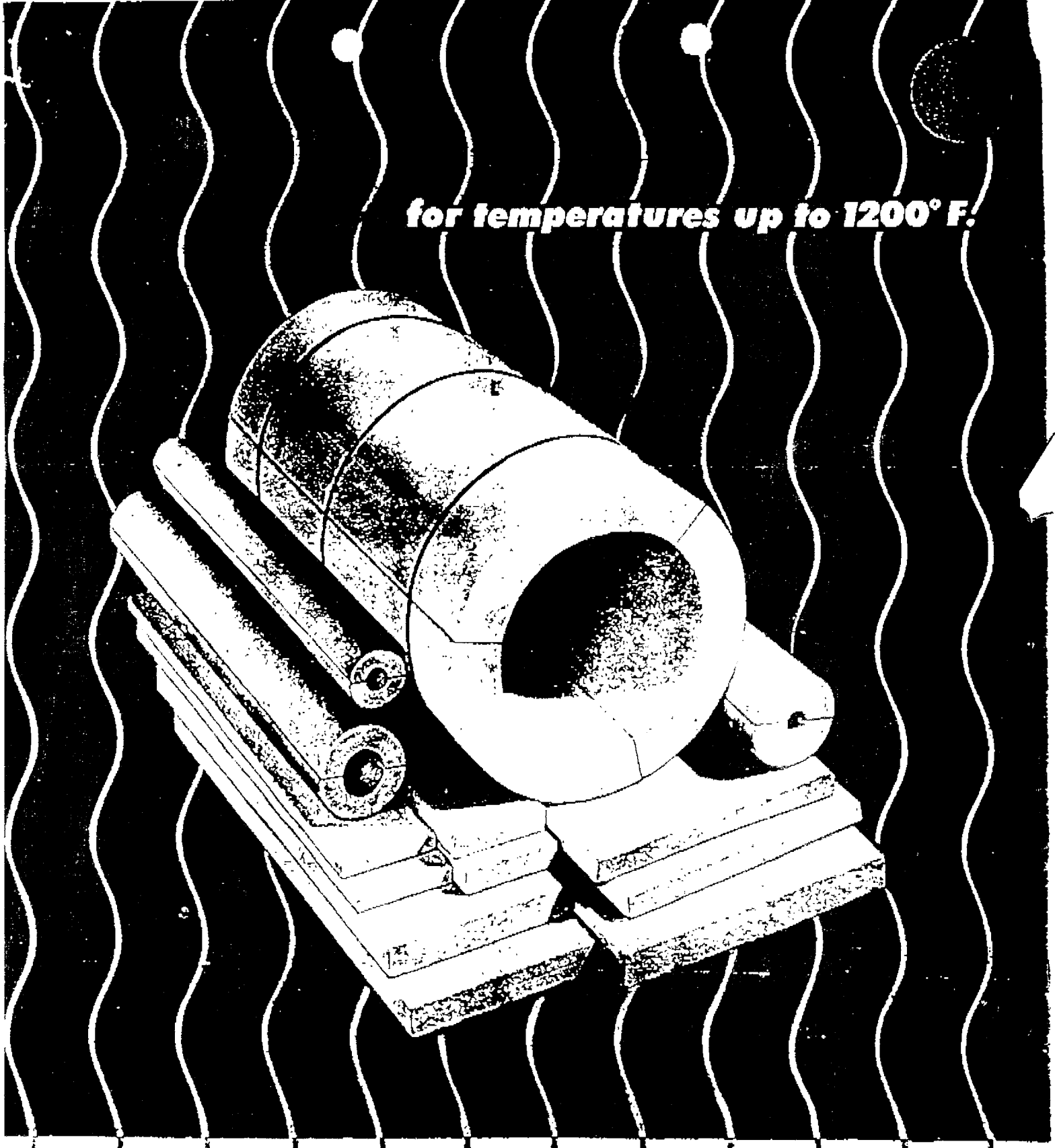
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DATE: 0000

DOC#: OC057

DOCUMENT DESCRIPTION: Sales Literature



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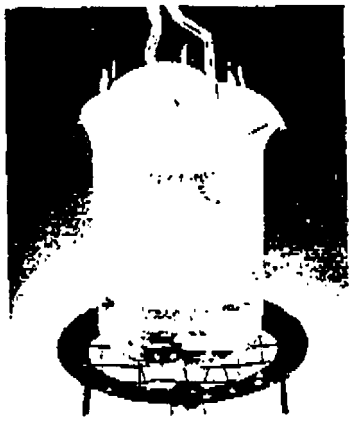
OWENS-CORNING FIBERGLAS CORPORATION

General Offices and General Products Division, Toledo, Ohio

KAYLO



Kaylo Heat Insulation is easily cut with ordinary tools.



Boiling water does not break it down.



Light weight combined with high strength.

KAYLO®

HEAT INSULATION

HYDROUS CALCIUM SILICATE

Kaylo Heat Insulation is made of a chemical compound of lime and silica developed by Owens-Illinois Glass Company. Although not glass, it is made of materials similar to those used in glass, and with which Owens-Illinois has had long experience. The technical name is hydrous calcium silicate. Since it is a chemically reacted material, it contains no added binder. For mechanical effects, a small amount of asbestos fiber is included at the time of manufacture.

Few materials have been so thoroughly tested. Owens-Illinois began work on hydrous calcium silicates in 1938, but no material was offered to the general market until 1943. Thousands of installations since that time have proved field superiority, yet research and product development are still continuing.

Kaylo Heat Insulation is made both as block and as molded pipe insulation, with the widest range of sizes, forms and thicknesses of any high temperature insulation available. Kaylo hydrous calcium silicate combines the most desirable physical characteristics of heat insulating materials to a degree not equalled by other materials on the market. This means outstanding performance and economical application for the user.

PERFORMANCE

Kaylo Heat Insulation is *effective up to 1200°F.*, performing efficiently on temperatures through the hot water and low pressure steam range and also through temperatures in the super heated steam range. Therefore, a single material can be used for high temperatures which usually require combinations of two different insulating materials.

The *low coefficient of conductivity*, or "k", of Kaylo Heat Insulation places it among the most efficient insulations for temperatures up to 1200°F. (The name "Kaylo" is derived from the fact that "k" is low for the material.) Its high insulation value comes from the extremely small pore structure. So small and numerous are its insulating air spaces that they present a material internal surface of approximately 100 acres per cubic foot of insulation.

Water does not break down Kaylo Heat Insulation. Even when saturated, it retains an appreciable percentage of its strength. After being soaked for long periods of time and then dried, it returns to its original thermal efficiency and strength, without apparent shrinking or warping.

Kaylo Heat Insulation is effective after long service. It remains strong and efficient over the years and shows little shrinkage after exposure to temperatures up to 1200°F.

APPLICATION

With a weight of only *11 pounds per cubic foot*, handling, shipping and application are simplified.

Kaylo Heat Insulation has flexural strength, compressive *strength and resistance to abrasion far above normal requirements* for heat insulation. Breakage during installation, therefore, is usually negligible.

Block or pipe insulation *can be cut, scored or sawed with ordinary tools* of the trade. The material is *non-irritating to the skin* and non-toxic.

PHYSICAL CHARACTERISTICS

DENSITY . . . . Approximately 11 lb. per cu. ft.

FLEXURAL STRENGTH . . . . . 50 lb. per sq. in.

COMPRESSIVE STRENGTH (at 5% deformation)

Before heating . . . . . 150 lb. per sq. in.
After heating for 24 hours
- at 750° F. . . . . 144 lb. per sq. in.
- at 1000° F. . . . . 123 lb. per sq. in.
- at 1200° F. . . . . 117 lb. per sq. in.

After boiling for 24 hours (white wet) . . . . . 74 lb. per sq. in.

LOSS IN WEIGHT

After heating for 24 hours
- at 750° F. 5.5%
- at 1000° F. 7.9%
- at 1200° F. 9.8%

After boiling for 24 hours (after drying) . . 0.2%

RESISTANCE TO ABRASION

(Conventional tumbling test-loss in weight after 10 minutes)

Before heating 2.2%
After heating for 24 hours
- at 750° F. 3.7%
- at 1000° F. 5.7%
- at 1200° F. 6.9%

DIMENSIONAL STABILITY

Linear shrinkage after heating for 24 hours
- at 750° F. 0.8%
- at 1000° F. 0.9%
- at 1200° F. 1.5%

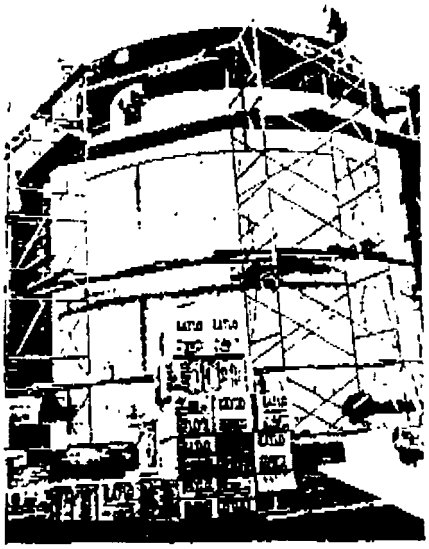
Elongation after saturation (max.) 0.04%

MOISTURE ADSORPTION (volume)

After 6 hours exposure in atmosphere of 120° F and 90% Relative Humidity . . . 0.9%

CONDUCTIVITY (K)

At 100° F. mean temperature 0.38
At 500° F. mean temperature 0.54

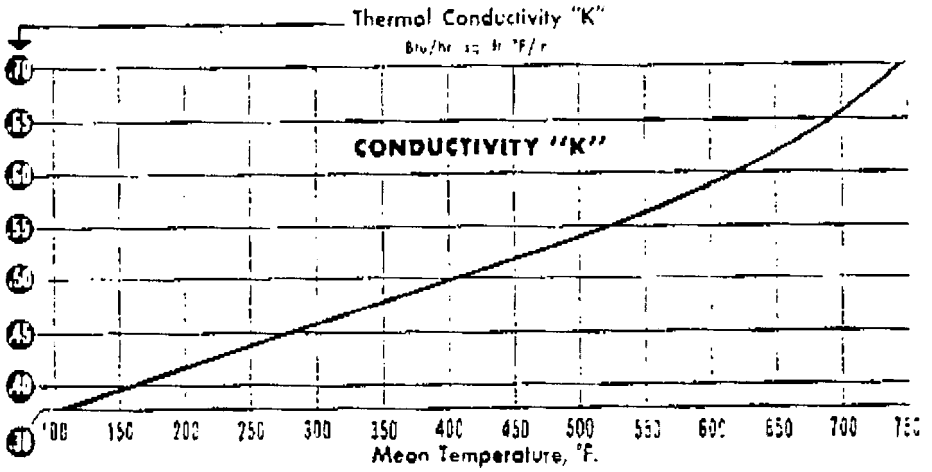


Applicators like its light weight and good "handleability".

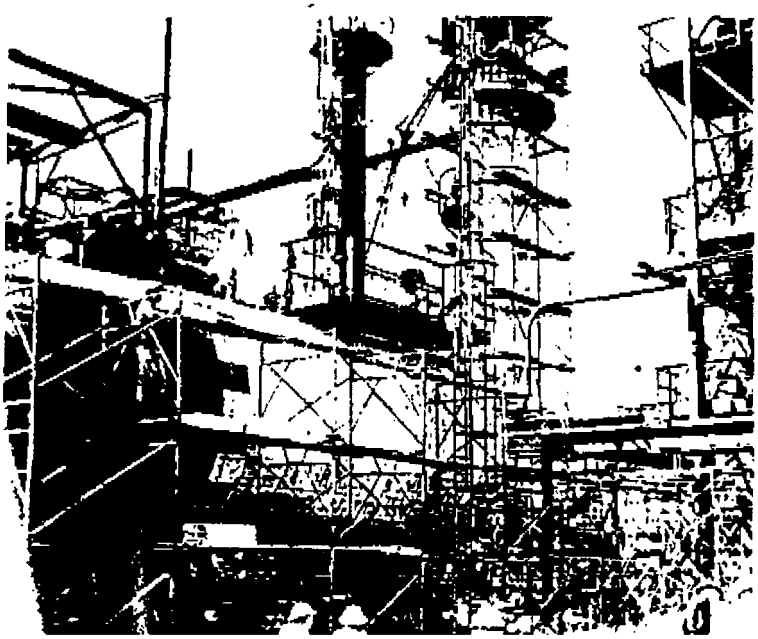
TYPICAL APPLICATIONS

Inside or outside, for temperatures up to 1200°F., Kaylo Heat Insulation is used for such equipment as:

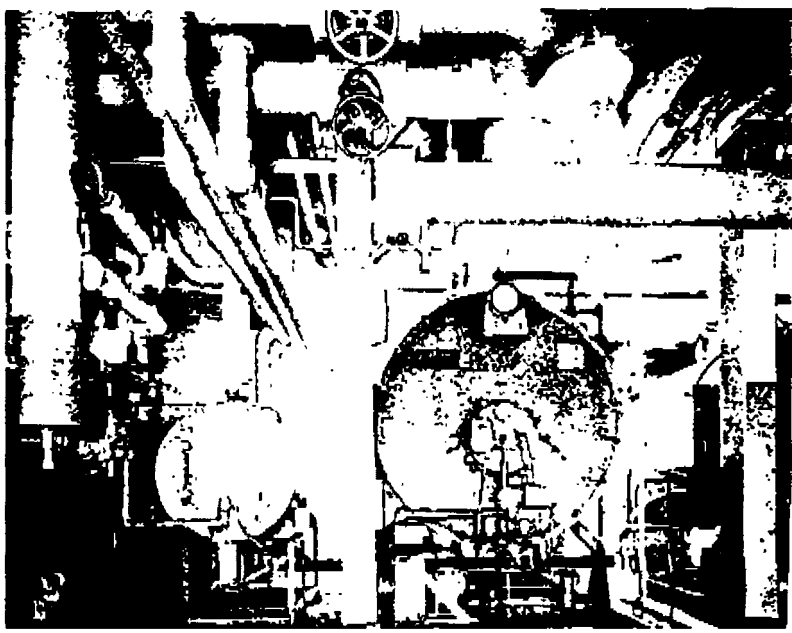
Autoclaves	Kilns
Boilers	Lehrs
Breechings	Locomotives
Chilling Pits	Ovens
Condensers	Precipitators
Dryers	Process Equipment
Evaporators	Steam Lines
Furnaces	Tanks
Heat Exchangers	Towers
Hot Air Ducts	Turbines
	Vessels



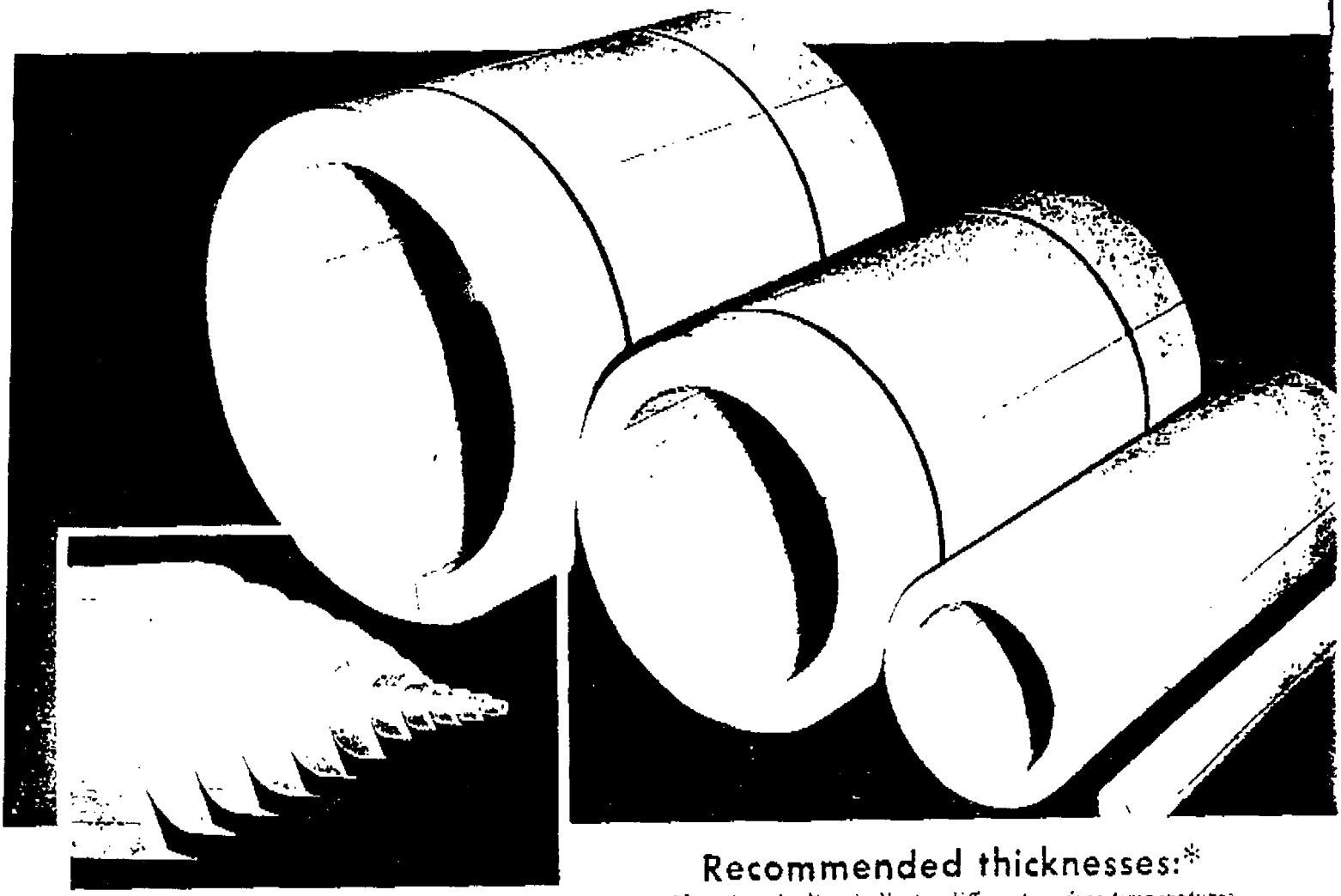
Strength of material and large units mean more economical application, less waste.



The smooth surfaces and straight edges of the material help make a neat finished job.



KAYLO PIPE INSULATION



Kaylo Pipe Insulation reduces inventory requirements because of two features—its wide effective temperature range, up to 1200°F., and its Simplified Dimensional Standards, which allow nesting.

Kaylo Pipe Insulation is produced in Simplified Dimensional Standards of thicknesses and diameters for pipe sizes from ⅛" to 28". O. D.'s of insulation correspond to O. D.'s of standard pipes, assuring proper fit for each pipe size and for nesting, when necessary. With this system of snug nesting, Kaylo Pipe Insulation fits all operating conditions, requires less items—reduces maintenance stock

Where plant operating economics demand greater insulation thicknesses, consult detailed data in Kaylo Information Files.

Unshaded = surface temp. under 140°F.
Light Shaded = surface temp. 140°F. to 145°F.
Heavy Shaded = surface temp. 145°F. to 150°F.

Recommended thicknesses:*

Note that shading indicates different surface temperatures

NOMINAL PIPE SIZE—IN.	TEMP. DIFFERENCE—HOT SURFACE TO AIR, DEG. F.										
	200	300	400	500	600	700	800	900	1000	1100	1200
½	1	1	1	1½	1½	1½	2	2	2½	3	3
¾	1	1	1	1½	1½	1½	2	2	2½	3	3
1	1	1	1	1½	1½	1½	2	2	2½	3	3
1¼	1	1	1	1½	1½	2	2	2½	2½	3	3
1½	1	1	1	1½	1½	2	2½	2½	3	3	3½
2	1	1	1½	1½	2	2	2½	2½	3	3	3
2½	1	1	1½	1½	2	2½	2½	3	3	3½	3½
3	1	1	1½	1½	2	2½	2½	3	3	3½	3½
3½	1	1	1½	2	2	2½	3	3	3½	4	4
4	1	1	1½	2	2	2½	3	3	3½	4	4
6	1½	1½	1½	2	2	2½	3	3	3½	4	4
8	1½	1½	1½	2	2	2½	3	3½	3½	4	4½
10	1½	1½	1½	2	2	2½	3	3½	4	4	4½
12	1½	1½	1½	2	2½	3	3	3½	4	4½	5
14	1½	1½	1½	2	2½	3	3	3½	4	4½	5
16	1½	1½	1½	2	2½	3	3	3½	4	4½	5
18 to 72	1½	1½	1½	2	2½	3	3	3½	4	4½	5

Standard sizes, thicknesses and forms:

Kaylo Pipe Insulation is available as a standard item in sectional and tri-segmental forms and in thicknesses through 3".

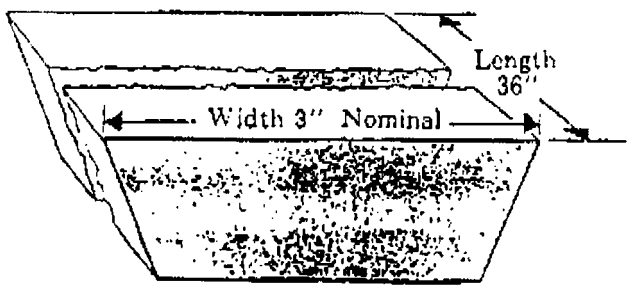
Red lines below show equal O.D.'s for selection of nesting sizes in conformance with *Simplified Dimensional Standards.*

NOMINAL PIPE SIZE	PIPE O.D.	NOMINAL THICKNESS OF INSULATION 1" Actual	1" O.D.	1½" Actual	1½" O.D.	2" Actual	2" O.D.	2½" Actual	2½" O.D.	3" Actual	3" O.D.	3½" Actual	3½" O.D.	4" Actual	4" O.D.	4½" Actual	4½" O.D.	5" Actual	5" O.D.
½	.84	1.00	2.88	1.56	4.00	2.06	5.00	2.35	5.56	2.88	6.63								
¾	1.05	.90	2.88	1.46	4.00	1.96	5.00	2.24	5.56	2.77	6.63								
1	1.32	1.08	3.50	1.58	4.50	2.11	5.56	2.64	6.63	3.14	7.63								
1¼	1.66	.98	3.50	1.48	4.50	1.94	5.56	2.47	6.63	2.97	7.63								
1½	1.90	1.03	4.00	1.58	5.00	1.82	5.56	2.35	6.63	2.85	7.63								
2	2.38	1.03	4.50	1.56	5.56	2.09	6.63	2.59	7.63	3.09	8.63	3.59	9.63	4.16	10.75	4.66	11.75	5.16	12.75
2½	2.88	1.06	5.00	1.31	5.56	1.84	6.63	2.34	7.63	2.84	8.63	3.34	9.63	3.91	10.75	4.41	11.75	4.91	12.75
3	3.50	1.00	5.56	1.53	6.63	2.03	7.63	2.53	8.63	3.03	9.63	3.59	10.75	4.09	11.75	4.59	12.75	5.22	14.00
3½	4.00	.75	5.56	1.28	6.63	1.78	7.63	2.28	8.63	2.78	9.63	3.34	10.75	3.84	11.75	4.34	12.75	4.97	14.00
4	4.50	1.03	6.63	1.53	7.63	2.03	8.63	2.53	9.63	3.09	10.75	3.59	11.75	4.09	12.75	4.72	14.00	5.22	15.00
4½	5.00	.78	6.63	1.28	7.63	1.78	8.63	2.28	9.63	2.84	10.75	3.34	11.75	3.84	12.75	4.47	14.00	4.97	15.00
5	5.56	1.00	7.63	1.60	8.63	2.00	9.63	2.66	10.75	3.06	11.75	3.66	12.75	4.19	14.00	4.69	15.00	5.19	16.00
6	6.63	.94	8.63	1.44	9.63	2.00	10.75	2.50	11.75	3.00	12.75	3.63	14.00	4.13	15.00	4.63	16.00	5.13	17.00
7	7.63			1.60	10.75	2.00	11.75	2.50	12.75	3.13	14.00	3.63	15.00	4.13	16.00	4.63	17.00	5.13	18.00
8	8.63			1.50	11.75	2.00	12.75	2.63	14.00	3.13	15.00	3.63	16.00	4.13	17.00	4.63	18.00	5.13	19.00
9	9.63			1.50	12.75	2.13	14.00	2.63	15.00	3.13	16.00	3.63	17.00	4.13	18.00	4.63	19.00	5.13	20.00
10	10.75			1.56	14.00	2.06	15.00	2.56	16.00	3.06	17.00	3.56	18.00	4.06	19.00	4.56	20.00	5.06	21.00
11	11.75			1.56	15.00	2.06	16.00	2.56	17.00	3.06	18.00	3.56	19.00	4.06	20.00	4.56	21.00	5.06	22.00
12	12.75			1.56	16.00	2.06	17.00	2.56	18.00	3.06	19.00	3.56	20.00	4.06	21.00	4.56	22.00	5.06	23.00
14	14.00			1.62	17.00	1.92	18.00	2.42	19.00	2.92	20.00	3.42	21.00	3.92	22.00	4.42	23.00	4.92	24.00
15	15.00			1.62	18.00	1.92	19.00	2.42	20.00	2.92	21.00	3.42	22.00	3.92	23.00	4.42	24.00	4.92	25.00
16	16.00			1.61	19.00	1.91	20.00	2.41	21.00	2.91	22.00	3.41	23.00	3.91	24.00	4.41	25.00	4.91	26.00
17	17.00			1.61	20.00	1.91	21.00	2.41	22.00	2.91	23.00	3.41	24.00	3.91	25.00	4.41	26.00		
18	18.00			1.61	21.00	1.91	22.00	2.41	23.00	2.91	24.00	3.41	25.00	3.91	26.00				
19	19.00			1.61	22.00	1.91	23.00	2.41	24.00	2.91	25.00	3.41	26.00						
20	20.00			1.61	23.00	1.91	24.00	2.41	25.00	2.91	26.00								
21	21.00			1.61	24.00	1.91	25.00	2.41	26.00										
22	22.00			1.61	25.00	1.91	26.00												
23	23.00			1.61	26.00														

FORMS: SECTIONAL; TRI-SEGMENTAL

SINGLE LAYER ONLY — SINGLE OR DOUBLE LAYER — MULTIPLE LAYER ONLY

KAYLO



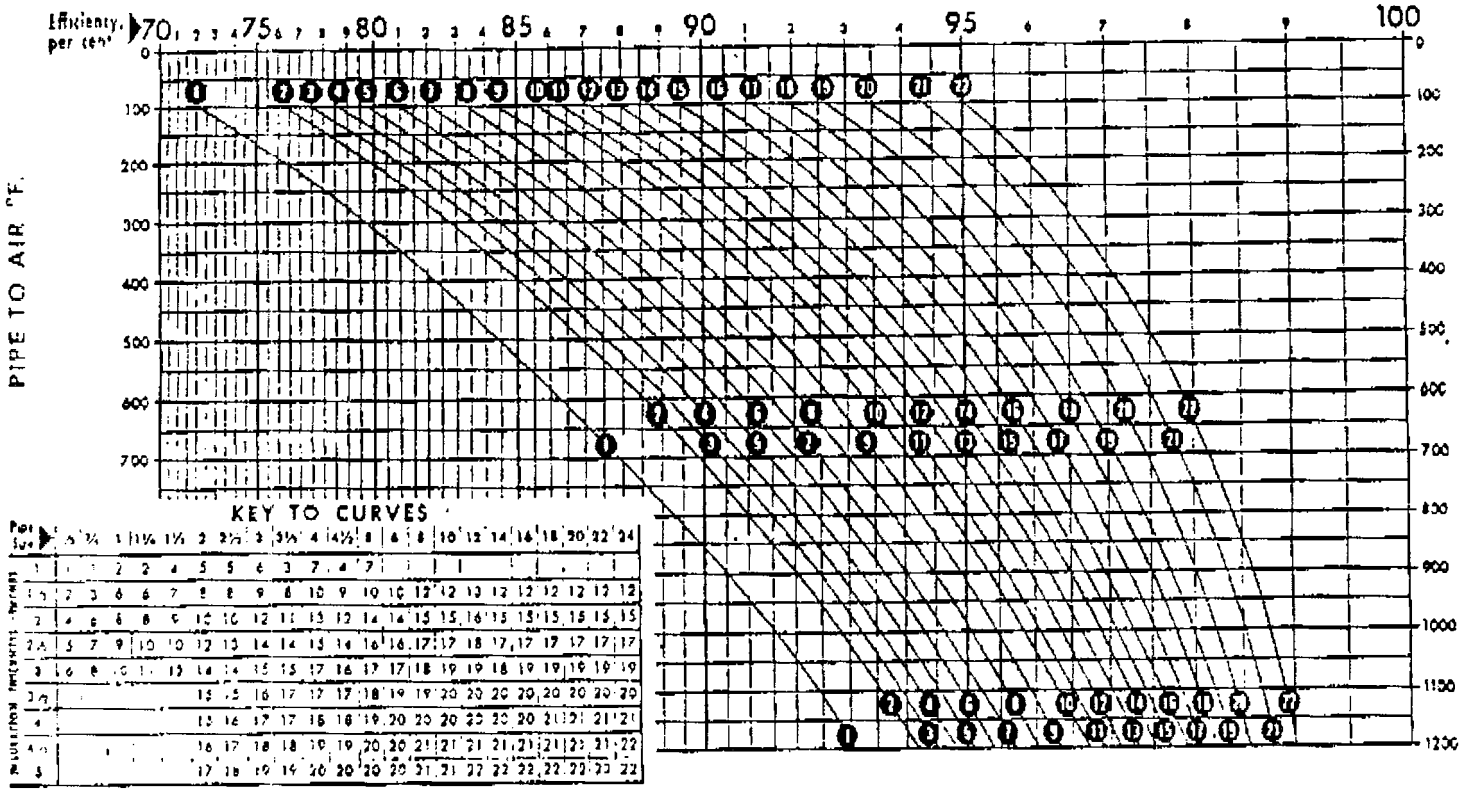
BEVELED LAGS

For pipe sizes greater than those indicated above, Kaylo Beveled Lags may be used. These lags are blocks of Kaylo insulation, nominally 3" wide, beveled to fit snugly on standard sizes of heated piping. Lags beveled to fit pipes from 21" to 36" in diameter are available in thicknesses of 1½", 2", 2½" and 3". Lags are 36" long.

KAYLO® PIPE INSULATION

Insulation Efficiencies:

Efficiency x Bare Pipe Heat Loss=Heat Saved By Insulation BTU/Lin.Ft./hr.
100-Efficiency x Bare Pipe Heat Loss=Heat Loss Through Insulation BTU/Lin.Ft./hr.

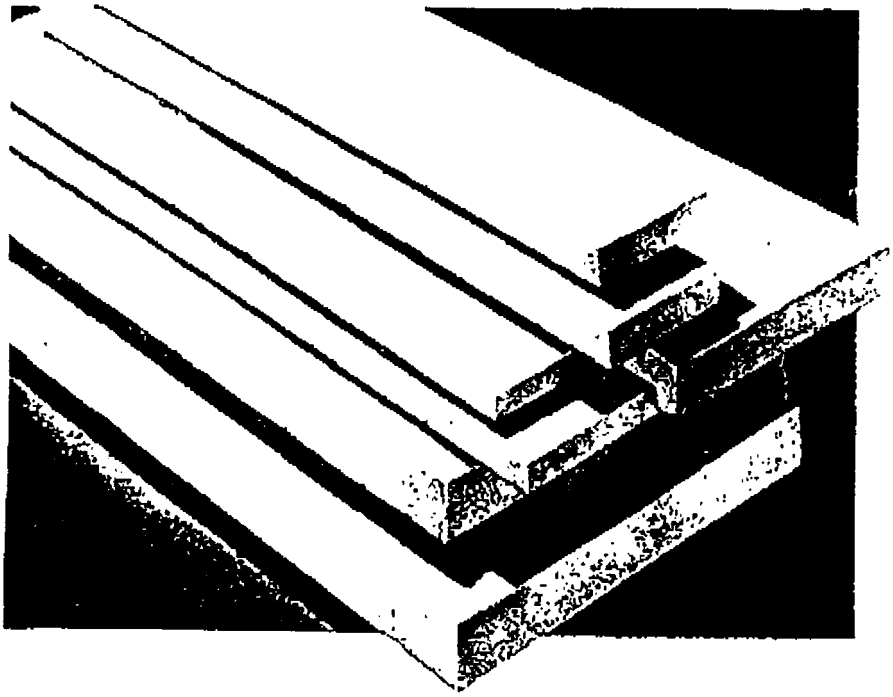


Bare Pipe Heat Loss:

BTU per lineal foot, per hour. Still ambient air 80°F.

NOMINAL PIPE SIZE / Temperature diff., deg. F., pipe to air	100	200	300	400	500	600	700	800	900	1000	1100	1200
½	55	136	247	394	581	820	1120	1482	1929	2469	3115	3882
¾	67	167	304	483	716	1013	1381	1835	2391	3064	3869	4825
1	82	206	373	595	884	1252	1709	2275	2967	3805	4809	6002
1¼	102	255	464	741	1103	1565	2139	2851	3722	4778	6044	7547
1½	115	289	526	841	1252	1780	2434	3247	4242	5448	6894	8613
2	141	355	647	1036	1546	2199	3013	4022	5260	6761	8562	10700
2½	168	423	773	1240	1853	2639	3619	4945	6330	8141	10317	12904
3	202	502	930	1493	2234	3186	4373	5850	7663	9863	12507	15651
3½	228	575	1052	1691	2533	3616	4968	6649	8714	11222	14236	17822
4	255	642	1176	1892	2836	4051	5570	7458	9780	12599	15988	20022
4½	281	708	1298	2090	3137	4481	6164	8258	10834	13962	17724	22201
5	310	782	1435	2312	3472	4965	6834	9161	12022	15500	19680	24659
6	364	920	1691	2728	4100	5870	8075	10848	14248	19763	23347	29267
8	464	1178	2169	3506	5280	7570	10443	14024	18436	23801	30261	37955
10	572	1447	2668	4318	6512	9350	12912	17355	22833	29500	37525	47089
12	671	1699	3137	5086	7675	11031	15243	20505	26993	34891	44402	55742
14	731	1851	3419	5544	8374	12042	16649	22403	29502	38143	48557	60967
16	828	2098	3877	6294	9514	13692	18941	25499	33597	43451	55330	69493
18	926	2348	4344	7059	10672	15374	21277	28660	37775	48873	62249	78204
20	1022	2592	4797	7800	11806	17009	23554	31742	41848	54161	69003	86704
22	1117	2835	5250	8539	12935	18642	25829	34817	45917	59439	75746	95196
24	1213	3078	5706	9286	14071	20291	28122	37917	50023	64771	82564	103784

KAYLO® HEAT INSULATING BLOCK



The complete range of standard widths up to 18" and thicknesses up to 3" allows Kaylo Heat Insulating Block to be used as single layer insulation for flat surfaces up to 700°F. and in double layers from 700°F through 1200°F, even in temperature ranges which usually requires two thickness of dissimilar materials.

Recommended Thicknesses:*

(in inches)

	TEMP. DIFF. HOT SURFACE TO AIR DEG. F.										
Temp. Diff.	200	300	400	500	600	700	800	900	1000	1100	1200
Thickness	1	1	1½	2	2½	3	3	3½	4	4½	5

*Unshaded. ☐ = Surface temp. under 140°F.
Heavy shaded = Surface temp. 145°F. to 150°F.

Standard Sizes and Thicknesses*

(in inches)

Thicknesses 1, 1½, 2, 2½, 3
Widths 6, 12, 18
Length 36

* Curved block and thicknesses over 3" available only on special order.

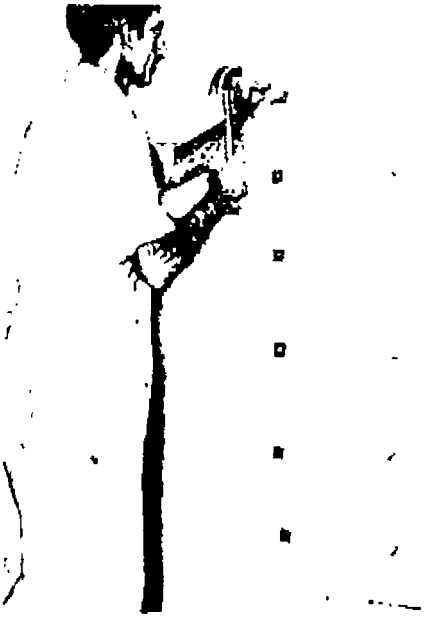
Applying Kaylo Heat Insulating Block to locomotive boiler, using tie wires.



Insulating ducts and boiler at power plant, using laced tie wires and wire mesh for finishing cement.

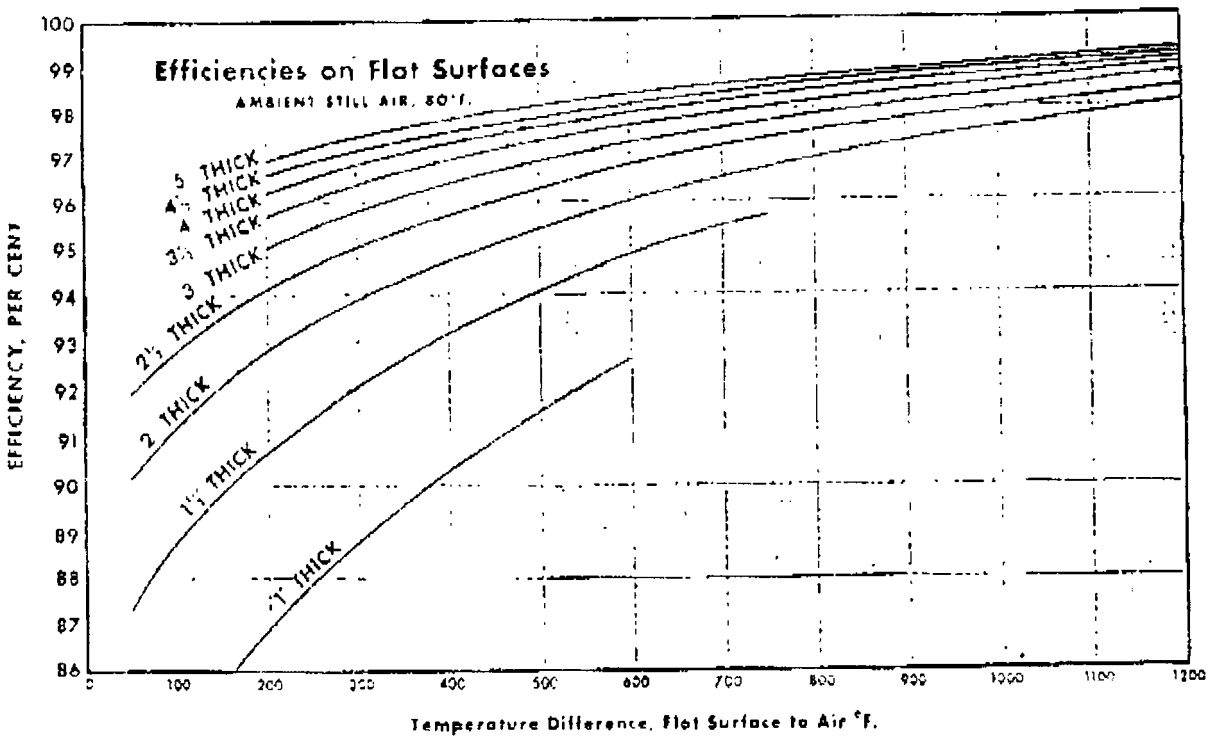


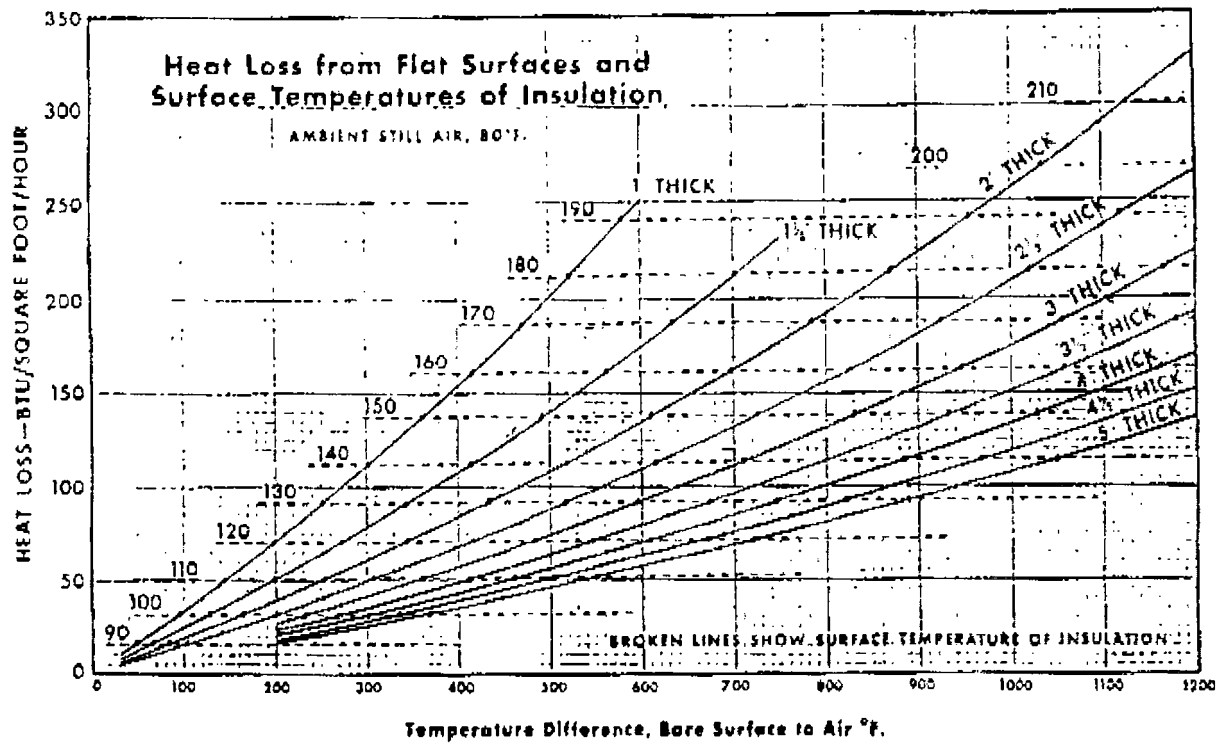
Drying oven installation using studs and speed clips for fastening insulation.



KAYLO HEAT INSULATING BLOCK

Heat Loss, Surface Temperatures, and Efficiencies





OWENS-CORNING FIBERGLAS CORPORATION

TOLEDO 1, OHIO *For additional information write:*