
Aluminum	800
Stainless Steel, Type 304	1000
Stainless Steel, Type 316	1000
Soft Iron, Low Carbon Steel	1000
Titanium	1000
Stainless Steel, Type 502	1150
Stainless Steel, Type 410	1200
Silver	1200
Nickel	1400
Monel	1500
Stainless Steel, Type 309 SCb	1600
Stainless Steel, Type 321	1600
Stainless Steel, Type 347	1600
Inconel	2000
Hastelloy	2000

J-M ASBESTOS CORD



J-M SPECIFICATIONS

APPROX. LB. PER 100 LINEAR FEET				Packaging
1/16"	1/8"	3/16"	1/4"	
0.20	0.80	1.75	2.63	1 and 5-lb paper tubes in boxes; 1/4, 1/2 and 1-lb balls; 5, 10, 25 and 50-lb spools.
0.20	0.714	1.47	2.33	

* Both styles are Commercial Grade.

[illegible] Cord is [illegible] diameter, [illegible] finished [illegible] diameter, [illegible] required [illegible] is not affected by mold, dampness, decay or exposure to the elements. It has wide application in the electrical industry for supporting electric-resistance wires, and is specially serviceable in glass and chemical works where high heat resistance is a requirement.

In addition, this Johns-Manville product is used in the joints and seams of melting and heat-treating furnaces, and elements in electrical pads and blankets are made by wrapping wire around Asbestos Cord and then covering the wire-wrapped cord with Asbestos Roving.

J-M Asbestos Cord is furnished plain unless treated cord is specified. See table for sizes and standard styles. Asbestos Cord is also available in a range of other grades up to "AAAA," with or without sizing, or with reinforcements of brass, copper or other fine wire to meet practically any specification or requirement of the customer.

J-M ASBESTOS WICK & ROPE

J-M SPECIFICATIONS

ASBESTOS WICK			ASBESTOS ROPE			
Style No.	No. Plies or Approx. Size	Packaging	Style No.	Type	Sizes	Packaging
	3 (1/4") 2 (3/16") 1 (1/8")	On 25 or 50-lb paper tubes, and in 1/4, 1/2 or 1-lb balls.	4200 4196 4194 (blue)	Twisted	3/16"; 1/4" and up.	In 10, 25 or 50-lb coils.
blue	1/4"		566 702 788 857	Braided Round	1/8" and 3/16"; 1/4" and 5/16"; 3/8" and up.	
	4 (1/4") 3 (3/16") 2 (1/8") 1 (1/16")		733 787 869 873	Braided Square	1/16", 1/8" and 3/16", 3/8" and up.	In 10, 25 or 50-lb reels.
			580 581	Plaited		



Johns-Manville Asbestos Wick is made by twisting one or more strands of Asbestos Roving, or felted asbestos, with or without a small cotton yarn in the center. Twisted Asbestos Rope is made from two or more strands of Asbestos Wick twisted tightly together to form a rope of any desired size; braided Asbestos Rope, from Asbestos Yarn by braiding jacket-over-jacket, by braiding one or more jackets over a core of twisted Asbestos Rope, or by plaiting Asbestos Yarn into square cross-section. The braid-over-braid styles are firmer and have greater mechanical strength; the plaited styles are softer, conform more readily, and are used where greater compression is desirable.

Asbestos Wick is used for a general utility and emergency packing; as a seal in ovens; for caulking; and as a low-pressure steam and hot water valve packing.

Asbestos Rope is used where a material thicker than Asbestos Wick is desired. Twisted ropes are generally used for caulking joints between furnace doors and brickwork; expansion joints on boiler drums, furnace brickwork and blast furnace connections; packing explosion doors, gas generator doors and manhole covers. Braided or plaited ropes are used for groove packings on inspection doors; filling for expansion joints in furnace brickwork; and hot blast valve packing.

ALUMINUM CO. OF AMERICA AUGUST 24 55

CONSTRUCTION DIVISION, BLDG. 825
DAVENPORT WORKS

MOTOR FREIGHT
200 FOR 12'X 45' ANNEALING FURNACES
30 FOR 10'X 30' ANNEALING FURNACE

DA-27674-R6

230 Exhaust Packing Gland Gasket made from Raybestos-Manhatten No. 650 sheet packing in accordance with Alcoa drawing No. C-35750 rev. 4-13-54 - Item 1.

NOTE (1) Material shipped against this order is to be plainly identified with order number and 200 shall be marked "FOR 12 X 45 ANNEALING FURNACE" and 30 shall be marked "FOR 10 X 30 ANNEALING FURNACE".

(2) On day shipment is made please mail our Davenport Works a notice of shipment giving date of shipment, our order number, routing and quantity of material being shipped.

Send copies of P. O. to Messrs. M. E. Brooks and J. C. Fisher, Pittsburgh Office, and C. A. Maurer, Davenport Works

J. C. FISHER/es 8/24/55 JANUARY 3, 1956

REQ. NO. 569698

2

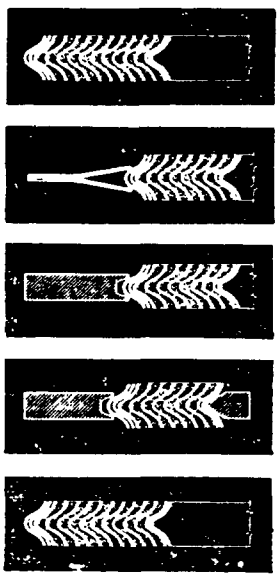
READY REFERENCE AND

Cross-Sections of J-M Metallic Gaskets

SPIROTALLIC®

General purpose, spiral-wound gaskets. Consist of preformed V-shaped strip of metal which is wound into a spiral. Metal layers are separated by an asbestos filler. Available with centering or compression limiting device.

Page 6



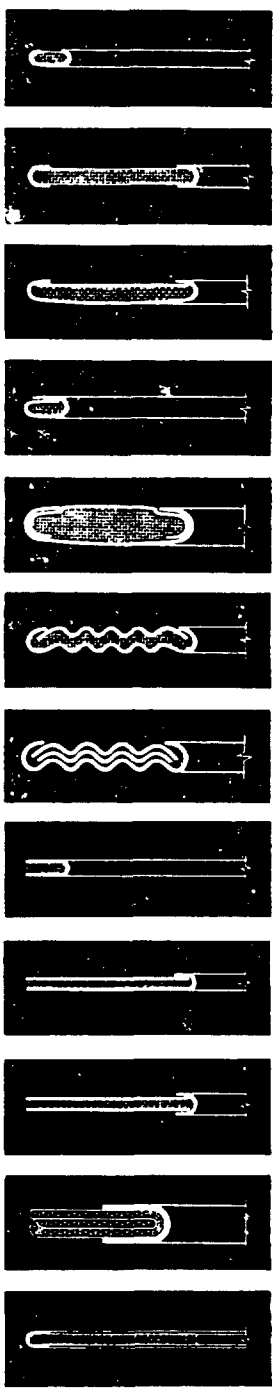
* **COLOR CODING USED ON J-M 912 and 913 SPIROTALLIC GASKETS**

Zinc Coated Steel	White
Type 304 Stainless	Yellow
Type 316 Stainless	Green
Type 347 Stainless	Blue
Monel	Orange
Copper	Brown
Aluminum	Aluminum
Plain Steel; Specials	No Color

METAL JACKETED

An early basic design. Offered today in many variations. Consist of soft compressible filler (asbestos, Teflon, etc.) partially or wholly enclosed in a metal jacket. Available in irregular or non-circular shapes.

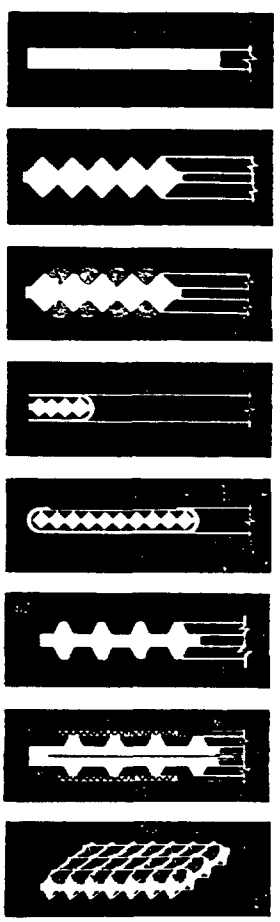
Page 8



FLAT METAL

"Brute-force" seals. Gaskets made of flat metal, relatively thin in relation to their width. Used as cut from sheet metal, or with the surface area reduced by machining for greater sealability.

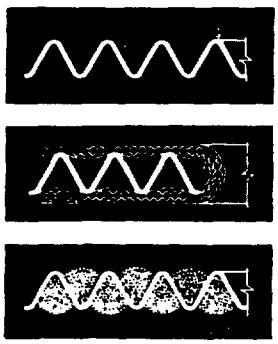
Page 13



CORRUGATED

Line contact seals. Consist of thin metal, corrugated or embossed concentric with I.D. Used plain, coated with sealing compound, with an asbestos cloth jacket, or with asbestos cord cemented into the corrugations.

Page 11



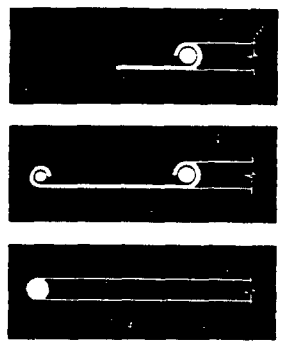
ROUND CROSS-SECTION

Solid metal, line contact seal. Generally made from round wire of the desired diameter, cut to the length of the gasket mean circumference, then formed into a circle and welded.

Page 15

HALF

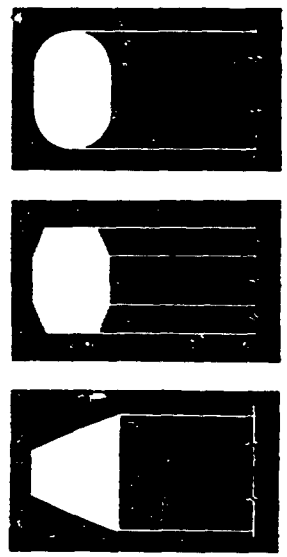
FULL



HEAVY CROSS-SECTION

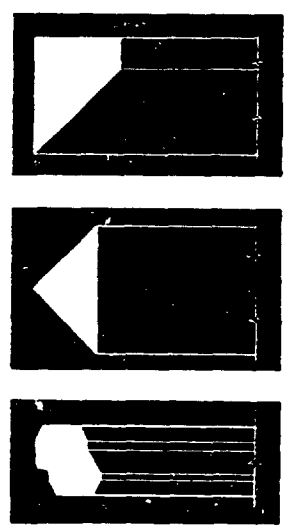
Seal by line contact or wedging action. Usually rectangular or triangular shaped gaskets, machined in heavy cross-sections from solid metal for high-pressure, temperature service where operating conditions require special joint design.

Page 16

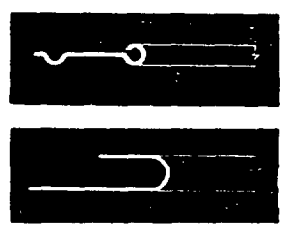


BRIDGEMAN

DELTA



ACCESSORIES TO 950,951

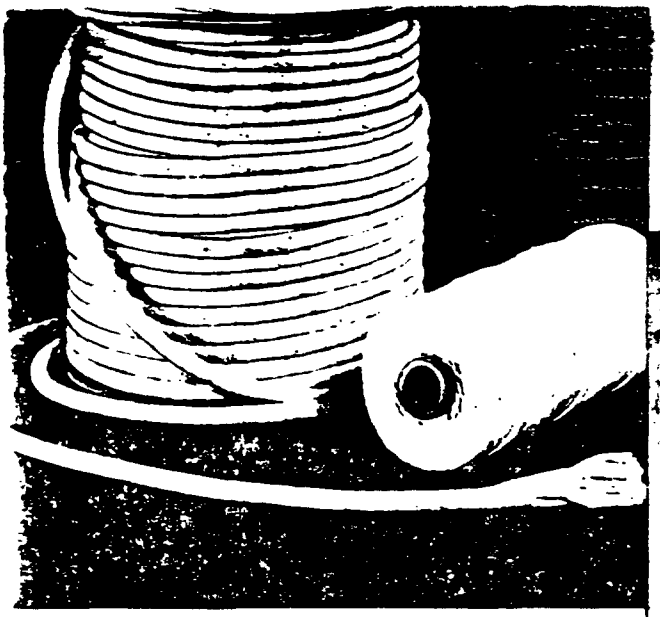


SELECTING THE RIGHT METAL IS IMPORTANT IN GASKET CONSTRUCTION

For any gasket application the choice of metal will depend upon the operating conditions, the mechanical features of the flanged assembly, and the design characteristics of the gasket.

On the following pages, reference is made to materials which are or are not used for certain gasket constructions. (Lead, for example, is not suitable in some designs because of its poor compression-recovery ratio.) Temperature plays a role. The tabulation right lists some of the typical metals used by Johns-Manville for metallic gaskets together with their generally accepted maximum temperature limitation for long duration exposure. Gasket style and size, and the severity of the corrosive conditions expected might increase or decrease these limits. Any nonmetallic elements in the gasket also may possibly affect upper temperature limits.

MATERIAL	MAX. TEMP. (°F)
Lead	212
The Common Brasses	500
Copper	600
Aluminum	800
Stainless Steel, Type 304	1000
Stainless Steel, Type 316	1000
Soft Iron, Low Carbon Steel	1000
Titanium	1000
Stainless Steel, Type 502	1150
Stainless Steel, Type 410	1200
Silver	1200
Nickel	1400
Monel	1500
Stainless Steel, Type 309 SCb	1600
Stainless Steel, Type 321	1600
Stainless Steel, Type 347	1600
Inconel	2000
Hastelloy	2000



J-M ASBESTOS CORD

J-M SPECIFICATIONS

APPROX LB PER 100 LINEAR FEET				Packaging
1/16"	1/8"	3/16"	1/4"	
0.20	0.30	1.75	2.63	1 and 5-lb paper tubes in boxes; 1/4, 1/2 and 1-lb balls; 5, 10, 25 and 50-lb spools.
0.20	0.714	1.47	2.33	

* Both styles are Commercial Grade.

[illegible] diameter cord in the required [illegible] is not affected by mold, dampness, decay or exposure to the elements. It has wide application in the electrical industry for supporting electric-resistance wires, and is specially serviceable in glass and chemical works where high heat resistance is a requirement.

In addition, this Johns-Manville product is used in the joints and seams of melting and heat-treating furnaces, and elements in electrical pads and blankets are made by wrapping wire around Asbestos Cord and then covering the wire-wrapped cord with Asbestos Roving.

J-M Asbestos Cord is furnished plain unless treated cord is specified. See table for sizes and standard styles. Asbestos Cord is also available in a range of other grades up to "AAAA," with or without sizing, or with reinforcements of brass, copper or other fine wire to meet practically any specification or requirement of the customer.

J-M ASBESTOS WICK & ROPE

J-M SPECIFICATIONS

ASBESTOS WICK			ASBESTOS ROPE			
Style No.	No. Plies or Approx. Size	Packaging	Style No.	Type	Sizes	Packaging
[illegible]	3 [illegible]" 2 [illegible]" 1 [illegible]"	On 25 or 50-lb paper tubes, and in 1/4 or 1-lb balls.	4200 4196 4194 (blue)	Twisted	3/16"; 1/8" and up.	In 10, 25 or 50-lb coils.
[illegible] blue	4"		566 702 788 857	Braided Round	1/8" and 3/16"; 1/4" and 5/16"; 3/8" and up.	
[illegible]	4 [illegible]" 3 [illegible]" 2 [illegible]" 1 [illegible]"		733 787 869 873	Braided Square	3/16", 1/4" and 5/16"; 3/8" and up.	In 10, 25 or 50-lb reels.
			580 581	Plaited		



Johns-Manville Asbestos Wick is made by twisting one or more strands of Asbestos Roving, or felted asbestos, with or without a small cotton yarn in the center. **Twisted Asbestos Rope** is made from two or more strands of Asbestos Wick twisted tightly together to form a rope of any desired size; braided Asbestos Rope, from Asbestos Yarn by braiding jacket-over-jacket, by braiding one or more jackets over a core of twisted Asbestos Rope, or by plaiting Asbestos Yarn into square cross-section. The braid-over-braid styles are firmer and have greater mechanical strength; the plaited styles are softer, conform more readily, and are used where greater compression is desirable.

Asbestos Wick is used for a general utility and emergency packing; as a seal in ovens; for caulking; and as a low-pressure steam and hot water valve packing.

Asbestos Rope is used where a material thicker than Asbestos Wick is desired. Twisted ropes are generally used for caulking joints between furnace doors and brickwork; expansion joints on boiler drums, furnace brickwork and blast furnace connections; packing explosion doors, gas generator doors and manhole covers. Braided or plaited ropes are used for groove packings on inspection doors; filling for expansion joints in furnace brickwork; and hot blast valve packings.

FROM ~~HAIG G. SAKOIAN~~

PITTSBURGH OFFICE

TO MR. M. J. CAPRIO

PITTSBURGH OFFICE - 19

1979 July 30

RE: ASBESTOS SUBSTITUTION

Attached is a summation of asbestos materials currently in use at Alcoa locations. Included in the listing are:

- The material and its use
- The number of plants using the material
- Whether or not there is a potential for employee exposure
- Potential replacements, if available -- and manufacturers (Page 10)

Much effort has been extended to reduce and eliminate asbestos uses in most locations. However, as can be seen by this report, many uses still exist. Because the continued use of asbestos products may result in unnecessary health hazards and concerns to our employees, as well as additional costs to Alcoa to comply with specific provisions of the OSHA Standard, we believe it is in Alcoa's best interest to continue eliminating the use of asbestos products wherever possible. This does not mean that all existing asbestos should be removed immediately which, as in the case of sprayed-on insulation, could create unnecessary exposure potentials. Rather, a systematic effort should be made to discontinue uses, when feasible and practical, by substitution or elimination. By creating this listing and maintaining frequent updating via feedback from all locations, each plant can be provided with the information necessary to attain this goal.

Mr. J. M. McCollum, Pittsburgh Office Mechanical Engineering, has been coordinating such an effort for asbestos replacements in potrooms. A list illustrating Alcoa's experience with potroom replacements is shown on Pages 7, 8, and 9.

It is hoped that this type of registry will be extended to cover all asbestos uses for all locations. To achieve this, it is asked that each location copy this office on all efforts made towards asbestos replacement... whether positive or negative. This information will then be disseminated to all locations on a periodic basis so that each plant can profit from the experience of the others in the Company.

Any questions, comments, or additions to the attached would be appreciated.

HAIG G. SAKOIAN

HGS/eds
Attachments
Distribution: See Page 2

RECEIVED
AUG 06 1979
PURCHASING

ALCOA

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Belting/Drip Casting Convevors	Potential for exposure during maintenance and removal. * (2 plants: 3, 7)	UNTESTED. Potential candidate: Fiberseal Fabric (NOTE: Must determine operating temperatures and strength/durability requirements for engineering.)
Block or brick/ Furnaces	Potential for exposure during installation, and especially during removal, even though this is infrequent. * (1 plant: 23)	Ceramic refractory block and brick. asbestos-free Superex-2000 asbestos-free linings for transfer trough
Brakes/Vehicles & Equipment	Recent studies indicate some asbestos fibers survive from brake use and are not destroyed, as presumed previously. However, the percentage of fibers not degraded by heat and friction is unknown. * (All plants)	NONE. Should reemphasize requirement of not using air to blow out brake drums and linings. Vacuum systems are available and should be used. (NOTE: Recommend air sampling for asbestos to document and confirm LOW or NO exposures: 1. Vehicle brake mechanics 2. Extruder brake, mechanical presses, or other equipment brake changers)
Cement Patch/Boiler Maintenance	Potential employee exposure. * (2 plants: 18, 24)	Two grades: 1. Hydraulic-setting cement -- Contains mineral wool and Portland cement; temperature range up to 1,000°F. Suppliers: Johns-Manville - "375" Keene Corp. - "Super Powerhouse" 48 Insulation - "Quick-Set Cement" 2. High-Temperature Grade -- Contains mineral wool; temp. range: 1,000°F to 1,900°F. Suppliers: Johns-Manville - "360" Keene Corp.- "Super 1900" 48 Insulation - "Super 48"

* Number of plants using material.

(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Cloth/Insulation, Welding Blankets	Plants indicate NO potential or unknown exposures. In many cases, the cloth is used wet and would, indeed, pose little potential for dust inhalation. However, as several plants indicated, there may be some cases where the exposure is unknown. * (6 plants : 12, 13, 16, 17, 20, & 24)	Pyrotek Fabrics (used in Warrick) Pyrotex™ Refrasil Nor•Fab Keller Gloves Kelnit Welding Blankets
Personal Protection/Gloves, Mittens, Pads, Coats, & Pants A1C Dan St Jacques	There may or may not be a potential for exposure depending on the type of material, i.e., whether it is aluminized or coated; lined or unlined; and the frequency of use. In general, lined, aluminized protective equipment should not generate a potential for dust inhalation. However, noncoated, unlined materials may pose a problem and should be replaced, preferably with a nonasbestos substitute. * (All plants)	These apply for some applications, not all. Many times asbestos gloves are used in cases where the temperatures encountered do not warrant the need for asbestos. For example, flame-resistant terrycloth gloves can often be effective replacements where up to 700°F temperatures are encountered. For temperatures up to 1,000°F, gloves made of duPont's Kevlar fiber may be acceptable. However, past Alcoa experience indicates that in certain applications the seams of these gloves do not hold up. For this reason, each case should be treated separately. Please keep us advised of your results. "Kelnit 29" Keller Gloves Pyrotex™ A1C prefers Teptoglass Glove Kevlar

* Number of plants using material.

(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Marinite and Marinite Floats/ Molten Metal Casting	Because of the special problems associated with Marinite in ingot casting, it is being treated separately. * (11 plants: 1, 7, 9, 13, 16, 17, 19, 20, 21, 22, & 24)	Alcoa Research Laboratories and our suppliers, in conjunction with plant personnel and Primary Products, have been working for some time to find replacements for molten metal Marinite. Due to this effort, replacements are now available for many -- but not all -- of its uses. Many plants are now using these replacements; however, for one reason or another, many plants continue to use Marinite even in those cases with potential replacements. These reasons include initial cost factors, and increased costs associated with lost or decreased production in ingot casting. Considering the increased costs associated with compliance requirements, i.e., medical exams, protective clothing, disposal requirements, ventilation controls, etc. -- in addition to the less tangible, but more serious costs of potential impairment of employee health -- every effort should be made to institute the replacements now available and to continue the search for those uses not yet replaceable. If it is still considered that the costs associated with replacement remain prohibitive to the location, continue the control program and continue the search for a more feasible replacement. This decision must be arrived at only after careful examination by both management and Medical.

* Number of plants using material.

(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Packing/ General pump packing	In most cases, pump packing materials are bonded in rubber or some other coating compound. As indicated by the plants, these generate little potential for fiber exposure. However, some packings, such as uncoated, noncompressed, braided asbestos may offer a potential for exposure and should be replaced. * (All plants)	Since specific needs and equipment types vary dramatically, pump packing and general packing materials are purchased at the plant level. Suitable replacements should be handled by plant Purchasing by direct contact with manufacturers and suppliers.
Paper/Welding protection, electrical insulation	Should be replaced. * (6 plants: 1, 3, 7, 13, 17, & 20)	Johns-Manville - Cerawool Paper (NOTE: Asbestos paper should not be used for welding protection. Substitutes available for this application can be found in the section dealing with "Cloth".)
Rope/Furnace insulation	Plants are divided on the extent of potential dust hazards. Uncoated material may pose a problem during removal and disposal and should be replaced. * (15 plants: 1, 3, 6, 8, 12, 13, 15, 16, 17, 18, 19, 20, 21, 23, & 24)	MUST BE TESTED. Johns-Manville - **Ceraform** Rope (used in Warrick) Pyrotek - Fiberseal Rope + Others
Sheet Gasketing/ General	Pre-cut compressed gaskets should pose little potential for employee exposure, especially if they are resin or rubber bonded. Sheet gaskets which must be out at the plant may create a dust hazard during cutting, installation, removal, and disposal. Since the requirements for gasketing material vary depending on the	

* Number of plants using material.

(Cont.)

ASBESTOS REPLACEMENT SUMMARY -- BY USE

MATERIAL/USE	POTENTIAL EXPOSURE	REPLACEMENTS AVAILABLE
Sheet Gasketing (Cont.)	application, each use should be carefully considered. Care should be taken to insure that maintenance personnel do not have on hand and use indiscriminantly such sheet gasket material. Storerooms and users should be carefully monitored to: 1. Determine and document exposures. 2. Evaluate housekeeping. 3. Insure proper disposal of waste material. * (All plants)	
Tape; Tubing/ Furnace seals, general insulation	Majority of plants do not consider this to be a potential dust hazard. However, certain uses may generate free fibers. * (10 plants : 1, 3, 6, 9, 13, 16, 17, 18, 20, & 23)	Tape Replacements: Pyrotex™ Refrasil Fiberfrax Nor•Fab
Thermocouple Wire	Due to deterioration and fraying of the asbestos insulation on thermocouple wire, potential fiber exposure may exist. * (7 plants: 1, 6, 7, 9, 15, & 19; probably more)	Sleeves made of Refrasil or Fiberfrax material may be used in place of asbestos-coated wire in some cases; otherwise, no replacements available.

Check Bumper T.C. wire Damage monitored

* Number of plants using material.

KEY TO ALCOA LOCATIONS

1 - ATC

2 - ARKANSAS

3 - BADIN

4 - CHILLICOTHE
(Wear-Ever Aluminum)

5 - CLEVELAND

6 - CORONA

7 - DAVENPORT

8 - FT. MEADE

9 - LAFAYETTE

10 - LANCASTER

11 - LEBANON

12 - MARSHALL (ACPC)

13 - MASSENA

14 - MOBILE

15 - NORTHWEST ALLOYS (ADDY)

16 - PT. COMFORT

17 - REA MAGNET WIRE

18 - RICHMOND, INDIANA

19 - ROCKDALE

20 - TENNESSEE

21 - TIFTON

22 - VANCOUVER

23 - VERNON

24 - WARRICK

ASBESTOS -- POTROOM USES

Specific Application	Substitute	Location	Comments
Cradle to Pot Shell Insulation	Quarry tile	Wenatchee	Tested; proved to be good replacement.
	Cem-Fil GRC Sheet	Warrick	Installed and seems okay; will get back with update.
	Cem-Fil GRC	Massena	Currently testing (just started).
Superstructure Fort Insulation	Cem-Fil GRC - 9" x 7" x 1"	Massena	Received material to be tested.
	Marinite-P -- ½" sheet	Massena	Received material to be tested.
Pot Cover Insulation	Almac Plastics Inc.'s-High-Temp Glass	Massena	Testing.
	Marinite-P -- ½" sheet	Massena	To be tested.
	Pyrotek's Fiberseal H-3 Fabric	Massena	To be tested for P-75 pot covers.
	(Same as above)	Badin	Double the material; works well.
	(Same as above)	Warrick	Works well; now standard; also works for side shield insulation.
	Amatex - Thermoglass #G-36P752	Wenatchee	Satisfactory.
Walkway Grating Insulation	M-50 Pyrotherm Dense Board	Massena	Tested; unsuccessful; it crumbles.
	GRC Cem-Fil - ¼" and 3/8"	Massena	To be tested on P-225.
	Marinite-P -- ½" sheet	Massena	To be tested on P-225.
	Marinite-P -- 1" board	Badin	Currently testing; not optimistic.
	Pyrotherm G-5 Insulating Board	Badin	To be tested.
	Kaowool M	Warrick	Does not stand up (no good).
	Penn Hi-Temp 270	Warrick	Looks good in preliminary tests; to be tested further; limitation might be that it's too expensive.

(Cont.)

ASBESTOS -- POTROOM USES

Specific Application	Substitute	Location	Comments
Bus Insulation	Marinite-P -- 1" sheet	Badin	Currently testing (but it crumbles)
	Cem-Fil GRC - ¼" and ½"	Massena	To be tested.
	Marinite-P -- ½" sheet	Massena	To be tested.
Exhaust Duct Insulator	Pyrotek Pipe	Warrick	Looks good in preliminary tests; now have 8 in use with a ¼" wall; have ordered 8 more 3/8" and 8 more ¼" for testing.
	Hetron 197	Wenatchee	Fiber glass pipe with antimony and dynel liners have failed and have been replaced with normal transite.
	Hetron 92	Wenatchee	Fiber glass pipe with antimony and asbestos linings -- satisfactory.
	Fiberfrax laminate tubes by Carborundum, Inc.	ATC	
Exhaust Duct Gaskets	Pyrotek's Fiberseal Felt T-1	Massena	No plans.
Siphon Gaskets	Pyrotek's Fiberseal Felt G-1 - ½" and Fiberseal Felt T-1 - ¼"	Badin	Tested and proved okay.
	(Same as above)	Massena	To be tested on P-225 siphon gasket and crucible cover plate gaskets.
	Fiberseal M-13 - 1/8" Compressible board	Massena	To be tested on P-225 siphon gasket and crucible cover plate gaskets.
	J-M Ceraform Heat Seal	Rockdale	Not as stable as asbestos; needs replaced more often.

(Cont.)

ASBESTOS -- POTROOM USES

Application			
Ladle & Ladle Lid Seal	Silicon Red rubber air hose - 3/4"	Warrick	Standard (but different seal from other plants).
	Refrasil - wrapped around rubber hose	Badin	No good; rubber melts; seal breaks.
	1-½" Fiberseal rope - F-10	Badin & Massena	On order.
	1" Fiberseal rope - D-1	Anaconda	Uses 600 ft./mo. of D-1
	1-½" Fiberseal rope - F-10	Pt. Henry	

ASBESTOS REPLACEMENT MANUFACTURERS

PRODUCT	SUPPLIER	TELEPHONE
Pyrotex™	Newtex Industries, Inc. Railroad Ave. P.O. Box 25 Victor, NY 14564	716/924-9135
Fiberseal Products	Pyrotek Incorporated East 9601 Montgomery Ave. Spokane, WA 99206 - or - Box 77 - R.D. #1 Claremont Rd. Carlisle, PA 17013 - or - Santa Fe Springs, CA	509/926-6211 717/249-2075
Refrasil	HITCO Division of Armco Steel Middletown, OH 45042	
Nor•Fab Yarns; Fabrics	Amatex 1032 Stanbridge St. Norristown, PA 19404	215/277-6100
Fiberfrax	The Carborundum Company Insulation Division P.O. Box 808 Niagara Falls, NY 14302	716/278-6221
Hi-Temp 270	Penn Compression Moulding, Inc. Burton Street Pittsburgh, PA 15218	412/351-4004
Ceramic Fiber Products	Kaowool Babcock & Wilcox	
	Cem-Fil Corporation Two International Plaza Drive Nashville, TN 37217	615/361-4664
	Keller Glove Mfg. Co. Plumsteadville, PA 18949	215/766-8818

HAIG G. SAKOIAN
1979 July 20/eds