PLAINTIFF'S EXHIBIT

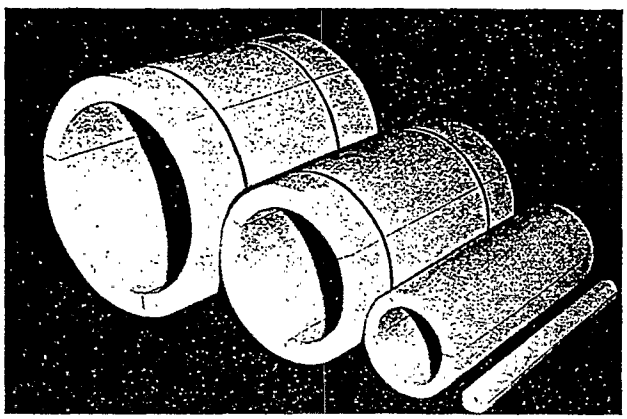
CHV-571

Commercial D.11
October, 1972

OWENS/CORNING FIBERGLAS

Kaylo 10 Asbestos Free Pipe Insulation

For hot water heating, high temperature hot water, steam condensate piping systems and all heated lines to 1200 F.



uses

Kaylo 10 Asbestos Free* is particularly suitable for use on high temperature piping systems where high performance and extended temperature range are required. Kaylo 10 Asbestos Free is widely used on hot piping where a great degree of physical abuse resistance is required, such as boiler and equipments rooms.

description

Kaylo 10 Asbestos Free Pipe Insulation is a rigid white hydrous calcium silicate insulation molded in sections for all types of indoor and outdoor piping that requires an abuse resistant, durable, efficient insulation, for temperatures up to 1200F. The insulation does not contain any asbestos fibers.

benefits

rugged—Kaylo 10 Asbestos Free Pipe Insulation is a strong and rigid material that resists mechanical damage during shipping, installation and service. It is well suited for riser piping in exposed locations.

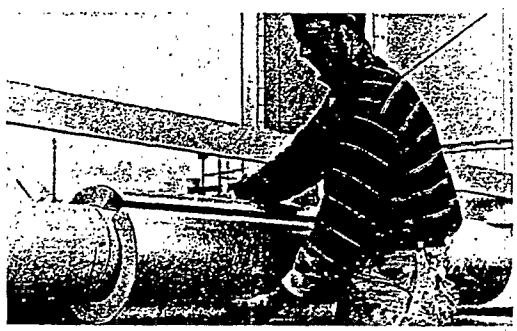
versatile—Kaylo's extended temperature range offers broader use for all hot piping to 1200F.

no asbestos—Kaylo 10 Asbestos Free can be safely used and applied in conformance with proposed OSHA regulations.

will not cause stress corrosion cracking—Kaylo 10 Asbestos Free will not cause stress corrosion cracking of stainless steel because Kaylo 10 Asbestos Free contains an inhibitor and has a very low soluble chloride content.

unaffected by moisture—Kaylo can be completely saturated in water without appreciable loss of strength and regains its strength and thermal value after drying out.

Kaylo Pipe Insulation cuts cleanly with straight square edges. The final result is well insulated piping with a neat finished appearance. Mitered fittings are finished with insulating cement and covered with canvas.



Kaylo Klad Pipe Insulation combines weather-proofing and insulation in one application. Attractive, maintenance-free factory-applied jackets of stainless steel and aluminum are complete with longitudinal locking seams and end joint butt strips.

*Trademark of Owens-Corning Fiberglas Corp.

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Performance characteristics

density (approx.) 11 lb. pcf.

modulus of rupture (ASTM C-446) 75 lbs./sq. in.

resistance to abrasion (Conventional tumbling test-loss in weight before heating) (ASTM C-421) after 10 minutes, 20% max. after 20 minutes, 45% max.

corrosion resistance does not cause or accelerate corrosion of steel, aluminum, or stainless steel

dimensional stability linear shrinkage after heating for 24 hours in a muffle (ASTM C-356)

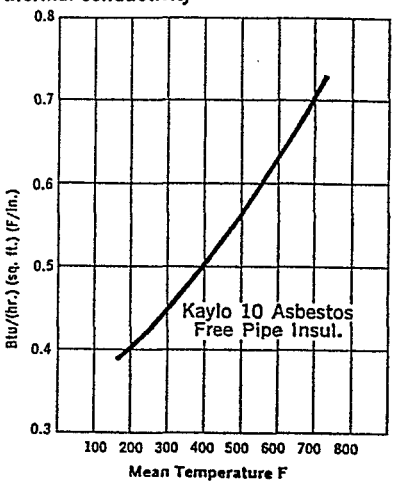
% length loss 1.4 (at 1200F)

specification compliance

HH-I-523c Insulation Block, Pipe Covering, Thermal, Calcium silicate (For temperatures up to 1200F) Type II (Pipe covering) Classes A thru F.

MIL-1-2781D Insulation Pipe Covering, Thermal, Grade 1, Class B; Grade 2, Class D; Grade 3, Class E, Type 1 and 2.

thermal conductivity



MIL-1-24244 (Ships)—Insulation Materials, Thermal, with Special Corrosion and Chloride Requirements, Type 1A, 1C, 1D, 1E.

ASTM C533-67

economic thickness—ambient air at 80F

Pipe Temp. / Temp. Diff. / IPS	200 / 120 ET	HL	ST	400 / 320 ET	HL	ST	600 / 520 ET	HL	ST
½	1	17	95	1½	40	106	2	63	113
¾	1	19	97	1½	47	110	2	71	117
1	1	20	95	1½	50	109	2½	70	107
1½	1	26	99	2	52	104	2½	81	111
1½	1	27	98	2	55	104	2½	84	112
2	1	32	98	2	61	104	2½	96	112
2½	1½	26	90	2	64	103	3	94	105
3	1½	33	93	2	79	104	3	111	110
3½	1½	33	91	2½	72	99	3	115	108
4	1½	40	94	2½	83	102	3½	118	106
4½	1½	36	93	2½	82	102	3½	120	107
5	1½	43	95	2½	94	105	3½	137	110

Pipe Temp. / Temp. Diff. / IPS	280 / 120 ET	HL	ST	400 / 320 ET	HL	ST	600 / 520 ET	HL	ST
6	2	46	91	3	98	100	4	140	104
7	2	47	92	3	104	103	4	155	107
8	2	55	91	3	115	100	4	169	106
9	2	56	92	3	123	102	4	182	110
10	2	65	91	3½	124	98	4	200	107
11	2	73	92	3½	133	98	4	205	107
12	2	81	92	3½	142	98	4½	210	105
14	2½	72	90	3½	157	99	5	213	103
16	3	70	88	4	159	97	6	207	99
18	3	78	88	5	147	92	6½	212	97
20	3	85	88	5	151	93	6½	229	98
24	3	100	89	5	176	93	6½	266	99

economic thickness

table key

ET—economic thickness (inches)
HL—heat loss (Btu/eff. hr)
ST—surface temperature (F)

importance of specifying economic thickness

Selection of insulation thicknesses for any specific application should take into consideration at least the following criteria. 1. Cost of insulation applied. 2. Cost of heat energy. 3. Cost of capital. 4. Cost of depreciation—plant and insulation. 5. Capital investment in heat production equipment. 6. Temperature differential. 7. Size of the pipe or surface. 8. Conductivity of insulation.

for hot piping, the tabulated thicknesses are optimum thicknesses calculated on an "Economic"* basis for heat conservation under average operating conditions and assure adequate temperature control. Special conditions may warrant the use of other thicknesses.

*From "How to Determine Economic Thickness of Insulation"—National Insulation Manufacturers Association.
economic thickness—Heated Piping to 1200F (80F ambient still air)

sizes

pipe sizes—Kaylo Pipe Insulation is available to fit nominal pipe sizes from ½" to 39" in diameter, and nominal copper tubing sizes from ⅜" to 3" in diameter. It is manufactured to Dimensional Standards Sizes to permit nesting in multiple-layer applications.

thickness—Kaylo Pipe Insulation is available in single layer thicknesses from 1" to 3" depending upon pipe size. Kaylo Copper Tubing Insulation is available in single layer thicknesses of 1" and 1½".

forms—Kaylo Pipe Insulation is available in sectional or multi-segmental form depending upon pipe size. All insulation is furnished in 3 ft. sections.

jackets

Jackets are factory-applied on Sectional Pipe and Tube Insulation. On Multisegmental forms they are furnished but not adhered.

canvas—Kaylo Sectional Pipe Insulation includes standard canvas jackets, at an additional charge, on thicknesses up to and including 3" depending on pipe size.
8 oz. canvas jacket is available for all types, sizes and thicknesses of Kaylo Pipe and Tube Insulation at an additional charge.

smooth and embossed aluminum—Kaylo is also available with smooth or embossed aluminum jacket .016" thick; or stainless steel .010". These weatherproof jackets provide greater resistance to mechanical damage and present a neat finished appearance to outdoor pipe lines. The longitudinal seam has a self-locking joint. Butt sealing strips are furnished with an integral weatherproof mastic for sealing end joints.

OWENS/CORNING FIBERGLAS TRADEMARK

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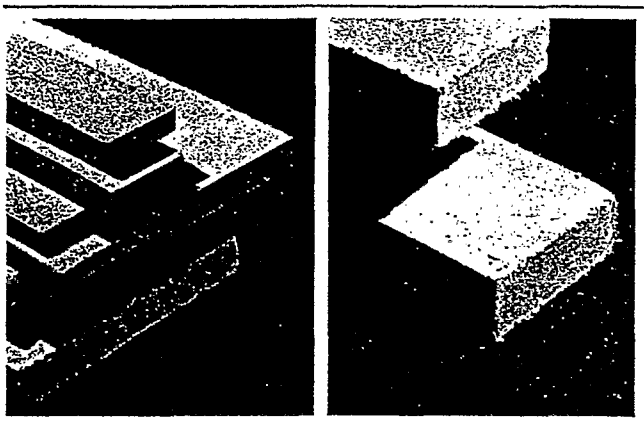
OWENS/CORNING FIBERGLAS

Kaylo 10 Asbestos Free Block Insulation

rigid calcium silicate insulations for all types of heated equipment operating at temperatures up to 1200F.



uses

Kaylo 10 Asbestos Free* Block is for use on indoor or outdoor equipment operating at temperatures up to 1200F. Kaylo block is ideally suited for use on stainless steel vessels and equipment as it helps inhibit stress corrosion cracking. Typical applications are for boilers, breeching, tanks, vessels. Kaylo 10 Asbestos Free Block is white in color.

description

Kaylo 10 Asbestos Free Block Insulation is a rigid hydrous calcium silicate heat insulation. It is strong, efficient and highly resistant to abrasion and moisture damage.

benefits

High thermal efficiency—Kaylo 10 Asbestos Free offers excellent thermal efficiency coupled with high strength. A low k of .40 for Kaylo 10 at 200F mean temperature proves that Kaylo will provide significant savings in operating costs over the life of the equipment.

Resistant to abuse—resists mechanical damage because of hard, tough, reinforced structure.

Strong—less breakage in shipment and handling. High temperatures have little effect on strength characteristics.

Will not cause stress corrosion cracking—Kaylo 10 Asbestos Free will not cause stress corrosion cracking of stainless steel because it contains sodium silicate as an inhibitor, and has a very low chloride content.

No asbestos—Kaylo 10 Asbestos Free can be safely used and applied in conformance with proposed OSHA regulations.

Resistant to moisture damage—unlike many other insulations, Kaylo is not affected appreciably from moisture damage. It regains thermal efficiency and strength after drying out. Outdoor installations must be weatherproofed, however, for long continuous service.

Dimensionally stable—Kaylo does not shrink appreciably in service, even at elevated temperatures. This means less heat leakage at the joints. And Kaylo will not warp or crack in service.

Fabricates easily—ordinary insulators tools are all that is required to fabricate Kaylo. It cuts with a clean true edge for tighter fit at the joints. Fittings are neater and faster.

*Trademark Owens-Corning Fiberglas Corporation

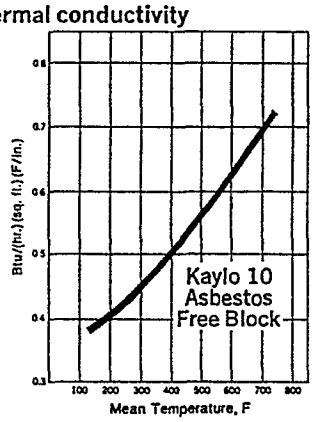
Performance characteristics

	KAYLO 10
density:	11 pcf approx.
flexural strength: (ASTM C-203)	60 psi average
compressive strength: (ASTM C-165) at 5% deformation	115 psi
hardness: (ASTM C-569)	.60 mm

resistance to abrasion:
(ASTM C-421)
after 20 minutes, 45% max.
after 10 minutes, 20% max.

dimensional stability:
(ASTM C-356)
linear shrinkage after heating for 24 hours in muffle at 1200F.—1.4%

thermal conductivity



economic thickness*

Selection of insulation thicknesses for any specific application should take into consideration the following important criteria. 1. Cost of insulation applied. 2. Cost of heat energy. 3. Cost of capital. 4. Cost of depreciation—plant and insulation. 5. Capital investment in heat production equipment. 6. Temperature differential. 7. Size of the pipe or surface. 8. Conductivity of insulation.

**From "How to Determine Economic Thickness of Insulation"—National Insulation Manufacturers Association.*

economic thickness—Kaylo 10 Asbestos Free block to 1200F—ambient still air 80F

ET—economic thickness ST—surface temperature HL—heat loss Btu/hr sq. foot

THICK	200 F		300 F		400 F		500 F		600 F		700 F		800 F		900 F		1000 F		1100 F		1200 F	
	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.	HEAT LOSS	SURF. TEMP.
1.000	38	103	72	124	109	147																
1.500	27	96	51	111	78	127	107	145														
2.000	21	93	40	104	60	117	83	130	107	145												
2.500	17	90	33	100	49	110	68	121	87	133	109	146										
3.000	14	89	28	97	42	105	57	115	74	125	92	136	112	148								
3.500	13	88	24	95	36	102	49	110	64	119	80	129	97	139	116	150						
4.000	11	87	21	93	32	99	44	107	56	114	70	123	85	132	102	142	120	153				
4.500	10	86	19	91	28	97	39	104	50	111	63	118	76	127	91	136	107	145	125	156		
5.000	9	85	17	90	26	96	35	101	46	108	57	115	69	122	82	130	97	139	113	149	130	159
5.500	8	85	16	89	23	94	32	100	42	105	52	112	63	118	75	126	88	134	103	143	118	152
6.000	7	85	14	89	22	93	30	98	38	103	48	109	58	115	69	122	81	130	94	138	109	146

*calculated

specification compliance

HH-1-523c Insulation Block, Pipe Covering, Thermal, (Calcium Silicate for temperatures up to 1200°F) Type 1.

MIL-1-2819E Insulation Block, Thermal. Class 1 and 2. ASTM C533-67.

MIL-1-24244 (Amend. 3) (Ships) Insulating Materials, Thermal, with Special Corrosion and Chloride Requirements (Kaylo 10 only), Type 3A, 3B.

sizes

thickness—1", 1½", 2", 2½", 3½" and 4"
width—3", 6", 12" and 18"
length—18" to 36"
form—Block

beveled lags

For pipe sizes greater than those for which Kaylo 10 Pipe Insulation sizes are available, Kaylo beveled lags may be used to insulate piping. Lags beveled to fit pipes from 18" to 72" in diameter are available in thickness of 1½", 2", 2½", 3". Lags are 36" long and 3" wide.

application recommendations

Kaylo 10 Asbestos Free Block Insulations are held in place by mechanically fastening with bands, welded rods or studs. The insulation may be finished with a trowel coat of insulating cement, canvassed and painted. Outdoor installations require weatherproofing with mastic or metal jacketing.

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