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"CONTAINER"

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June 8, 1954

Subject: Comparison of Asbestos in Kaylo and Competitive Calcium Silicates
File 63.1

The amounts, fiber length, degree of fiberization, and types of the asbestos contained in O-I, Pabco, Ruberoid, and Johns-Manville calcium silicate insulations have been determined.

Asbestos Contents. Following are the amounts of asbestos computed to be present in the various materials by means of a combination of chemical and x-ray analyses:

Insulation	% Asbestos
Kaylo	19.8
Pabco	23.5
Ruberoid	23.1
Johns-Manville	18.7

Fiber Length. Pabco uses the longest fiber, it not being uncommon to find bundles as long as 2 inches. Johns-Manville material contains many fibers as long as 1 inch to 1½ inches. In addition, the J.M. product contains the smallest percentage of extremely short fibers. The fibers in the Ruberoid product are shorter than those in Pabco or J.M., but are definitely longer than those found in Kaylo.

Fiberization. The J.M. material is in a class by itself in regard to the degree of fiberization of the asbestos. No thick bundles or sticks are to be found. This degree of fiberization and the process employed results in a felt-like integration of the fibers. Pabco asbestos is by far the least spiculated. Kaylo and Ruberoid are intermediate.

Type of Asbestos. All products except Kaylo contain amosite asbestos in addition to chrysotile. Following are the relative percentages of the two types.

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Product	% Amosite	% Chrysotile
Kaylo	0	100
Paboo	50	50
Ruberoid	37	63
Johns-Manville	75	25

The chrysotile fraction in all cases except Kaylo is of a grade finer than #4.

W. C. Taylor

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COMPARISON OF PIPE COVERING INSULATION — OCTOBER 1954

APPEARANCE / HANDLEABILITY	DENSITY	MODULUS OF RUPTURE	HARDNESS	%	ASBESTOS: FIBER LENGTH	ASBESTOS: FIBERIZATION	CANVAS: THREAD COUNT	CANVAS: WEIGHT/SQ.YD.	CANVAS: ADHESION
Good / Good	10.9 PCF	60 PSI Aver. (50-70) Range	1-1.25 MH	19.8	Short 3/8" Max.	Intermediate	48x60	2.69 oz	Fair
Surface cracks, holes and folds / Good	11.6 PCF	49 PSI Aver. (25-63) Range	.75-1.25 MH	23.5	Long 2" Max.	Least Amount	42x60	4.02 oz	Fair
Some air holes / Slightly brittle	11.1 PCF	47 PSI Aver. (34-58) Range	1-2 MH				42x60	3.97 oz	Fair
Good / Good	14.1 PCF	146 PSI Aver. (124-164) Range	.75-1.0 MH	18.7	Long 1½" Max.	Greatest Amount	20x20	2.03 oz	Good
Good / Good	12.6 PCF	62 PSI Aver. (46-74) Range	1.25-1.75 MH				20x20	2.03 oz	Good
Uneven surface air holes / Good	12.6 PCF	60 PSI Aver. (27-62) Range	.25-.75 MH	23.1	Med. 3/4" Max.	Intermediate	48x60	2.52 oz	Good
Fibrous / Dusty	24.1 PCF	65 PSI Aver. (43-83) Range	1-1.25 MH				36x44	1.78 oz	Good
Fibrous / Dusty	15.1 PCF	45 PSI Aver. (24-62) Range	2 MH				36x44	1.75 oz	Good
Good / Fibers act as spare collimers	22.5 PCF	296 PSI Aver. (257-330) Range	0 MH				No canvas used. (Tied with string 2 places		
Fibrous / Dusty	14.1 PCF	56 PSI Aver. (37-68) Range	1-1.5 MH				36x44	1.78 oz	Fair
Smooth / Brittle	10.1 PCF	41 PSI Aver. (27-49) Range	2-2.25 MH				36x44	1.76 oz	Fair

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TABLE II — COMPARISON

BRAND NAME	INSULATION TYPE	NOMINAL INSULATION SIZE	MEASURED DIMENSION	APPEARAN HANDLEAB
OWENS-ILLINOIS "Kaylo"	Calcium Silicate	2 x 1	2.4 -2.44 ID Range 1.0 -1.03 Thk " 36.03 Length	Good —— Good
PABCO "Caltemp"	Calcium Silicate	2 x 1	2.44-2.53 ID Range 1.00-1.02 Thk " 36.0 Length	Surface cr holes and Good
PABCO "Precision Molded"	85% Magnesia	2 x 1	2.44-2.53 ID Range 1.00-1.05 Thk " 36.06 Length	Some air h Slightly brittle
JOHNS MANVILLE "Thermotestos"	Calcium Silicate	2 x 1	2.5-2.53 ID Range .89-.97 Thk " 36.06 Length	Good —— Good
JOHNS MANVILLE "85% Magnesia"	85% Magnesia	2 x 1	2.5-2.53 ID Range .90-.97 Thk " 36.03 Length	Good —— Good
RUBEROID "Calsilite"	Calcium Silicate	2 x 1	2.37-2.44 ID Range 1.0-1.03 Thk " 36.0 Length	Uneven surf air holes Good
CAREY "Temperlite"	Diatoma-ceous Earth	2 x 1½	2.44-2.59 ID Range 1.25-1.32 Thk " 36.0 Length	Fibrous —— Dusty
CAREY "Super-Light"	85% Magnesia	2 x 1	2.53-2.62 ID Range .95-1.03 Thk " 35.96-36.03 Lgth "	Fibrous —— Dusty
UNARCO "Unibestos"	Arcosite with binder	2 x 1	2.47-2.53 ID Range .97-1.02 Thk " 36.06 Length	Good Fibers act sharp splin
KEASBY & LATTISON "Featherweight"	85% Magnesia	2 x 1	2.44-2.50 ID Range .95-1.02 Thk " 36.0-36.12 Lgth "	Fibrous —— Dusty
CAREY "Thermalite"	85% Magnesia	2 x 1	2.44-2.53 ID Range 1.00-1.05 Thk " 36.0 Length	Smooth —— Brittle

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