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K-1709

Division Headquarters
March 30, 1961

G.B. Brown - Research
F.B. Proctor - GHD
P.C. Giddings - GHD
C.E. Ernst - DHA
T.G. Fuller - Long Beach

CANCELLATION NOTICE

FINISHED PRODUCT SPECIFICATIONS

We have been advised by A. Pocius that the sale of Kaylo Insulation has been discontinued. Therefore, please cancel the following Finished Product Specifications and remove them from your active file.

<u>NUMBER</u>	<u>SPECIFICATION</u>
432-51	KAYLO FIFE INSULATION Pages 1 - 8
432-56	KAYLO BLOCK INSULATION Pages 1 -3

E.C. LINDSTROM

cc:
E.F. Briggs
A. Pocius

DEFENDANT'S
EXHIBIT

01-281

**JOHN MANVILLE CORPORATION
FINISHED PRODUCT SPECIFICATION**

KAYLO PIPE INSULATION

SPEC. NO.
33-1

PAGE NO.
1

Industrial Insulations Division

I. MANUFACTURING POINT: Watson, California

II. SIZES:

A. Standard Length - 36"

B. Pipe Sizes and Thicknesses:

1. Iron Pipe

Nominal Thickness in Inches

Nominal Pipe Size in Inches

1
1-1/2
2
2-1/2
3
3-1/2
4

1/2 through 6
1/2 through 24*
1/2 through 24
1/2 through 24
1/2 through 24
1 through 23
1 through 22

* Note - For pipe sizes 19" thru 24", factory furnishes 2" thick insulation. Factory to notify Owens-Corning of substitution on each shipment.

2. Copper Tubing - I.D. 3/8" - 3"

All thicknesses from 1" to 4" in 1/2" increments.

3-1/2 - 4" thickness not furnished in sizes 3/8", 1/2" and 3/4"

3. Double Layer

Pipe Insulation for use in nested or multi layer construction must be ordered direct from plant. When Pipe Insulation is taken from warehouse locations there is no guarantee that the insulation will nest.

4. Half-lengths

Two 18" lengths paired with one 36" length may be furnished up to a maximum of 10% of an order.

5. Quadrants

Sizes 12" and larger may be furnished in the form of quadrants up to a maximum of 10% of the order. Two quadrants are to be paired with a half section. Material is to be cut so that the machine edge will form a joint between the two quadrants and the moulded edge will form an edge between each quadrant and the half section.

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3/7/61

8/22/59

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SUPERSEDES: None

DATE ISSUED

7/3/59

FINISHED PRODUCT SPECIFICATION

KAYLO PIPE INSULATION

SPEC. NO.

32-5.

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Industrial Insulations Division

III. PRODUCT STANDARDS:

Specification

A. Density - pcf

Based on average of 5
samples taken at random.
Dried to constant weight.

14 pcf. max.

B. Modulus of Rupture - psi

Based on average of 5
samples taken at random.
Dried to constant weight

50 psi. min.

C. Linear Shrinkage - %

Based on average of 3 samples
taken at random.
After 24 hours. at 1200 F.

1.8% max.

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SUPERSEDES:

None

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Johns-Manville FINISHED PRODUCT SPECIFICATION	PRODUCT:	DIVISION	II
	KAYLO PIPE INSULATION	SPEC NO.	432-51
		PAGE NO.	3.

IV. INSPECTION STANDARDS:

A. Dimensional Tolerances

1. Length (36" basis) - Plus 1/8", Minus 1/4"

The length difference between two pieces in a section can be no greater than 1/8". If pipe insulation shorter than the 1/4" minus tolerance meets the 1/8" maximum difference requirement, it can be shipped provided the plant received clearance from Owens-Corning.

2. Inside Diameter

<u>Pipe Size</u>	<u>Tolerance</u>	
	<u>Max.</u>	<u>Min.</u>
1 1/2" thru 4"	1/16"	0
4-1/2" thru 7"	1/8"	0
8" thru 12"	3/16"	0
14" thru 19"	1/4"	0
20" thru 24"	3/8"	0

3. Squareness of Leg End 1/32" maximum

4. Joint Warpage 1/8" maximum

5. Out of Straightness 3/32" maximum

6. Wall Thickness Plus 1/8", minus 1/8"

This tolerance applied to Wall Thickness tables on page 4 of this specification. Where insulation thickness is furnished in two or more layers, the total thickness shall be the sum of the actual thicknesses. The above thickness tolerance shall be applied to each layer.

Note: The Owens-Corning Contract, Exhibit C approved in March, 1959, shows that the thickness tolerance is Plus 1/8", Minus 1/16".

8CR
4/9/59
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X- INDICATES
CHANGE —REASON: To add note on Exhibit C

AUTHORITY
FOR CHANGE E.C. Lindstrom per W.D. Gaches' letter of 1/12/59 to J.B. Jobe

SUPERSEDES: Page 3 same specification issued 7/8/58

DIR. Q.C.	MGR. C.C.	SUPR. C.C.	PROD. SUPT.	PLNT. FN.	RES. LAB.	COM. MGR.	DATE ISSUED	3/27/59
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1- n 333-5 Pld. in U.S.A.

Industrial Insulations DIVISION

IV. INSPECTION STANDARDS:A. Dimensional Tolerances

1. Length (36" basis) - Plus 1/8" Minus 1/4"

The length difference between two pieces in a section can be no greater than 1/8". If pipe insulation shorter than the 1/4" minus tolerance meets the 1/8" maximum difference requirement, it can be shipped provided the plant received clearance from Owens Corning.

2. Inside Diameter

<u>Pipe Size</u>	<u>Tolerance</u>	
	<u>Max.</u>	<u>Min.</u>
2" thru 4"	1/16"	0
4 1/2" thru 6"	1/8"	0
8" thru 12"	3/16"	0
14" thru 19"	1/2"	0
20" thru 24"	3/8"	0

3. Squareness of Leg End 1/32" maximum4. Joint Warpage 1/8" maximum5. Out of Straightness 3/32" maximum6. Wall Thickness Plus 1/32", minus -1/32"

This tolerance applied to Wall Thickness tables on page 4 of this specification. Where insulation thickness is furnished in two or more layers, the total thickness shall be the sum of the actual thicknesses. The above thickness tolerance shall be applied to each layer.

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**JOHN-MANVILLE CORPORATION
FINISHED PRODUCT SPECIFICATION**

KAYLO PIPE INSULATION

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Industrial Insulations DIVISION

IV. INSPECTION STANDARDS: (Cont'd)

B. Wall Thickness of Pipe Insulation

Iron Pipe Sizes

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Steel Pipe		Actual Wall Thickness						
Nominal Pipe Size (inches)	Outer Diameter (inches)	1"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
1/2	0.840		1-9/16	2-1/16	2-7/8	3-3/8		
3/4	1.050	7/8	1-7/16	1-15/16	2-3/4	3-1/4		
1	1.315	1-1/16	1-9/16	2-3/32	2-5/8	3-1/8	3-5/8	4-1/8
1-1/4	1.660	7/8	1-5/8	1-29/32	2-7/16	2-15/16	3-7/16	3-15/16
1-1/2	1.900		1-1/2	2-5/16	2-13/16	3-5/16	3-13/16	4-3/8
2	2.375	1-1/32	1-9/16	2-3/32	2-19/32	3-3/32	3-19/32	4-5/32
2-1/2	2.875	1-1/32	1-27/32	2-11/32	2-27/32	3-11/32	3-29/32	4-13/32
3	3.500		1-17/32	2-1/32	2-17/32	3-1/32	3-19/32	4-3/32
3-1/2	4.000		1-25/32	2-9/32	2-25/32	3-11/32	3-27/32	4-11/32
4	4.500		1-17/32	2-1/32	2-17/32	3-3/32	3-19/32	4-3/32
4-1/2	5.000		1-25/32	2-9/32	2-27/32	3-11/32	3-27/32	4-15/32
5	5.563		1-1/2	2	2-9/16	3-1/16	3-9/16	4-3/16
6	6.625	3-1/32	1-15/32	2-1/32	2-17/32	3-1/32	3-21/32	4-5/32
7	7.625		1-17/32	2-1/32	2-17/32	3-5/32	3-21/32	4-5/32
8	8.625		1-17/32	2-1/32	2-21/32	3-5/32	3-21/32	4-5/32
9	9.625		1-17/32	2-5/32	2-21/32	3-5/32	3-21/32	4-5/32
10	10.750		1-19/32	2-3/32	2-19/32	3-3/32	3-19/32	4-3/32
11	11.750		1-19/32	2-3/32	2-19/32	3-3/32	3-19/32	4-3/32
12	12.750		1-19/32	2-3/32	2-19/32	3-3/32	3-19/32	4-3/32
14	14.000		1-17/16	1-15/16	2-1/16	2-15/16	3-7/16	3-25/16
Over 14"								
up to and incl. 18"			1-7/16	1-15/16	2-7/16	2-15/16	3-7/16	3-25/16
Over 18"								
up to and incl. 24"				1-15/16	2-7/16	2-15/16	3-7/16	3-25/16

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SUPERSEDES:

None

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**JOHN-MANVILLE CORPORATION
FINISHED PRODUCT SPECIFICATION**

KAYLO PIPE INSULATION

**Industrial Insulations
DIVISION**

SPEC NO.
432-5

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IV. INSPECTION STANDARDS: (Cont'd)

B. Wall Thickness of Pipe Insulation (Cont'd)

Copper Tubing Sizes

Nominal Pipe Size	Pipe Insulation						
	Actual Wall Thickness (Inches)						
	1"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
3/8	1-5/32	1-23/32	2-7/32	3-1/32	3-17/32	-	-
1/2	1-3/32	1-21/32	2-5/32	2-31/32	3-15/32	-	-
3/4	31/32	1-17/32	2-1/32	2-27/32	3-11/32	-	-
1	1-5/32	1-21/32	2-3/16	2-23/32	3-7/32	3-23/32	4-7/32
1-1/4	1-1/32	1-25/32	2-1/16	2-19/32	3-3/32	3-19/32	4-3/32
1-1/2	1-1/8	1-5/8	2-7/16	2-15/16	3-7/16	3-15/16	4-1/2
2	1-9/64	1-43/64	2-13/64	2-45/64	3-13/64	3-45/64	4-17/64
2-1/2	1-9/164	1-51/64	2-23/64	2-51/64	3-29/64	4-1/64	4-33/64
3	1-11/64	1-45/64	2-13/64	2-45/64	3-13/64	3-49/64	4-17/64

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SUPERSEDES:

None

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1/3/58

**JOHN MANVILLE CORPORATION
FINISHED PRODUCT SPECIFICATION**

KAYLO PIPE INSULATION

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V. JACKETING MATERIAL:

A. Canvas

5.80 or 6.25 Canvas shall be furnished up to and including 11" pipe size unless otherwise specified in the order. The jacket shall be 37-1/2" to 38-1/2" wide and shall be applied so as to allow at least 1-1/2" end lap at one end of section. Circumferential length shall be sufficient for jacket to overlap itself by at least 2" on smaller pipe sizes and greater amounts on larger pipe sizes.

Pipe size shall appear on the canvas jacket.

B. Uncanvassed sections that are packed more than one section per carton shall be shipped with Kraft paper jackets. Sizes packed one per carton may be shipped without the Kraft paper jacket. (See p.8 for Sections per Carton)

C. Weatherproof

1. Weatherproof jackets, furnished separately, shall be cut to size from jacket material specified in the order. When jacketing material is not specified, DC Flexstone shall be furnished.

2. DC Flexstone applied to pipe insulation at the plant is subject to the following limitations:

a. Plant applied Weatherproof Jackets shall be 35-3/4" long, centered on the 36" long sections.

b. One (1) butt strip per section shall be furnished, 7" in width and of the same material and circumferential length as the jacket.

3. Unless otherwise specified in the order, pipe insulation shall be furnished wrapped with a 30 lb. Kraft paper jacket.

4. Wire

a. Wire shall be furnished in the minimum quantities.

b. The minimum amount of wire furnished per 100 lineal feet of Weatherproof-Jacketed Pipe Insulation shall be determined from the following equation:

$$\text{Ft. of wire/100 lin.Ft. P/I} = \left\{ \left(\frac{\text{Max I.D.} + \text{Twice Max.}}{\text{of P/I} \quad \text{P/I Thickness}} \right) \times \pi \right\}^2 \times \frac{333}{12}$$

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KAYLO PIPE INSULATION

SPC. NO.

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Industrial Insulations DIVISION

V. JACKETING MATERIAL: (Cont'd)

4. Wire (Cont'd)

c. Approved wire is No. 15 AWG Copperweld.

VI. BANDS:

Bands are not furnished unless specifically requested on order. When bands are requested, two per section shall be furnished on all sizes.

VII. PACKAGING AND LABELLING:

A. Material shall be packaged in corrugated cartons. Owens-Corning Printing Label L-17 SC shall be affixed to the carton.

B. Each carton shall be stencilled or stamped in black letters at least 1/2" high with the following information:

Size of Pipe Insulation, Quantity and Date Code

C. Quantities per carton appear on page 3.

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SUPERSEDES:

None

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KAYLO PIPE INSULATION

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Industrial Insulation Division

VII. PACKAGING AND LABELLING: (Cont'd)

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Nominal Pipe Size (Inches)	Number of Sections per Carton for Each Thickness				
	1"	1-1/2"	2"	2-1/2"	3"
1/2	45	21	15	10	8
3/4	45	21	13	10	8
1	30	18	13	8	8
1-1/4	30	15	13	8	8
1-1/2	21	15	8	6	6
2	18	13	8	6	6
2-1/2	15	8	6	6	4
3	13	8	6	6	4
3-1/2	8	6	4	4	4
4	8	6	4	4	4
4-1/2	8	6	4	4	4
5	8	6	4	4	4
6	6	4	4	4	4
7		4	2	2	2
8		2	2	2	2
9		2	2	2	2
10		2	2	2	2
11		2	2	2	2
12		2	2	2	2
13		2	2	2	2
14		2	2	2	2
15		2	2	2	2
16		2	2	2	2
17		2	2	2	2
18		2	2	2	2
19		2	2	2	2
20		2	2	2	2
21		2	2	2	2
22		2	2	2	2
23		2	2	2	2
24		2	2	2	2

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SUPERSEDES: None

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7-3-68