

IL050B.ASB
04/18/91

STATE OF ILLINOIS
IN THE CIRCUIT COURT OF THE ELEVENTH JUDICIAL CIRCUIT
COUNTY OF FORD

ANNA WOELLMS, Individually and as	)	
Special Administrator for the	)	
Estate of Willie Woellms, deceased	)	
Plaintiff,	)	
vs.	)	No. 89 L 29
ARMSTRONG WORLD INDUSTRIES,	)	
INC., et al.,	)	
Defendants.	)	

DEFENDANT, OWENS-ILLINOIS, INC'S RESPONSES TO
PLAINTIFFS' FIRST REQUEST FOR DISCOVERY TO
DEFENDANT, OWENS-ILLINOIS, INC.

PRELIMINARY STATEMENT

Some of the events which may be relevant to the matters inquired about by Plaintiffs' Request for Production apparently occurred more than thirty-five years ago. In addition, effective April 30, 1958, Owens-Illinois, Inc. disposed of the business involved in this action by way of sale of that business to Owens-Corning Fiberglas Corporation. Since that time, Owens-Illinois, Inc. has not engaged in any such business. It does not now and it has not since that sale manufactured, distributed or sold any asbestos-containing products. As a result of the foregoing factors, investigations to date indicate that at least some documents which relate to matters inquired about by these requests were transferred to Owens-Corning Fiberglas Corporation with the transfer of the business in question in 1958. Owens-Illinois, Inc. is engaged in a continuing investigation in an attempt to locate, confirm the transfer of, or confirm the absence of, such documents and is also engaged in a continuing investigation into the matters inquired about in these requests. Unless otherwise stated in an answer to a specific request, the answers set out hereinafter are limited to the period during

W-11-1131

which Owens-Illinois, Inc. manufactured asbestos-containing insulation products and to the facilities related to that business. The following is a part of and is incorporated by reference in every answer provided hereinafter:

This answer is accurate as of the date made. However, Owens-Illinois, Inc.'s investigation is continuing, and Owens-Illinois, Inc. cannot exclude the possibility that it may be able to obtain more complete information or even information which indicates that the answer being supplied is incorrect. Owens-Illinois, Inc. objects to answering this request in regard to any period of time other than the period during which it engaged in the business involved in this case which ended in mid-1958 or concerning any facility not related to that business, on the basis that any such answer would be irrelevant to the subject matter of the pending litigation, would not be reasonably calculated to lead to the discovery of admissible evidence, and would be burdensome and oppressive.

Furthermore, Owens-Illinois, Inc. objects to the instructions and definitions supplied by plaintiffs with regard to these requests, on the basis that the definitions are overbroad, vague, and often inconsistent with the normal usage and meaning of such words, and the instructions are overbroad, burdensome and constitute an unreasonable expansion of the requests themselves. Owens-Illinois, Inc. therefore gives notice that it does not consider itself bound by the instructions and definitions propounded by plaintiffs, and instead shall answer the requests in a manner consistent with a normal understanding of the language used in the requests and to the extent necessary to fairly and fully answer the requests.

REQUEST NO. 1. All witness statements of any sort, whether signed or unsigned (together with all documents purporting to reflect the same), and a list of those statements for which a privilege from disclosure is claimed;

RESPONSE NO. 1. Neither this defendant nor its counsel is in possession of materials referred to in this request. This defendant reserves the right to supplement its response at any time in the future.

REQUEST NO. 2. All data as to the physical or mental condition of Willie Woellms, excluding all documents provided you by Plaintiff's counsel and excluding all documents, copies of which have already been provided Plaintiff's counsel through formal discovery;

RESPONSE NO. 2. Neither this defendant nor its counsel is in possession of materials referred to in this request. This defendant reserves the right to supplement its response at any time in the future.

REQUEST NO. 3. All photographs or sketches of Willie Woellms:

RESPONSE NO. 3. This defendant has found no documents responsive to this request.

REQUEST NO. 4. All photographs, models, sketches or diagrams of any of the sites at which Willie Woellms worked;

RESPONSE NO. 4. Neither this defendant nor its counsel is in possession of materials referred to in this request. This defendant reserves the right to supplement its response at any time in the future.

REQUEST NO. 5. All photographs, models, sketches or diagrams of any of the products involved in this litigation;

RESPONSE NO. 5. Refer to Exhibit I which may contain information relevant to the subject matter of this request.

REQUEST NO. 6. All pamphlets, brochures or other documents prepared, distributed or utilized by Defendant to advertise or promote asbestos-containing products during the 1950's and 1960's;

RESPONSE NO. 6. Refer to Exhibit I.

REQUEST NO. 7. All medical articles, case reports, textbooks or other documents which relate to any "state-of-the-art" defense you will present.

RESPONSE NO. 7. The documents which this defendant intends to rely upon at trial are not known at the present time. This defendant reserves the right to designate documents to be used at trial at a later date. As a partial listing, however, the following materials may be relied upon: "A Study of Asbestosis in the Asbestos Textile Industry," Dressen, W.C. (1938); an article published in the Transactions of the Eleventh Annual Meeting, Industrial Hygiene Foundation, November 7, 1946, by J. J. Bloomfield; "A Health Survey of Pipe Covering Operations in Constructing Naval Vessels," Fleischer, Drinker, et al., (1946); "Asbestos Exposure During Naval Vessel Overhaul," Marr, William T. (1964); "Prevalence of Chronic Respiratory Disease," Ferris, B. G., Jr. (1971); "Asbestosis and Bronchogenic Carcinoma," Isselbacher, K. J. (1953); Annals of the New York Academy of Sciences Volumes 132 and 330; and the Threshold Limit Values promulgated by the American Conference of Governmental Industrial Hygienists for the years 1946 through 1958.

REQUEST NO. 8. A transcript (including exhibits) of each instance where an expert witness has testified in support of Defendant's "state-of-the-art" defense in asbestos disease litigation;

RESPONSE NO. 8. This defendant objects to this request as being vague, ambiguous, irrelevant, overly broad, burdensome and oppressive, not reasonably calculated to lead to the discovery of admissible evidence and not limited to any issue which is the subject of this case.

REQUEST NO. 9. Each document authored by an employee of Defendant in the course of his employment, dealing in whole or in part with the consequences of exposure to asbestos;

RESPONSE NO. 9. This defendant objects to this request as being unintelligible, overly broad, burdensome and oppressive, not reasonably calculated to lead to the discovery of admissible evidence and not limited to any issue which is the subject of this case.

REQUEST NO. 10. All medical records of those present or former employees of Defendant who have filed claims for worker's compensation or occupational disease benefits alleging an injury or disease from exposure to asbestos and all personnel and employment records which evidence or reflect the duration, quantity and quality of his or her exposure to asbestos while employed by Defendant;

RESPONSE NO. 10. This defendant objects to this request on the basis that it seeks information which is not relevant to the subject matter of this litigation and is not reasonably calculated to lead to the discovery of admissible evidence, except as it relates to the period of time during which this defendant engaged in the manufacture, sale and distribution

of its asbestos-containing products. Without waiving the above objection, during the period in which this defendant engaged in the manufacture of its asbestos-containing products, it received no workers' compensation claims for any asbestos-related disease.

REQUEST NO. 11. Each written warning, caution or other document which was intended by Defendant to reach those persons who would breathe or ingest the asbestos from asbestos-containing products manufactured and/or sold by Defendant;

RESPONSE NO. 11. This defendant ceased the manufacture, sale and distribution of asbestos-containing products in 1958. This defendant has not found information in its records sufficient to enable it to answer this request. However, it does not appear that any warning concerning asbestos was given in that it does not appear that this defendant had reason to believe that the use of its products would result in a foreseeable risk of harm.

REQUEST NO. 12. A transcript (including exhibits) of each instance where an employee of Defendant testified at deposition or trial in asbestos disease litigation;

RESPONSE NO. 12. This defendant objects to this request as being vague, ambiguous, irrelevant, overly broad, burdensome and oppressive, not reasonably calculated to lead to the discovery of admissible evidence and not limited to any issue which is the subject of this case.

REQUEST NO. 13. A transcript (including exhibits) of each instance where an individual whom Defendant listed, retained or called as an expert witness, testified at deposition or trial in asbestos disease litigation;

RESPONSE NO. 13. This defendant objects to this request as being vague, ambiguous, irrelevant, overly broad,

burdensome and oppressive, not reasonably calculated to lead to the discovery of admissible evidence and not limited to any issue which is the subject of this case.

REQUEST NO. 14. All agreements to which Defendant is a party and which relate to the manner in which this case shall be evaluated, delayed or defended, including, but not limited to, all Wellington agreements and all documents exchanged by the parties thereto;

RESPONSE NO. 14. This defendant objects to this request on the basis that it seeks information which is not relevant to the subject matter of this litigation and is not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST NO. 15. Defendant's last three annual reports;

RESPONSE NO. 15. This defendant objects to this request on the basis that it seeks information which is not relevant to the subject matter of this litigation and is not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST NO. 16. A list of the names, addresses and employers of each person involved or consulted in the preparation of your response to this Request;

RESPONSE NO. 16. This defendant states that it has referred to the relevant business records of the Owens-Illinois Glass Company, which are still in the possession of Owens-Illinois, Inc., in connection with the preparation of answers to these interrogatories unless otherwise indicated.

REQUEST NO. 17. An affidavit stating whether production is complete according to the knowledge of Defendant and Defendant's insurance carriers, attorneys, agents and employees.

AFFIDAVIT

STATE OF OHIO)

)SS:

COUNTY OF LUCAS)

A. H. SMITH, being duly sworn according to law, deposes and says that he is an Assistant Secretary of Owens- Illinois, Inc., a defendant herein; that as such he is authorized to make an Affidavit on its behalf; and that the facts set forth in the foregoing DEFENDANT, OWENS-ILLINOIS, INC.'S RESPONSES TO REQUEST FOR PRODUCTION, are true and correct to the best of his knowledge, information and belief.

A. H. Smith

A. H. SMITH

SWORN TO and subscribed before me this 1st day of May, 1991.
My Commission Expires: January 4th, 1996

SEAL

Mary Janet Crawford

Notary Public

MARY JANET CRAWFORD
Notary Public, State of Ohio
My Commission Expires 1-4-96

EXHIBIT I

MAY 9 - 1991

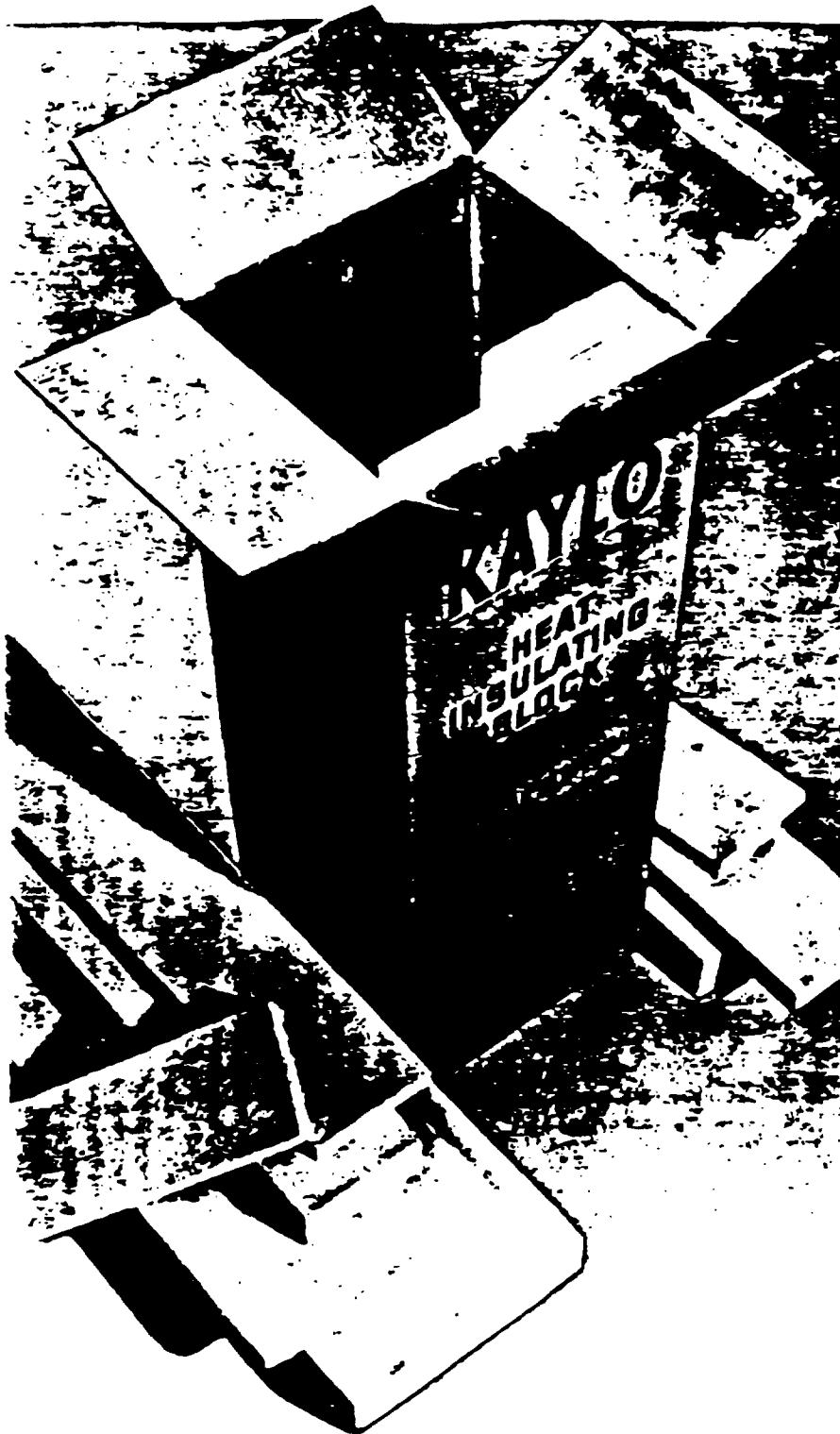
NEW

KAYLO

HEAT INSULATING BLOCK
For Temperatures up to 1200° F.

**AMERICAN STRUCTURAL
PRODUCTS COMPANY
TOLEDO, OHIO
OWENS-ILLINOIS GLASS COMPANY**

A NEW HEAT INSULATION WITH A REMARKABLE COMBINATION OF ADVANTAGES....



Kaylo Heat Insulating Block is a new type of lightweight mine insulation that is *efficient* enough to be used at ordinary room temperature and *resistant* enough to perform actively up to 1200° F.

Few new products of any kind have been so thoroughly researched and being placed on the market. Heat Insulating Block is the outcome of many years' work by C. Illinois Glass Company engineers, physicists and chemists.

No other material, new or old, effectively combines the most desirable characteristics of the ideal insulation.

For instance...

LOW DENSITY

Kaylo Heat Insulating weighs only 11 pounds per cubic foot. This light weight (less than one to the board foot) simplifies handling, shipping and application. It reduces weight—an important factor on ships, for an example.



Notice the clean, straight lines on these insulated precipitators. Applicators find it easy to do this kind of work with Kaylo Heat Insulating Block because they are so easy to cut and yet they have a great flexural strength. The hoppers are also insulated with Kaylo Heat Insulating Block.

LOW THERMAL CONDUCTIVITY

The coefficient of conductivity, or k value, of Kaylo Heat Insulating Block, is shown on the chart on page four. It is among the most efficient insulations for medium high temperatures. Its insulation value comes principally from its fine, interlaced cellular structure. These cells are so tiny and so numerous that they present a material surface of approximately 140 acres per cubic foot of insulation.

Experience shows that the insulation value of Kaylo insulation improves when the material is put into service.

EFFECTIVE OVER WIDE TEMPERATURE RANGE

Kaylo Heat Insulating Block performs efficiently not only on temperatures in the low pressure steam and hot water range but on temperatures in the superheated steam range as well. This is shown by the flatness of the conductivity curve. One-material coverage with Kaylo insulation handles applications which often require two thicknesses of different materials.

HIGH COMPRESSIVE STRENGTH

Its compressive strength is unusually high for a mineral product of such light weight. Kaylo Heat Insu-

lating Block withstands compression values equivalent to those of a man's walking on it or even to those of a heel's being ground into it.

HIGH FLEXURAL STRENGTH

Its flexural strength is higher than the normal requirement for heat insulation of this type. This strength makes for easy handling and application, and contributes to long service with low maintenance.

NO ADDED BINDER

Kaylo insulation is an inorganic compound, containing no added binder. Its performance characteristics, therefore, are not affected by additives, which often reduce insulating value, modify effective temperature range or otherwise limit performance.

EASY TO APPLY WELL

Kaylo Heat Insulating Blocks are clean-cut and trim. They are easy to fit into place to make a good-looking installation. Their "feet" is pleasant and non-irritating. They can be cut, scored and sawed with ordinary wood-working tools. Finishes that go over the block, whether cement, cloth or other types, can be applied smoothly and with a minimum of effort. No special tools are needed.

LOW MOISTURE ABSORPTION

Moisture absorption is no problem with Kaylo insulation. Even when subjected to an atmosphere of 90% relative humidity and a temperature of 120° F., in standard tests, specimens absorb less than 1% moisture by volume.

RETAINS EFFECTIVENESS AFTER LONG SERVICE

Kaylo Heat Insulating Block remains strong, free from excessive powdering, and shows little loss in weight or shrinkage after long application to temperatures up to 1200° F. Even conventional rumbling tests, run after prolonged heating, produce relatively little crumbling or breakdown of the material.

STANDARD SIZES

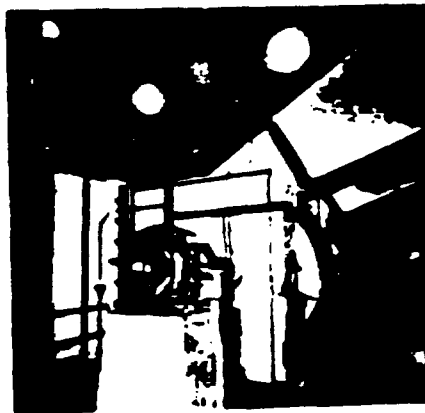
Lengths (inches)	Widths (inches)	Thicknesses (inches)
36	6	1
36	6	1 1/2
36	6	2
36	6	2 1/2
36	6	3
36	12	1
36	12	1 1/2
36	12	2
36	12	2 1/2
36	12	3

Other sizes are available on special order.

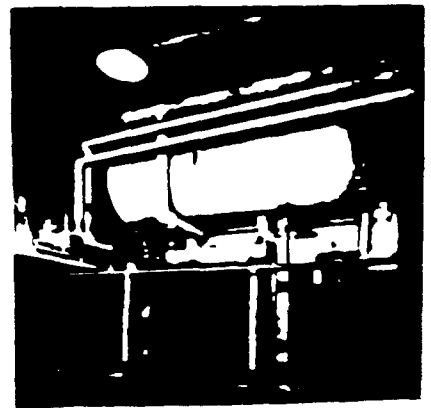
AND A REMARKABLE VERSATILITY



On large or small equipment, inside or out, Kaylo Heat Insulating Block performs efficiently and with a minimum of maintenance. Here it is being applied to the walls of a large precipitator. Workmen are laying block over 6" x 6" wire mesh welded to the stiffeners. The block are then covered with finishing cement and asphalt mastic weatherproofing.



Kaylo Heat Insulating Block covers both flat and curved surfaces on the power house equipment pictured here. At the right are fresh air intakes; the center compartments house induced draft fans; and at the left are conduits leading to a precipitator. Kaylo insulation means continuous fuel savings to this power plant.



Hot water is always ready when needed in the office building where this hot water storage tank is installed thanks to Kaylo Heat Insulating Block. This permanent insulation holds water temperature constant with a minimum of power consumption.

Other applications for Kaylo Heat Insulating block are listed on the back page.

PRINCIPAL FEATURES OF KAYLO HEAT INSULATING BLOCK



PHYSICAL CHARACTERISTICS AT A GLANCE

DENSITY Approximately 11 lb. per cu. in.

FLEXURAL STRENGTH 50 lb. per sq. in.

COMPRESSIVE STRENGTH (1% deformation) 150 lb. per sq. in.

Before heating 150 lb. per sq. in.

After heating for 24 hours

at 750° F. 144 lb. per sq. in.

at 1000° F. 125 lb. per sq. in.

at 1200° F. 117 lb. per sq. in.

After boiling for 24 hours (while 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 0.2%

RESISTANCE TO ABRASION

(Conventional Tumbling Test—Loss in weight after 10 minutes)

Before heating 2.1%

After heating for 24 hours

at 750° F. 2.1%

at 1000° F. 2.9%

at 1200° F. 2.9%

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.) 0.4%

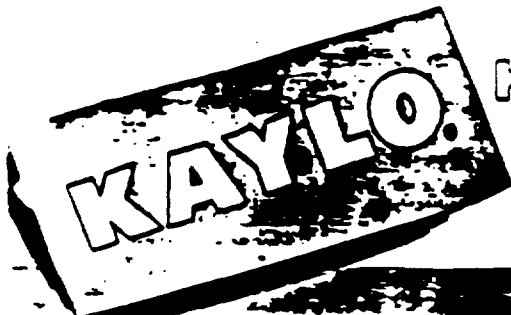
MOISTURE ABSORPTION (volume)

After 6 hours exposure in atmosphere of

120° F. and 90% Relative Humidity 0.9%

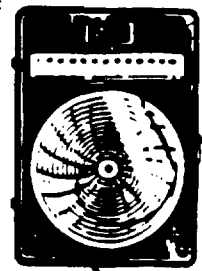
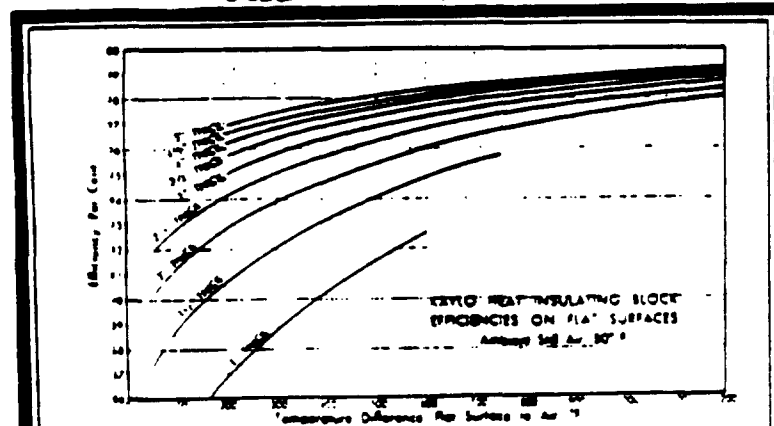
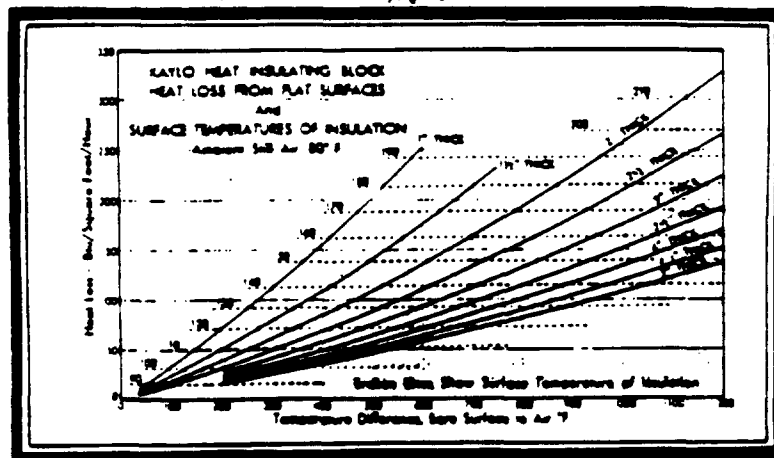
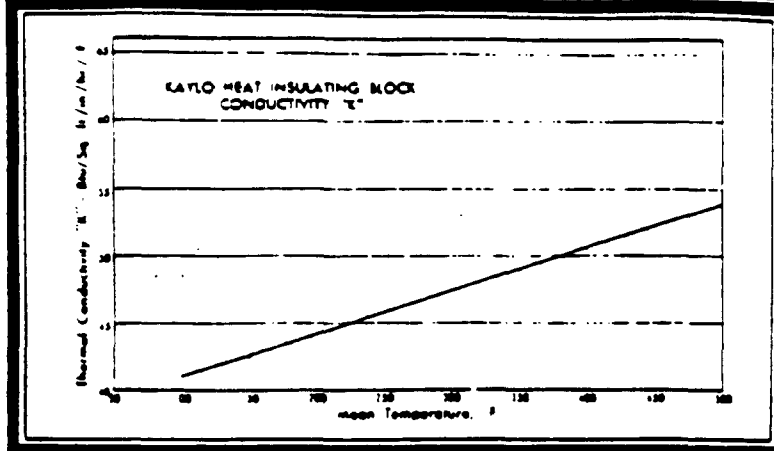
COEFFICIENT OF EXPANSION

At 300° F. mean temperature 0.474



HEAT INSULATING BLOCK

Heat Loss, Surface Temperatures
and Efficiencies...



Inside or outside, for large insulations or small, from 0 to 200°F use Kaylo Heat Insulating Block insulation.

- | | |
|-----------------|---------------|
| Breechings | Lehrs |
| Hot Air Ducts | Autoclaves |
| Tanks | Ovens |
| Towers | Furnaces |
| Dryers | Turbines |
| Evaporators | Chilling Pits |
| Heat Exchangers | Boilers |
| Condensers | Precipitators |
| Locomotives | |

SOURCES OF TEST DATA

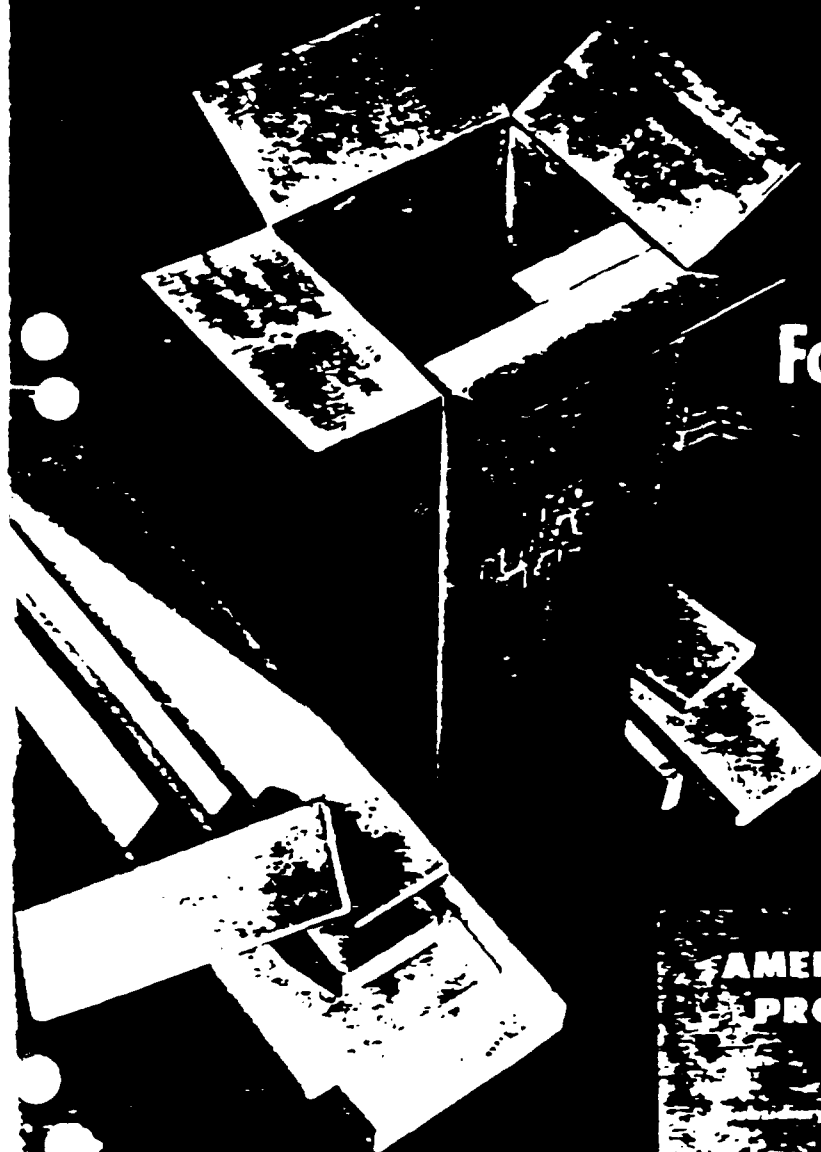
The data shown on these pages are supported by tests run at various laboratories, all well-known to the insulation industry. They are further supported by the performance of the product in service.

More detailed information on Kaylo Heat Insulating Block is available on request. American Structural Products Company, Toledo 1, Ohio. Subsidiary of Owens-Illinois Glass Company.

NEW

KAYLO®

HEAT-INSULATING BLOCK



**For Temperatures
Up To 1200° F.**

**AMERICAN STRUCTURAL
PRODUCTS COMPANY**

Toledo, Ohio

Manufactured by OWENS ILLINOIS GLASS COMPANY

A new heat ins

WITH A REMARKABLE COMBINATION O

KAYLO HEAT INSULATING BLOCK is a new type of lightweight mineral insulation that is *efficient* enough to be used at ordinary room temperatures and *resistant* enough to perform effectively up to 1200° F.

Few new products of any kind have been so thoroughly researched before being placed on the market. Kaylo Heat Insulating Block is the achievement of many years' work by Owens-Illinois Glass Company engineers, physicists and chemists. It combines the most desirable characteristics of the ideal heat insulation.

LOW DENSITY. Kaylo Heat Insulating Block weighs only 11 pounds per cubic foot. This light weight (less than one pound to the board foot) simplifies handling, shipping and application.

LOW THERMAL CONDUCTIVITY. The coefficient of conductivity, or *k*, of Kaylo Heat Insulating Block places it among the most efficient insulations for medium high temperatures. Its insulation value comes principally from its fine, cellular structure. These cells are so tiny and so numerous that they present a material surface of approximately 140 acres per cubic foot of insulation.

Experience shows that the efficiency of Kaylo insulation improves after exposure to service temperatures.

EFFECTIVE OVER WIDE TEMPERATURE RANGE.

Kaylo Heat Insulating Block performs efficiently not only on temperatures in the low pressure steam and hot water range but on temperatures in the superheated steam range as well. One-material coverage with Kaylo insulation handles applications which often require two thicknesses of different materials.

HIGH COMPRESSIVE STRENGTH. Its compressive strength is unusually high for a mineral product of such light weight.

HIGH FLEXURAL STRENGTH. Its flexural strength is higher than the normal requirements for heat insulation of this type. This strength makes for easy handling and application, and contributes to long service with low maintenance.

NO ADDED BINDER. Kaylo insulation is an inorganic compound, containing no added binder. Its performance characteristics, therefore, are not affected by additives, which often reduce insulating value. Modest effective temperature range or otherwise limit performance.

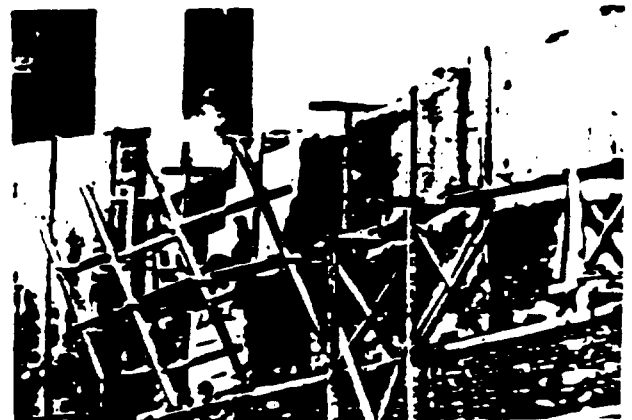
EASY TO APPLY. Kaylo Heat Insulating Blocks are clean-cut and trim. They are easy to fit into place.



Notice the clean, straight edges on these insulated precipitator hoppers. Application is easy to work with Kaylo Heat Insulating Block because they are so easy to cut and yet have a high flexural strength.



On large or small equipment, inside or out, Kaylo Heat Insulating Block performs efficiently and with a minimum of maintenance. Here it is being applied to the walls of a large precipitator.



Installation

ADVANTAGES...

Make a good-looking installation. These "foam" insulants are pleasant and non-irritating. They can be cut, scored and sawed with ordinary woodworking tools. Finishes that go over the block, whether cement, cloth or other types, can be applied smoothly and with a minimum of effort. No special tools are needed.

LOW MOISTURE ABSORPTION. Kaylo Heat Insulating Block absorbs little moisture from surrounding humid air.

EFFECTIVE AFTER LONG SERVICE. Kaylo Heat Insulating Block remains strong, free from excessive powdering, and shows little loss in weight or shrinkage after long application to temperatures up to 1200° F. Even conventional tumbling tests, run after prolonged heating, produce relatively little crumbling or breakdown of the material.

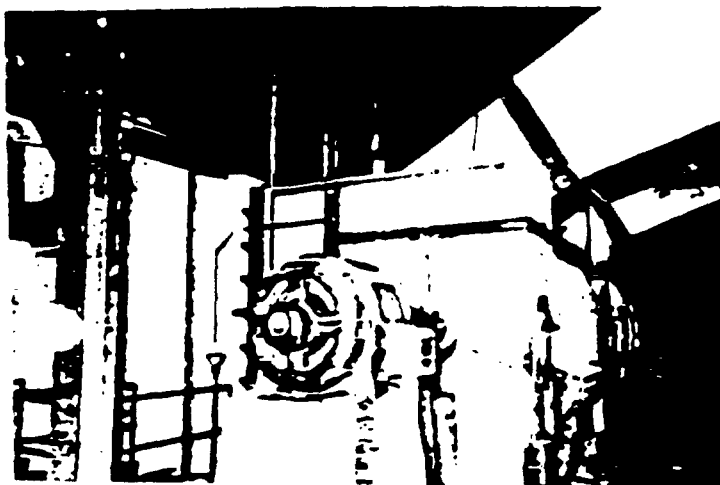
TYPICAL APPLICATIONS:

Indoor or outside, for large installations or small, up to 1200° F., use Kaylo Heat Insulating Block to insulate:

Breechings	Heat Exchangers	Turbines
Hot Air Ducts	Condensers	Chilling Pits
Tanks	Lehrs	Boilers
Towers	Autoclaves	Precipitators
Dryers	Ovens	Locomotives
Evaporators	Furnaces	



Kaylo Heat Insulating Block covers both flat and curved surfaces on the power house equipment pictured here. By minimizing heat loss, it saves fuel and keeps temperatures within the room at comfortable levels.



PHYSICAL CHARACTERISTICS

DENSITY	Approximately 11 lb. per cu. ft.
FLEXURAL STRENGTH	50 lb. per sq. in.
COMPRESSIVE STRENGTH (at 5% deformation)	150 lb. per sq. in.
Before heating	
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 (while wet)	74 lb. per sq. in.
LOSS IN WEIGHT	
After heating for 24 hours	5.5%
at 750° F.	7.9%
at 1000° F.	9.8%
at 1200° F.	10.2%
After boiling for 24 hours (after drying)	10.2%
RESISTANCE TO ABRASION	
(Conventional tumbling test—loss in weight after 10 minutes)	2.2%
Before heating	
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.	1.1%
at 1000° F.	1.2%
at 1200° F.	1.3%
Swollen after saturation (max.)	1.4%
MOISTURE ABSORPTION (volume)	
After 6 hours exposure in atmosphere of 120° F. and 90% Relative Humidity	1.9%
CONDUCTIVITY (K)	
At 100° F. mean temperature	2.4
At 500° F. mean temperature	2.54

STANDARD SIZE

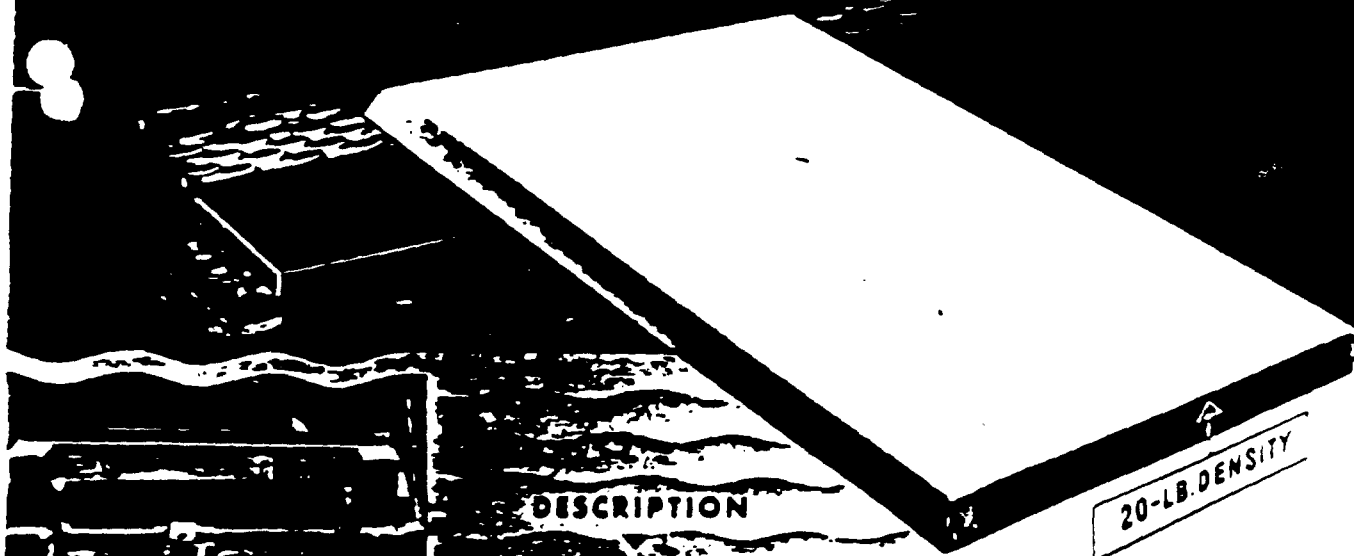
LENGTH (inches)	WIDTH (inches)	THICKNESS (inches)
12	12	1
12	12	1 1/2
12	12	2
12	12	2 1/2
12	12	3
12	12	3 1/2
12	12	4
12	12	4 1/2
12	12	5
12	12	5 1/2
12	12	6
12	12	6 1/2
12	12	7
12	12	7 1/2
12	12	8
12	12	8 1/2
12	12	9
12	12	9 1/2
12	12	10
12	12	10 1/2
12	12	11
12	12	11 1/2
12	12	12



KAYLO®

20-LB. DENSITY

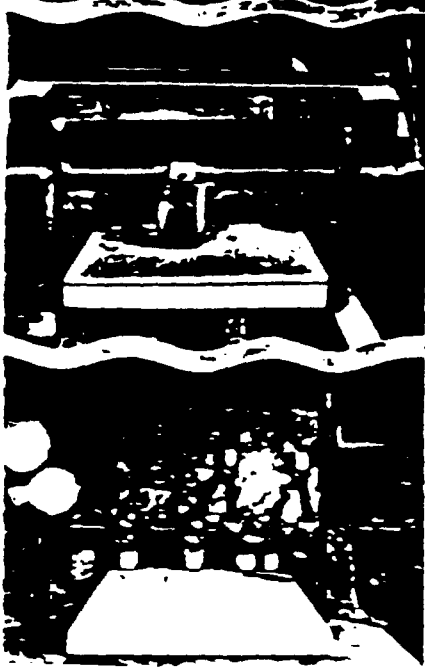
STRUCTURAL INSULATING BLOCK



DESCRIPTION

Kaylo Structural Insulating Block—is a near-white, rigid mineral insulating material weighing approximately 20 pounds per cubic foot. It is composed principally of calcium silicate. Except for density and for those characteristics that are changed by density it is similar to *Kaylo Heat Insulating Block*, a lightweight insulation used to insulate against heat loss from hot surfaces. Kaylo Structural Insulating Block (20-lb. density) is designed to give maximum strength and fire resistance without sacrificing its advantages of light weight and low thermal conductivity. In fact the practical combination of these four properties—strength, weight, insulating value and fire resistance—makes it almost unique as a building material.

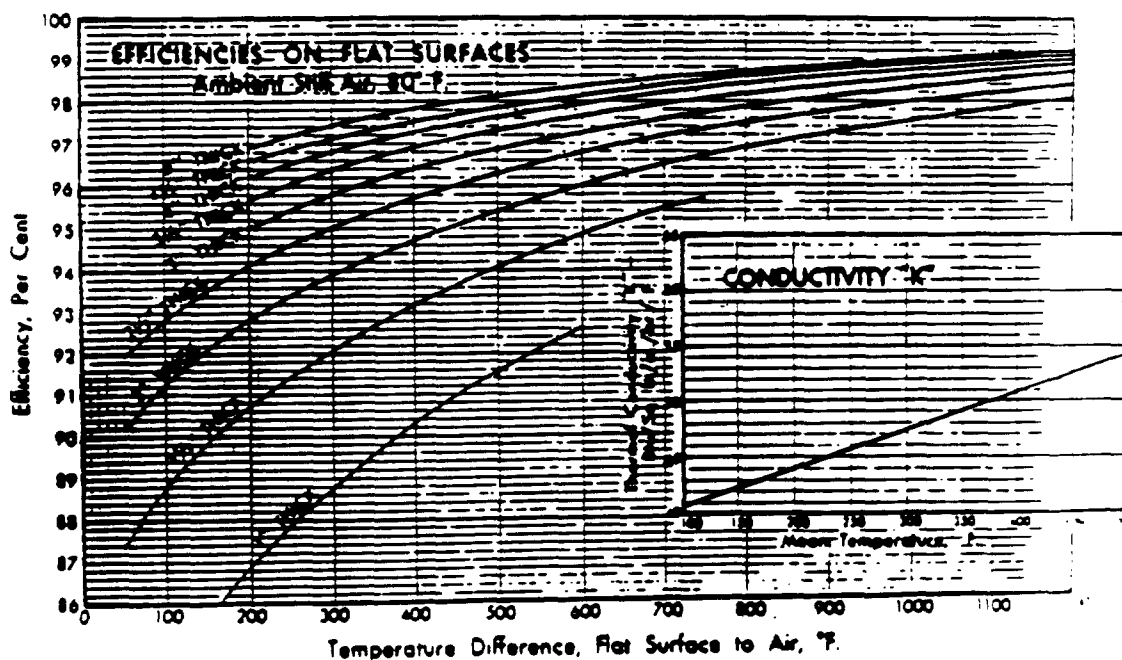
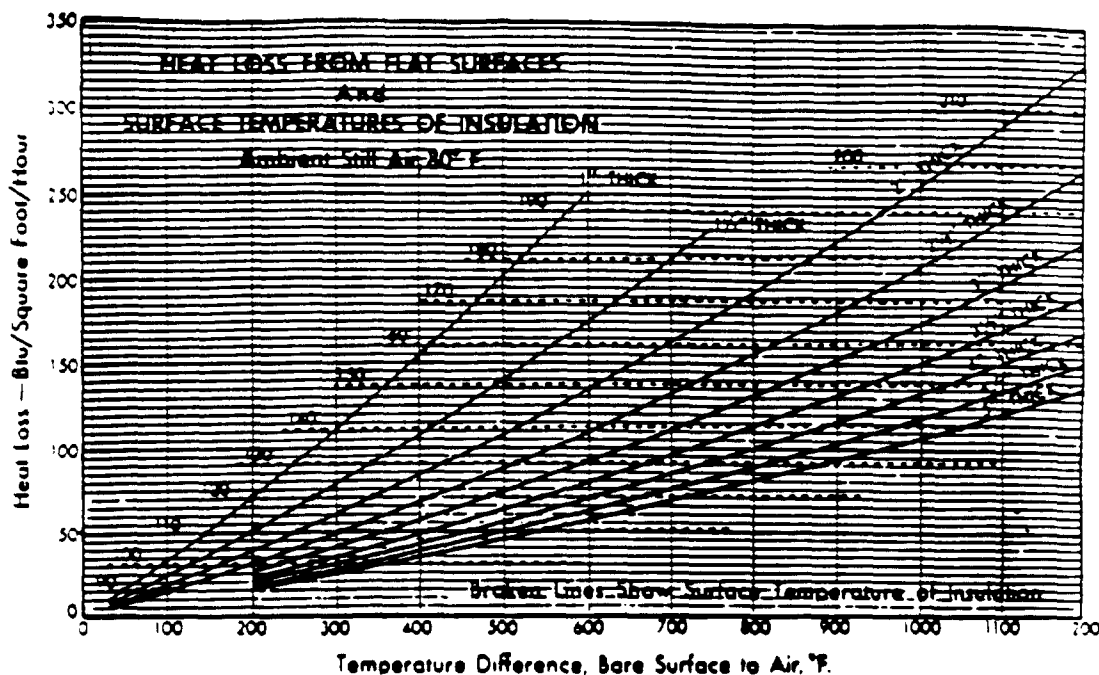
It weighs nominally 20 pounds to the cubic foot (actually on an average basis from 19.5 to 22 lb.), has a compressive strength of approximately 100 lb. per sq. in., a "k" of 0.66 at 100 mean and outstanding resistance to the travel of heat and flame at building fire temperatures.





HEAT INSULATING BLOCK

Heat Loss, Surface Temperatures, and Efficiencies



SOURCES OF TEST DATA: The data shown on these pages are supported by tests run at various laboratories, all well known to the insulation industry. They are further supported by the performance of the product in service.

More detailed information on Kaylo Heat Insulating Block is available on request.

KAYLO[®] STRUCT

USES

Kaylo Structural Insulating Block is not a finished building material in itself and is not made for exposure to the weather. Its principal uses are as a structural roof tile, or roof deck unit, in which a steel reinforcing mat is inserted at the time of forming, and as a core material. In this latter use it serves as the core of laminated structures where the faces or laminates are applied with adhesives, and also as the core of structural shells or envelopes where the Kaylo core material is simply inserted in the open spaces and held by its own contact or by such conventional methods as clips or other attachments.

In any of these applications it adds rigidity to the structure and vastly increases insulation value and fire resistance.

PHYSICAL PROPERTIES

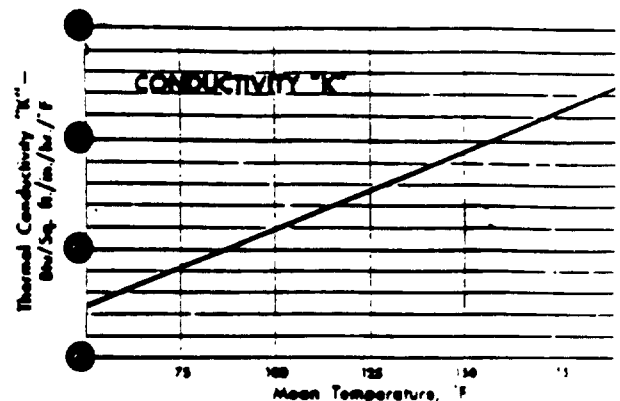
Light Weight—Nominal 20-lb. density Kaylo Block is about a third lighter than yellow pine. On an oven-dry basis it weighs from 19.5 to 22 pounds per cubic foot.

High Strength—Its compressive strength is approximately 500 lb. per sq. in. with a deformation of 5 per cent. Flexural strength is approximately 175 lb. per sq. in.

Fireproof—Kaylo 20-lb. density Structural Insulating Block has been tested at the Underwriters' Laboratories in Chicago and given the following rating, based on comparison with untreated Red Oak as 100.

Flame spread	0.0
Fuel contributed	negligible
Smoke produced	0.0

For use in fabrications that are to be Underwriters' Laboratories inspected, Kaylo Structural Insulating Block furnished bearing the Underwriters' label for fire classification for building material.



Good Insulation Value—At low mean temperatures Kaylo Structural Insulating Block is one of the most efficient structural mineral insulations. At high mean temperatures it still compares favorably with heat insulating materials of its own weight.

High Light Reflectivity—When left exposed and untreated (as with the underside of a roof deck) Kaylo Structural Insulating Block has high light reflectivity. Its light reflection factor is from 70 to 80 per cent.

Non-Abrasive Surface—Its surface is non-abrasive. It has a somewhat "soapy" feel that makes it pleasant to handle. At the same time it has a firm surface that assures contact with surfaces applied over it.

No Added Binder—It contains no added binder, but instead constitutes its own binder. Hence its characteristics are not modified as to temperature limit, sound insulation value, fire resistance or otherwise by any limitations."



INSULATING BLOCK (20-LB. DENSITY)

Good Workability—Kaylo Structural Insulating Block is responsive to wood working tools. It can be sawed with a hand saw or power saw, can be routed, tongue-and-grooved, sanded, and, in fact, run through most wood-working equipment.

High Modulus of Elasticity—The modulus of elasticity of 20-lb. density block is approximately 160,000 lb. per sq. in.

Low Specific Heat—The specific heat of Kaylo Structural Insulating Block is approximately 0.22.

Cellular Structure—Kaylo Structural Insulating Block is about 80 per cent inter-communicating air cells. The cells are extremely small, less than a micron in diameter.

Low Moisture Absorption—Kaylo Structural Block is hygroscopic. It will absorb moisture from humid air and will reach equilibrium at lower moisture contents when exposed to lower humidities. However, because of its extremely small pore size and other characteristics, its behavior with respect to moisture differs from that of most porous materials. It has unusual capacity to distribute moisture within its mass, and to give it off to surrounding air of lower moisture content.

Its moisture absorption when surrounded by humid air is slow. Test specimens dried for 24 hours at 215° F., cooled and then exposed on all surfaces to an atmosphere of 90 per cent relative humidity and a temperature of 120° F. for six hours, absorbed less than one per cent of moisture by volume.

Consistent with the common practice for good construction involving porous insulating materials of high internal surface area, Kaylo Structural Insulating Block should be sealed against moisture on the warm side when it is subjected to extremely low temperatures.

High Wet Strength—Kaylo Structural Insulating Block, like most other insulating materials, is not intended to serve immersed in water or exposed to extremely damp or humid conditions, yet its flexural strength when wet (immersed 10 hours) is reduced only about 15 per cent.

Dimensionally Stable—The dimensions of Kaylo Structural Insulating Block change little with changes in moisture content. Experience has shown from the manufacture of thousands of units of laminated structures that they have unusual dimensional stability and unusual freedom from warping.

Available with and without Reinforcing—In the form of roof tile Kaylo Structural Insulation is available with a steel reinforcing mat. In the form of core material for various types of structure it is available without reinforcing.

Accepts Nails and Screws—Both nails and screws can be used with Kaylo Structural Block. Tables showing holding power of both are available on request. Nails should be of the cement-coated type without barbs that abrade the sides of the opening they make as they are driven into the block. Galvanized or non-ferrous nails may be used where greater resistance to corrosion is required. Screws may be inserted either with or without drilling a pilot hole.

Sizes—Kaylo Structural Insulating Block is made in a standard size of 18 x 36 inches.

Since most uses involve manufacturing operations, thicknesses that are practical can best be worked out with the manufacturer of Kaylo Insulating Products after approximate quantities needed are known. These will usually be between one and two inches thick.

Certain thicknesses are suggested by certain building requirements. A thickness of from 1½ to 2 inches of Kaylo Structural Insulating Block is required to withstand a typical building fire for one hour—usually somewhat more for a partition than for a door because of the greater performance required of a partition.

20-Lb. and 11-Lb. Density Block Can Be Used in Combination—Where two thicknesses of insulation are used to build an insulating structure it is possible to use the two densities in combination to develop the best insulation value, strength and fire resistance.

**AMERICAN STRUCTURAL
PRODUCTS COMPANY**

Toledo 1, Ohio

Subsidiary of OWENS ILLINOIS GLASS COMPANY



LAMINATION

amination over a Kaylo Insulating Core—Almost any face material may be bonded to Kaylo Structural Insulating Block surfaces. Bonding agents can be selected to meet the requirements of the particular facing—also to satisfy

the service requirements of the finished product—and still offer some choice in curing procedures.

Some adhesives which may be used with various types of face materials are listed below. (This list is not intended to be complete. Its only purpose is to identify a partial list of adhesives. These have been found to provide a tensile strength of 35 lb. per sq. in. and a minimum shear strength of 100 lb. per sq. in. when cured in the manner indicated.

ADHESIVES FOR JOINING

KAYLO

STRUCTURAL INSULATING BLOCK TO:

Wood Veneer	Aluminum	Stainless Steel
Durite No. 3026A 3026A-WH207 3026A-W7	Durite No. 3026A	Durite No. 3026 No. A, MH267
Ponacelite G1131	Ponacel 718	M100
Ponacel 718	Weldwood	3 MEC 826
Carabond 720	Insulute No. 1	Weldwood
Vinylseal MA 28-18	Interplate 4162	Insulute No. 1
Amberlite PR14	Vulcastek	Interplate 4162
Booth 7026	Dupont 4653	Vulcastek
Redux	Dupont 4646	Dupont 4653
Synco X-8348 + 130LW (DW)	G. E. 2142	Dupont 4646
	G. E. 7031	G. E. 2142
	Vinylseal MA 28-18	G. E. 7031
	Amberlite PR14	Vinylseal MA 28-18
	Booth EXE 138	Amberlite PR14
	Redux	Booth 7026
		Sodium Silicate
		Redux

ADHESIVES FOR JOINING LIKE MATERIALS

Insulating Block to Insulating Block	Aluminum to Aluminum	Stainless Steel to Stainless Steel
Durite 3026A	Vulcastek	Dupont 4653
Ponacelite G1131	Dupont 4653	G. E. 7031
Weldwood	Dupont 4646	Booth 7026
Insulute 1	G. E. 7031	Booth EXE 138
G. E. 2142	Booth 7026	Redux
Plackon 911	Booth EXE 138	
Solactron 5003	Redux	
Vinylseal MA 28-18		
Amberlite PR14		
Booth 7026		
Booth EXE 138		
Sodium Silicate		
Redux		
Synco X-8348 + 130LW (DW)		

Symbols for method of cure
For Maximum Strength

- (A) Clamped at room temperature for 24 hours.
- (B) Clamped in oven at 120° F. for 1 hour.
- (C) Placed in press at 10 p.s.i. at 300° F. for 10-30 minutes.
- (D) Placed in press at 100 p.s.i. at 300° F. for 10-30 minutes.
- (E) Clamped in oven at 250° F. for 10-30 minutes.

High-frequency curing has been tried successfully on an experimental basis with wood, aluminum and stainless steel bonded to a Kaylo insulating core. Many of the manufacturers making the above listed adhesives can provide adhesives suitable for high-frequency curing.

AMERICAN STRUCTURAL PRODUCTS COMPANY

TOLEDO 1, OHIO

Subsidiary of OWENS-ILLINOIS GLASS COMPANY

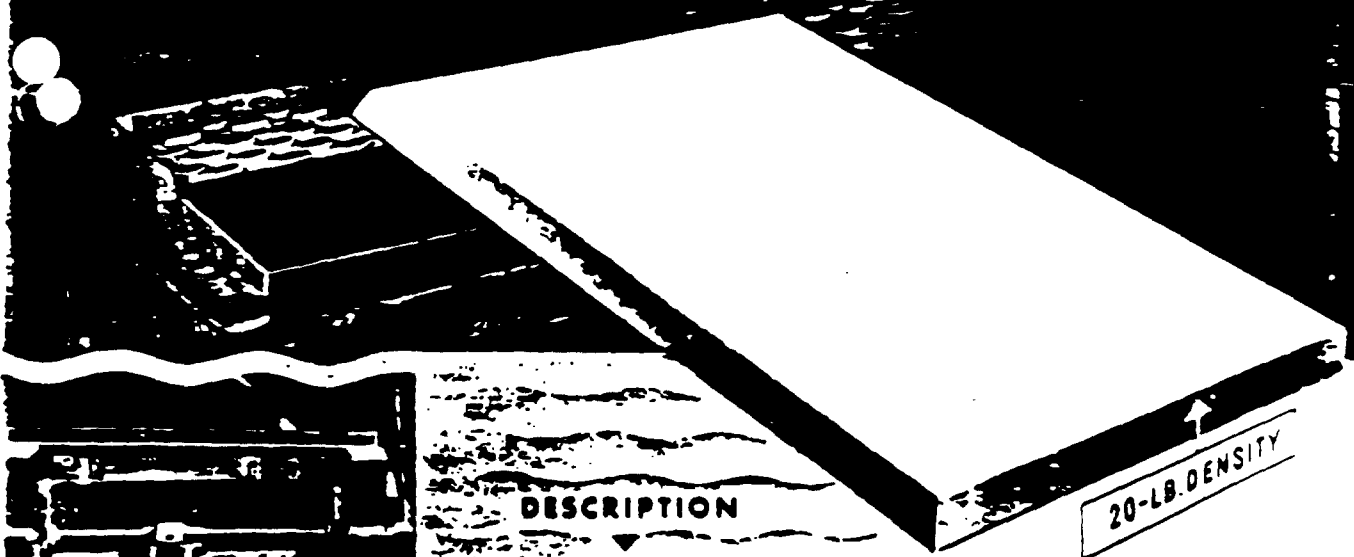
$\frac{1h}{Ow}$



KAYLO®

20-LB. DENSITY

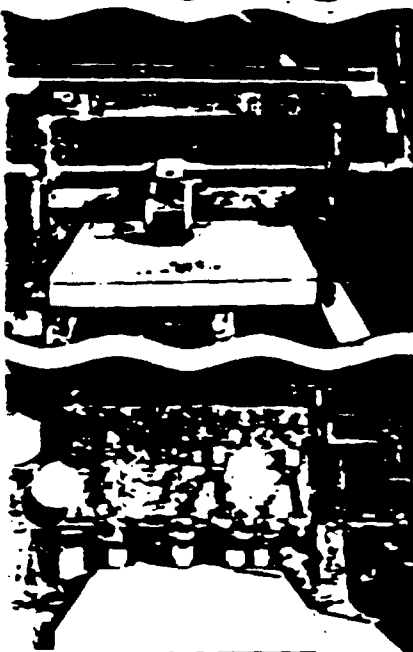
STRUCTURAL INSULATING BLOCK



DESCRIPTION

Kaylo Structural Insulating Block—is a near-white, rigid mineral insulating material weighing approximately 20 pounds per cubic foot. It is composed principally of calcium silicate. Except for density and for those characteristics that are changed by density it is similar to Kaylo Heat Insulating Block, a lightweight insulation used to insulate against heat loss from hot surfaces. Kaylo Structural Insulating Block (20-lb. density) is designed to give maximum strength and fire resistance without sacrificing its advantages—light weight and low thermal conductivity. In fact the practical combination of these four properties—strength, weight, insulating value and fire resistance—makes it almost unique as a building material.

It weighs nominally 20 pounds to the cubic foot (actually on an average basis from 19.5 to 22 lb.), has a compressive strength of approximately 1 lb. per sq. in., a k value of 0.66 at 100 mean and outstanding resistance to travel of heat and flame at building fire temperatures.



insulating Core—Almost any face
to Kaylo Structural Insulating
agents can be selected to meet
articular facing—also to satisfy

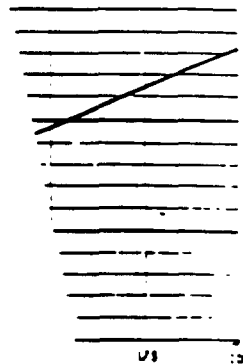
JOINING KAYLO INSULATING BLOCK TO:

Aluminum	Stainless Steel
Durite No. 3026A	Durite No. 3026
Peters 718	No. A. NH267
Weldwood	H100
Insulate No. 1	3 MRC 826
Interlube 4162	Weldwood
Interlube 4162	Insulate No. 1
Dupont 4653	Interlube 4162
Dupont 4646	Vulcolock
G. E. 2142	Dupont 4653
G. E. 7031	Dupont 4646
Vynylcol MA 28-18	G. E. 2142
Amborlite PB14	G. E. 7031
Booth EXE 138	Vynylcol MA 28-18
Redux	Amborlite PB14
	Booth 7036
	Sodium Silicate
	Redux

ADHESIVES FOR JOINING LIKE MATERIALS:

Insulating Block to Insulating Block	Aluminum to Aluminum	Stainless Steel to Stainless Steel
Durite 3026A	Vulcolock	Dupont 4653
Penscolite Q1131	Dupont 4653	G. E. 7031
Weldwood	Dupont 4646	Booth 7036
Insulate 1	G. E. 7031	Booth EXE 138
G. E. 2142	Booth 7036	Redux
Plascon 911	Booth EXE 138	
Solatron 3083	Redux	
Vynylcol MA 28-18		
Amborlite PB14		
Booth 7036		
Booth EXE 138		
Sodium Silicate		
Redux		
Synco I-5348 + 130LW (DW)		

be Underwriters' Labor-
atory Insulating Block is
its label for fire hazard



temperatures Kaylo
most efficient
temperatures
insulating materials

and untreated
Structural
insulating materials

very strong
to handle
heavy loads

but not
temperatures
above 1000
degrees Fahrenheit

is for method of curing
For Maximum Strength

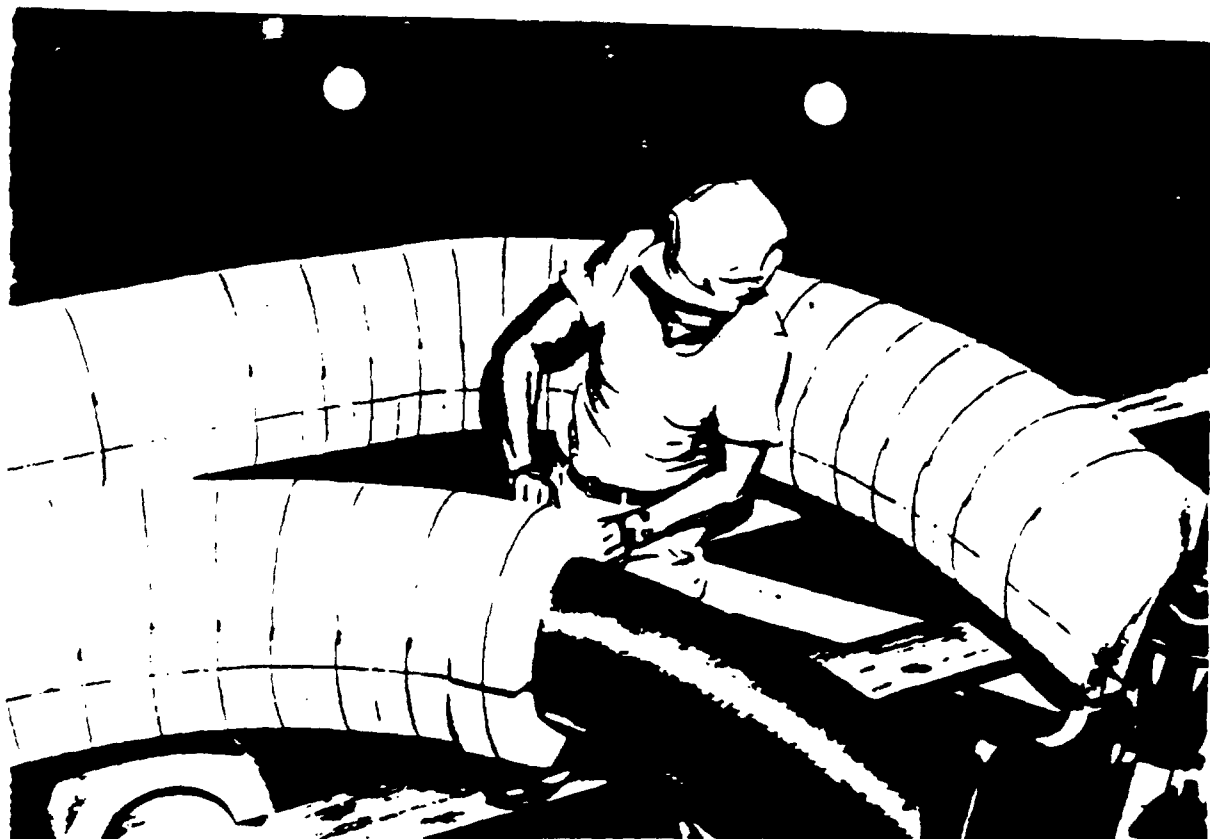
- (A) Clamped at room temperature for 24 hours.
- (B) Clamped in oven at 120° F. for 1 hour.
- (C) Placed in press at 10 p.s.i. at 300° F. for 10-30 minutes.
- (D) Placed in press at 100 p.s.i. at 300° F. for 10-30 minutes.
- (E) Clamped in oven at 250° F. for 10-30 minutes.

high-frequency curing has been tried successfully on an experimental
insulating core. Many of the manufacturers making the above listed
insulating core can provide adhesives suitable for high-frequency curing.

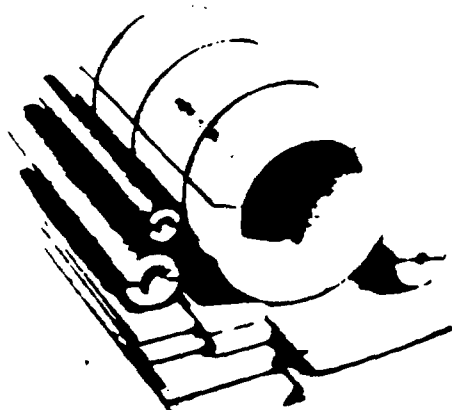
**AMERICAN STRUCTURAL
PRODUCTS COMPANY**
TOLEDO 1, OHIO

Subsidiary of OWENS-ILLINOIS GLASS COMPANY

Copyright 1964, American Structural Products Company



The Right Material... Expert Application



First, Kaylo Heat Insulation is proved a better material hydrous calcium silicate. Its light weight, strength, water-insolubility, low conductivity and wide temperature range give you extra advantages at no extra cost.

Second, Kaylo distributors have the technical knowledge and experience to provide you with a complete insulating service. Their trained applicators are skilled craftsmen who do neat and efficient installation.

To be sure of getting the most out of your insulating dollars for your next job, call the nearest Kaylo distributor. Chances are you can find him listed in the yellow pages of your phone book. If not contact us and we'll give you his name.

WRITE FOR FREE BOOK—"Kaylo Heat Insulation."
Address: Dept. H-370, Owens-Illinois Glass Company, Kaylo Division, Toledo 1, Ohio.



KAYLO, ... first in calcium silicate

...pioneered by OWENS  ILLINOIS Glass Company

MAIN OFFICE: TOLEDO 1, OHIO—KAYLO SALES OFFICES: ATLANTA • CHICAGO • HOUSTON • NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS

Owens-Illinois Glass Company—Kaylo Division
Advertisement No. K 153, appearing in the following publications:

Chemical Engineering—Jan., 1953
Oil & Gas Journal—Jan. 12, 1953
Plant Engineering—Jan., 1953
Power—Jan., 1953
Petroleum Refiner—Feb., 1953
Chemical Processing—Feb., 1953
Combustion—Feb., 1953
Industry & Power—Feb., 1953

LAMINATION

Lamination over a Kaylo Insulating Core—Almost any face material may be bonded to Kaylo Structural Insulating Block surfaces. Bonding agents can be selected to meet the requirements of the particular facing—also to satisfy the service requirements of the finished product—and still offer some choice in curing procedures.

Some adhesives and primers which may be used with various types of face materials are listed below. This list is not intended to be complete. Its only purpose is to identify a partial list of adhesives. An adhesive not listed does not imply that it is not suitable. These have been found to provide a tensile strength of 35 lb. per square inch and a minimum shear strength of 100 lb. per square inch when cured according to the manufacturer's recommendation. They are not listed in the order of their adhesive strength.)

ADHESIVES AND PRIMERS FOR JOINING



STRUCTURAL INSULATING BLOCK TO:

Wood Veneer or Paper or Plastics		Steel, Stainless Steel Galvanized, or Aluminum		Kaylo Insulating Block or Cement-Asbestos Board	
Durite No. 3026A	A	Durite No. 3026A or No. A MH267	A	Durite 3026A	A
Pencelite G1131	A	H100	C	Pencelite G1131	A
Pecora 718	F	Pecora 718	E	Armstrong J 1162	D
Cetabond 720	A	3MSC 824	C, D, E	Insulite 1	A
Vinylseal MA 28-18	F	Pencelite G1131	A	G.E. 2142	F
Amberlite PR 14	D	Insulite No. 1	C	Selaston 5003	F
Booth 7026	D	Insulite 4162	C, D	Vinylseal MA 28-18	F
Redux	D	Vulcolok	A, B	Amberlite PR-14	D
Synco S-8348+130LW (DW)	D	DuPont 4653	C, D, E	Booth 7026	D
Reversabond R-12	A	DuPont 4646	C, D, E	Booth EXE 138	D
Armstrong J-1162	D	Reversabond R-12	A	Sodium Silicate	A
Togo	D	G.E. 2142	F	Redux	D
		G.E. 7031	F	Synco X-8348+130LW (DW)	A
		Booth 7026	D	Reversabond R-12	D
		Booth EXE 138	D	Togo	D
		Booth 1007	A		
		Vinylseal MA 28-18	F		
		Amberlite PR-14	D		
		Redux	D		
		Armstrong J-1162	D		

Symbols for method of cure:
For Maximum Strength

- A Clamped at room temperature for 24 hours.
- B Clamped in oven at 120° F. for 1 hour.
- C Placed in press at 10 p.s.i. at 300° F. for 10-30 minutes.
- D Placed in press at 100 p.s.i. at 300° F. for 10-30 minutes.
- E Clamped in oven at 250° F. for 10-30 minutes.

High-frequency curing has been tried successfully on an experimental basis with wood, aluminum and stainless steel bonded to a Kaylo insulating core. Many of the manufacturers making the above listed adhesives can provide adhesives suitable for high-frequency curing.

**Kaylo Division
OWENS-ILLINOIS
GLASS COMPANY**
Toledo 1, Ohio

STRUCTURAL INSULATING BLOCK

Good Workability—Kaylo Structural Insulating Block is responsive to wood working tools. It can be sawed with a hand saw or power saw, can be routed, tongue-and-grooved, sanded, and, in fact, run through most wood-working equipment.

High Modulus of Elasticity—The modulus of elasticity of 20-lb. density block is approximately 160,000 lb. per sq. in.

Low Specific Heat—The specific heat of Kaylo Structural Insulating Block is approximately 0.22.

Cellular Structure—Kaylo Structural Insulating Block is about 80 per cent inter-communicating air cells. The cells are extremely small, less than a micron in diameter.

Low Moisture Absorption—Kaylo Structural Block is hygroscopic. It will absorb moisture from humid air and will reach equilibrium at lower moisture contents when exposed to lower humidities. However, because of its extremely small pore size and other characteristics, its behavior with respect to moisture differs from that of most porous materials. It has unusual capacity to distribute moisture within its mass, and to give it off to surrounding air of lower moisture content.

Its moisture absorption when surrounded by humid air is low. Test specimens dried for 24 hours at 215° F., cooled and then exposed on all surfaces to an atmosphere of 90 per cent relative humidity and a temperature of 120° F. for six hours, absorbed less than one per cent of moisture by volume.

Consistent with the common practice for good construction involving porous insulating materials of high internal surface area, Kaylo Structural Insulating Block should be sealed against moisture on the warm side when it is subjected to extremely low temperatures.

High Wet Strength—Kaylo Structural Insulating Block, like most other insulating materials, is not intended to serve immersed in water or exposed to extremely damp or humid conditions, yet its flexural strength when wet (immersed 10 hours) is reduced only about 15 per cent.

Dimensionally Stable—The dimensions of Kaylo Structural Insulating Block change little with changes in moisture content. Experience has shown from the manufacture of thousands of units of laminated structures that they have unusual dimensional stability and unusual freedom from warping.

Available with and without Reinforcing—In the form of roof tile Kaylo Structural Insulation is available with a steel reinforcing mat. In the form of core material for various types of structure it is available without reinforcing.

Accepts Nails and Screws—Both nails and screws can be used with Kaylo Structural Block. Tables showing holding power of both are available on request. Nails should be of the cement-coated type without barbs that abrade the sides of the opening they make as they are driven into the block. Galvanized or non-ferrous nails may be used where greater resistance to corrosion is required. Screws may be inserted either with or without drilling a pilot hole.

Sizes—Kaylo Structural Insulating Block is made in a standard size of 18 x 36 inches.

Since most uses involve manufacturing operations, thicknesses that are practical can best be worked out with the manufacturer of Kaylo Insulating Products after approximate quantities needed are known. These will usually be between one and two inches thick.

Certain thicknesses are suggested by certain building requirements. A thickness of from 1½ to 2 inches of Kaylo Structural Insulating Block is required to withstand a typical building fire for one hour—usually somewhat more for a partition than for a door because of the greater performance required of a partition.

20-Lb. and 11-Lb. Density Block Can Be Used in Combination. Where two thicknesses of insulation are used to build up an insulating structure it is possible to use the two densities in combination to develop the best insulation value strength and fire resistance.

**Kaylo Division
OWENS-ILLINOIS
GLASS COMPANY**
Toledo 1, Ohio



For Radii from $\frac{1}{4}$ Inch...

to
Infinity...

Nesting Kaylo Heat Insulation Requires Fewer Pieces Per Job

The complete range of Kaylo Insulation includes pipe covering in Simplified Dimensional Standards for diameters from $\frac{1}{4}$ in. to 72 in., curved block from 72 in. to 60 ft. and flat block for surfaces of less curvature whose radii approach infinity. With its wide selection of interchangeable sizes and shapes, Kaylo Insulation reduces the number of items needed per job and permits substantial savings in warehousing maintenance stock.

WRITE FOR FREE BOOK — "Kaylo Heat Insulation"
Address Dept. K-371, Owens-Illinois Glass Company,
Kaylo Division, Toledo 1, Ohio.

KAYLO

... first in calcium silicate

...pioneered by OWENS-ILLINOIS Glass Company

MAIN OFFICE: TOLEDO 1, OHIO — KAYLO SALES OFFICES: ATLANTA • CHICAGO • HOUSTON • NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS

Owens-Illinois Glass Company

Advertisement No. K-134—appearing in the following publications:

Plant Engineering—March, 1953
Oil & Gas Journal—March 23, 1953
Chemical Engineering—March, 1953
Chemical Processing—April, 1953
Petroleum Refiner—May, 1953

