

FILE NAME: Quigley (QUIG)

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DATE: 1947-1969

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DOCUMENT DESCRIPTION: Advertising Literature

WATER RESISTANT REFRACTORY LAGGING

INSULAG

INSULAG

A superior refractory lagging with unsurpassed insulating and sealing properties for use on high or low temperature equipment.

Can be applied on hot or cold metal surfaces.

Fuel savings, constant temperatures and increased production result from its use.

Increases in thickness after application and retains this increased volume throughout its entire range of service temperatures.

Does not collapse after it has set, from contact with water, oil or steam.

Is non-injurious as contains no mineral wool or fine slag particles which are irritants to the body.

Develops high mechanical strength upon drying and withstands shock, moderate abrasion and vibration.

Can be applied by gun in thin coats to effect a perfect seal.

Block insulation is effectively covered and protected.

Makes a good expansion jointing.

Has excellent insulating qualities.

Weight expanded 36 lbs. to a cubic foot.

Expands approximately $\frac{1}{2}$ " for each inch applied if installed immediately after mixing.

Has temperature range of 2200°F. limit for interface temperature.

3 lbs. usually covers one square foot 1" thick.

Sets firmly on cold set in 24 hours.

Can be applied by gun, grout or trowel.

Packed in 100 lb. multiwall, moisture-proof bags.

Proper instructions for use enclosed in each bag.

SPECIAL APPLICATIONS

$\frac{1}{4}$ " coating applied by Quigley C. O. Gun on new open hearth silica roofs—increases life by eliminating initial spalling.

$\frac{1}{2}$ " coating on brick-lined doors when new, prevents spalling.

Sealing Tuyers when banking Blast Furnaces.

Insulation and sealing Bustle Pipes.

Expansion Joints at jamb in Coke Ovens.

Insulating walls for comfort between furnaces in working areas of Reheat Furnaces.

When banking Blast Furnace seal Bosh usually by spraying.

Insulate outside of Reheat Furnace.

Cover block insulation on outside Stoves.

Spraying Annealing Oven interiors to seal cracks and spalling.

Sealing Regenerator chambers in Rolling Mills.

SUMMARY OF PROPERTIES

Temperature Range	2200°F. Interface
Setting Characteristics	Hydraulic Set
Application	By Gun, Grout or Trowel
Thermal Conductivity K factor in B.t.u./ sq. ft./inch thk./ hr./°F.	@ 500°F. .56 @ 1000°F. .70 @ 1500°F. .84
Spalling	Negligible
Weight	36# to a cubic foot
Coverage	3# covers 1 sq. ft. 1" thick
Packing	50# bags



QUIGLEY COMPANY, INC.

Manufacturers of Refractories — Insulations — Points

235 E 42nd Street

New York, N.Y. 10017

INSULAG

Pfizer



QUIGLEY COMPANY, INC.

Manufacturers of Refractories — Insulations — Paints

235 E. 42nd Street

New York, N.Y. 10017

**THE IDEAL INDUSTRIAL INSULATION
WATER RESISTANT REFRACTORY LAGGING**

WHERE to USE	HIGHLY EFFICIENT INSULATING LAGGING <i>With Air-setting Properties for a wide Range of Temperature Applications</i>			
BOILER PLANTS	Buildings Foundries Hospitals Hotels Laundries	Lumber Mills Plywood Plants Steel Plants Textile Plants Marine Units	Compressor Plants Mines Collieries Gas Plants Auto Assembly Plants	Boiler Mfg. Furnace Mfg. Incinerator Mfg. Kiln Mfg.
CANNERIES	Boilers Breeching Cookers	Evaporators Driers Retorts	Hot Water Tanks Baffles Dehydrators	Fuel Tanks Fireproofing Stacks
CHEMICAL PLANTS	Acid Plants Ammonia Tanks Boilers Baffles Breechings	Dehydrators Stillls Molasses Tanks Fireproofing Convertors	Sulphur Burners Fertilizer Units Coke Ovens Carbon Furnaces Vulcanizers	Potash Kilns Lime Kilns Cement Kilns
GLASS PLANTS	Crowns Breast Walls Port Necks Regenerators Melter Sidewalls	Melter Bottoms Breechings Flue Wall Checkers Stack	Lehrs Ducts Throat Silica Brick Caps Recuperators	Refiner Uptakes Port Side Walls Annealing Furnace Glass Tank
OIL REFINERIES	Fireproofing Fuel Tanks Heaters Stillls Crackers	Vessel Skirts Super Heaters Baffles Breechings Dampers	Ducts Boilers Stacks Fractionators Reactors	Regenerators Tube Sheet Kilns Inspection Doors
PAPER MILLS	Boilers-Baffles Breechings Dehydrators Digesters Dryers	Dust Collectors Fittings-Piping Furnaces-Recovery Heat Recovery Lime Calciners	Lime Kilns Precipitators Roasters Super Heaters Tanks	Towers-Acid Towers-Absorption Vats Waste Heat Recovery Stacks-Steel-Concrete
POWER PLANTS	Boilers Baffles Breechings Stacks Super Heaters	Heat Recovery Fitting-Pipe Valves Tanks-Fuel Hot Water Tank	Feed Water Heaters Drums Flanges Tile Backup	Casings Turbines Fireproofing Smoke Flues
SMELTERS	Convertor Waste Heat Boiler Reveratory Doors Drossing Furnace Breechings	Dampers Anode Furnace Zinc Furnace Shields Blast Furnace	Stacks Cottrell Acid Plant Tanks Piping-Valves	Boilers Baffles Ducts Kilns
SUGAR MILLS	Accumulators Air Heaters Bagasse Driers Boilers-Baffles Breechings-Ducts	Clarifier Diffuzer Economizers Evaporators Fittings	Feed Water Heaters Juice Heaters Preheaters Super Heaters Heat Exchangers	Tanks Turbines Vacuum Pans Valves-Piping

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INSULAG

Reg. U. S. Pat. Off.

A HIGHLY EFFICIENT INSULATING LAGGING

*With Air-setting Properties for a Wide Range
of Temperature Applications*

WATER RESISTANT—ECONOMICAL

Bulletin No. 332-F

A QUIGLEY PRODUCT

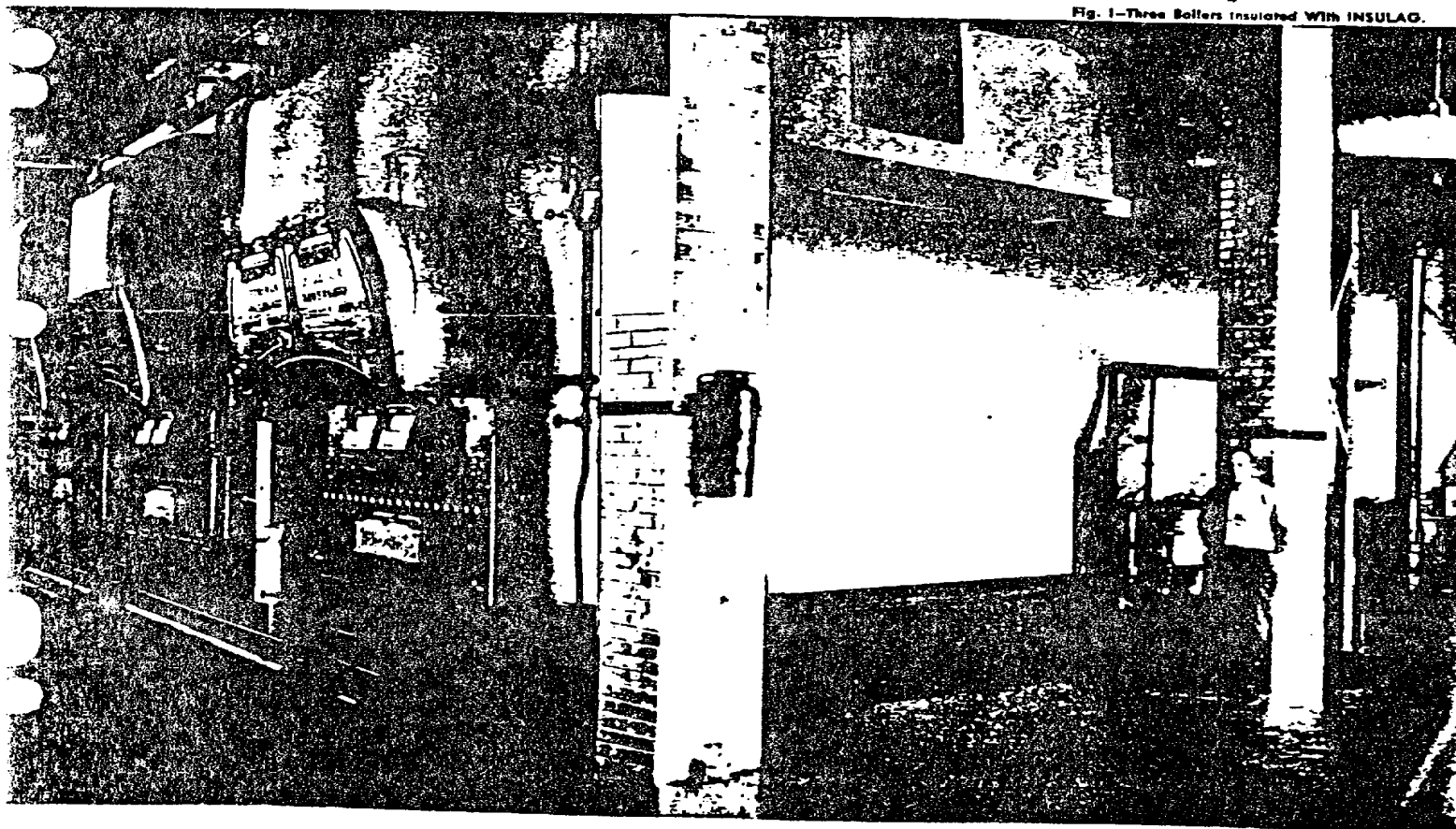


Fig. 1—Three Boilers Insulated With INSULAG.

INSULAG is a superior refractory lagging with unsurpassed insulating properties for use on high or low temperature equipment. It can be applied on hot or cold metal surfaces, and as a finishing coat for insulation.

INSULAG possesses at recommended temperatures exceptionally high refractory and insulating properties. **INSULAG** is used at operating temperatures at which other laggings fail.

Its unusual low heat storage and low thermal conductivity make **INSULAG** a most effective insulator for the control of temperatures. **INSULAG** permits reduction in thickness of heavy refractory walls and, in turn, decreases the heat capacity of the total structure. Fuel savings, constant temperatures and increased production result from its use.

INSULAG increases in thickness after application and retains this increased volume throughout its entire range of service temperatures. **INSULAG**, after it has set, does not dissolve or collapse from contact with water, oil or steam, which properties make it an outstanding product.

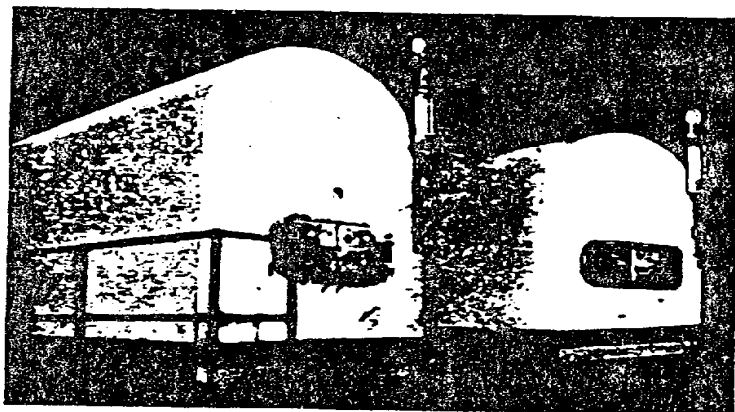


Fig. 2—Boilers Insulated With **INSULAG**.

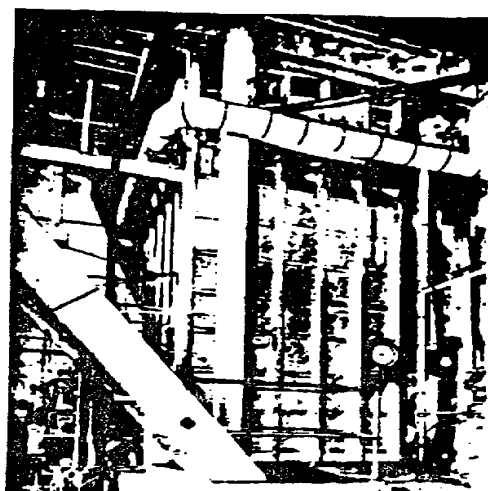


Fig. 3—Wells, Ducts, Casings, Drums of Large Boilers Insulated With **INSULAG**.

POWER PLANTS—**INSULAG** meets the engineer's demand for a suitable material for covering turbines, feed water heaters, hot liquid storage tanks, drums, smoke flues, stacks, pipes and flanges. It is also recommended as insulation in back of refractory tile of water wall boilers and outside fire brick walls in boiler furnace construction.

ON BOILER DRUMS—**INSULAG**, used on the boiler drums because it does not crack in service, can be walked on without destruction, and does not collapse due to steam leaks or water dripping on same.

FIRE-PROOFING—Bins, walls, roof structures, furnace rooms, columns, etc., may be protected against fire by applying **INSULAG** as a veneer coating. The fire retardant properties of **INSULAG** render it ideal for this purpose.

GENERAL USES—**INSULAG** has such a wide range of uses that it is indispensable as a plastic lagging in plants using fuel fired furnaces. It is "the lagging material of a thousand uses."

PROPERTIES OF **INSULAG** vs. FIRE BRICK

Heat Conductivity B.t.u./Sq. Ft./In. Thick/°F./per hour

MEAN TEMPERATURE	INSULAG	FIRE BRICK
500° F.	.56	—
1000° F.	.70	8.15
1500° F.	.84	9.99
Approximate weight per cu. ft. applied	36 lbs.	130 lbs.
Heat storage per lb. per °F.	24 B.t.u.	24 B.t.u.
Heat Storage for same insulating effect	1/40	1.

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This bulletin becomes effective as of October 1, 1948, and cancels in its entirety all previously issued bulletins or data referring to this product.

QUICK SUMMARY

1" equals 9" of fire brick in insulating value.
 1/40 heat storage capacity of fire brick for same heat flow.
 High mechanical strength.
 Operating temperature 2200°F. interface.
 Light weight—yet rugged and strong.
 Sets quickly.
 Adaptable—suitable for practically every lagging need.
 Water resistant—steam, oil or water leaks do not destroy.
 Expands—as inch applied is more than an inch when dried.

INSULAG is shipped in 50 lb. bags, net.

PROPERTIES OF INSULAG

LOW THERMAL CONDUCTIVITY—INSULAG retains practically constant insulating values throughout its service range, so that under varying conditions and temperature changes there is no appreciable loss of insulating efficiency. One inch of INSULAG has an insulating value equal to about nine inches of fire brick and has about 1/40 the heat storage capacity of fire brick walls of equal heat flow. Therefore, relatively thin applications of INSULAG may be substituted for heavy masses of refractories; heat losses are reduced and furnace production is increased.

HIGH MECHANICAL STRENGTH—INSULAG is different. It develops high mechanical strength upon drying and successfully withstands shock, moderate abrasion and vibration. The impact of a hammer will cause a dent in INSULAG and may even crack it, but the blow will not cause it to break away readily from the equipment to which it was applied. This is most advantageous on drums, tanks, pipe lines and other equipment subject to rough usage.

HIGH TEMPERATURE LIMITS—INSULAG will withstand a wide range of applications for high temperature direct exposure and is recommended for interface temperatures up to 2200°F.

EXPANSION—INSULAG expands after application; physical shrinkage eliminated.

LIGHT WEIGHT—On the average, three pounds of INSULAG covers 1 square foot to a thickness of 1 inch. Varying conditions, methods of application, hard troweling, kinds of surfaces, variations in mixing, water content, and temperature of surfaces at time of application may require more material.

QUICK SETTING—INSULAG cold-sets firmly in 24 hours to 48 hours and in much less time when subjected to heat. The quick drying and setting characteristics of INSULAG permit troweling to a smooth finish suitable for painting.

ADAPTABILITY—INSULAG possesses properties necessary for "roughing" coat and "finishing" coat, or two coats by one application. The user of INSULAG does not find it necessary to carry in stock two or three different materials for the same job.

WATER RESISTANT—INSULAG, after setting, does not dissolve or collapse from contact with water, oil or steam. This is a decided advantage in plant maintenance. INSULAG is a superior product for insulating equipment exposed to the weather.

NON-INJURIOUS—INSULAG contains no mineral wool, or fine slag particles which are irritants to the hands or other parts of the body.

A feature of INSULAG which particularly appeals to many users is the beautiful, smooth, white surface of a trowelled finished job.

If desired an INSULAG trowelled finished job can be treated with Quigley TRIPLE-A Protective Coatings in white, black, colors or aluminum.

Various combinations of INSULAG with other INSULINE Products can be made for specific applications.

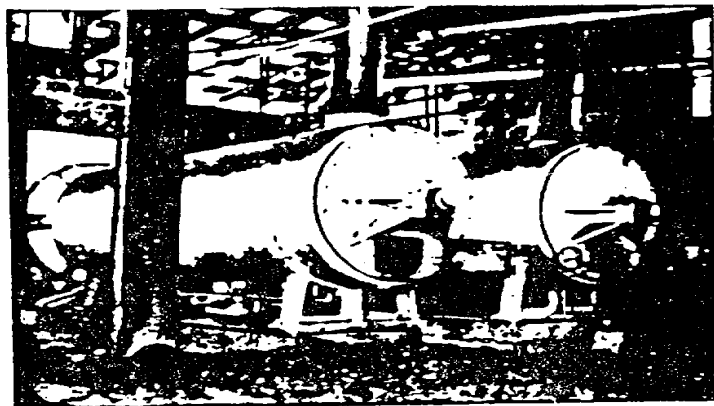


Fig. 4—Steam Driers Coated With INSULAG. No Wrapping or Painting Necessary.

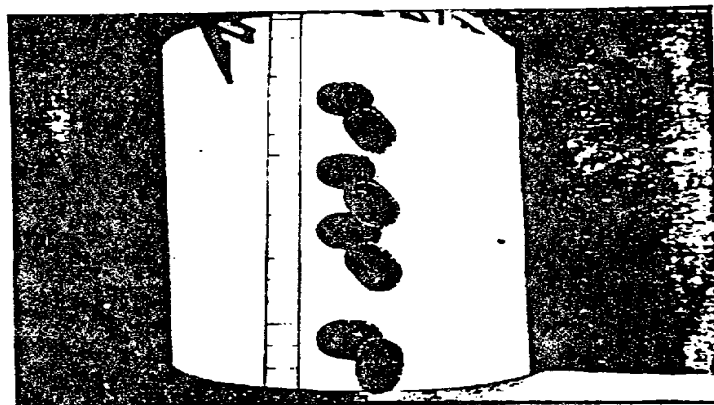


Fig. 5—Dorr Thickener (24 ft. diam. x 10½ ft. high) insulated With INSULAG.

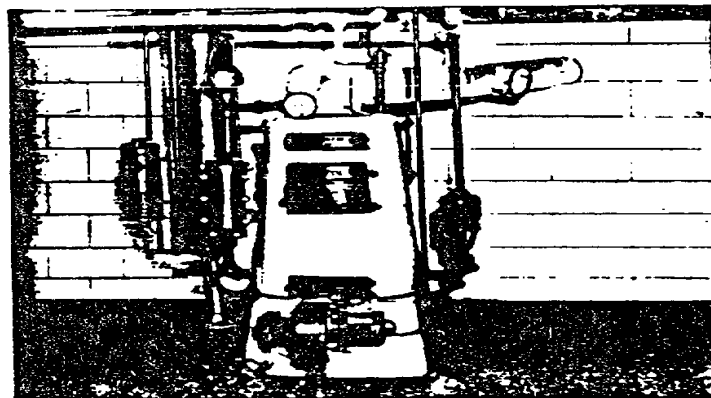
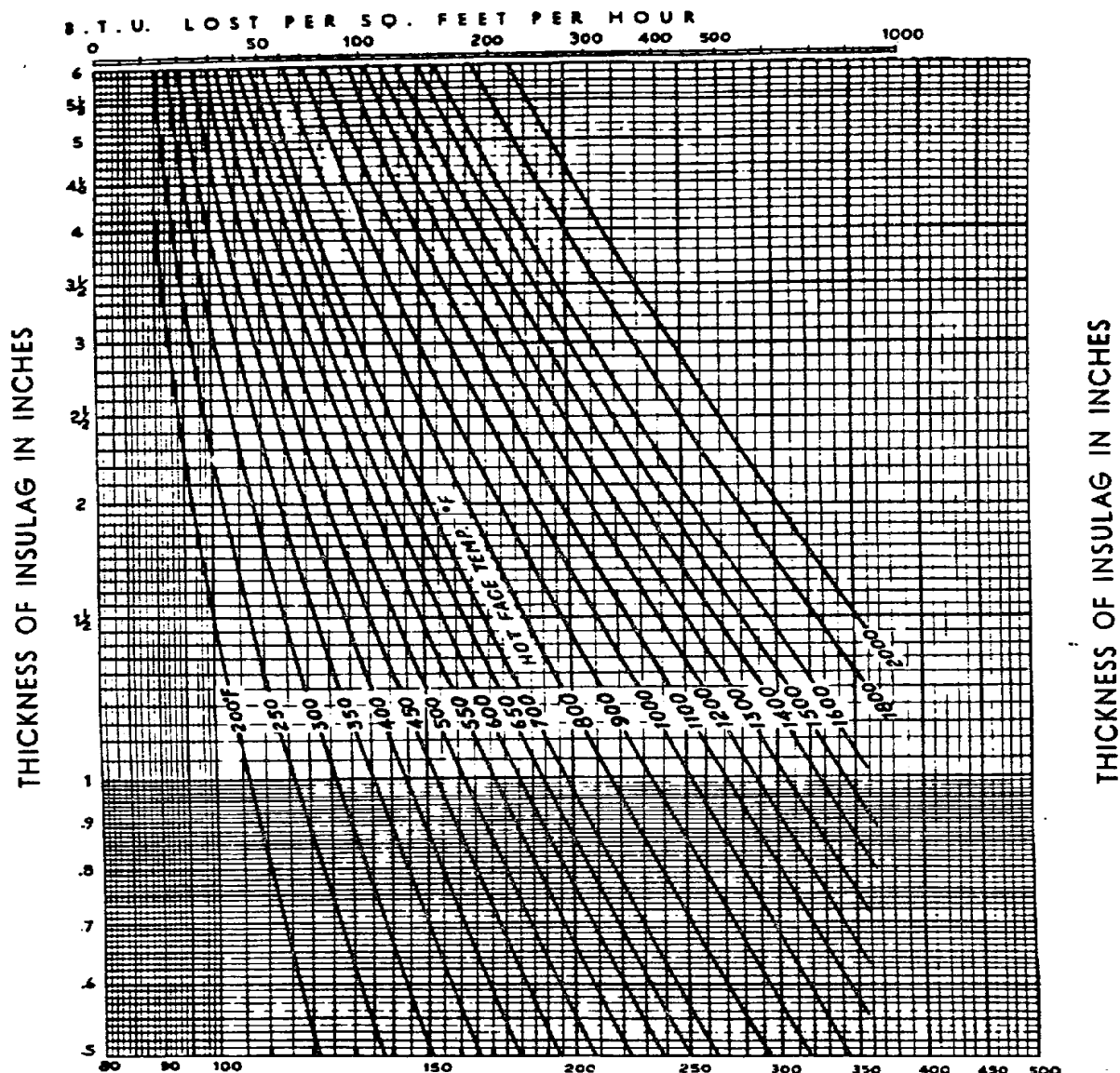


Fig. 6—Water Tank and Boiler Domestic Fuel Oil Burner insulated With INSULAG.

INSULAG—THICKNESS IN INCHES REQUIRED FOR VARIOUS HOT FACE TEMPERATURES



TEMPERATURE OUTSIDE FACE OF INSULATION DEGREES FAHR. BASED ON STILL AIR AT 80°F.
THIS CURVE IS BASED ON THE INSULATING MATERIAL CAST AND DRIED AND WITH A SURFACE EMISSIVITY FACTOR OF 0.89.

How to Determine Heat Savings Effected by INSULAG.

Chart above indicates the heat loss through graduated combination thicknesses of INSULAG, as well as the temperature of the outside surface of the INSULAG at given temperature for the hot surface.

1. To determine the thickness of INSULAG required to give an outside surface temperature.
Example: Temperature of the hot surface is 500°F. What total thickness will give a temperature of about

130°F.? Follow 500°F. line upward until it meets 130°F. curve line. At this point follow horizontal line and read 2 in. Therefore a 2 in. thickness of INSULAG is required.

2. To determine the heat loss through given thickness of INSULAG or from outside face temperature.
Example: Similar conditions as that given under "1". From 130°F. at bottom of chart follow upward until you read 90 B. t. u.'s on the upper scale.

415 Madison Avenue

QUIGLEY COMPANY INC.

New York 17, N. Y.

M & L SUPPLY CO.

BOX 368 - BUTTE, MONTANA

BOX 2033 - GREAT FALLS, MONT.

Bulletin 232F—6M—3-66—AMP.—This cancels and supersedes all previous literature

Printed in U. S. A.

HOW TO USE INSULAG

(Reg. U. S. Pat. Off.)

A Plastic Refractory Insulator and Sealer for Lagging Interior and Exterior Surfaces of High Temperature Equipment

INSULAG when mixed with water BLOATS. In order to secure maximum insulating efficiency BLOATING MUST TAKE PLACE AFTER APPLICATION—NOT IN THE MORTAR BOX.

Use only quantity of INSULAG that can be mixed and applied within twenty minutes in a clean mortar box or wheelbarrow.

Add sufficient water to INSULAG to make a smooth easy-working mixture. Use clean fresh water at 60-65°F. An average mixture takes about ten and one half (10½) gallons of water to a one hundred pound bag. More or less water may be used for various types of work.

Mix the batch thoroughly and quickly with a hoe or shovel, turning the mixture over to be sure all of the INSULAG is saturated with water. Apply INSULAG promptly after mixing so that the BLOATING TAKES PLACE ON THE WORK INSTEAD OF IN THE MORTAR BOX. Make a fresh batch for each application. Mix only quantity required. Close bag tightly to keep the unused material in good dry condition.

All surfaces which are to be covered with INSULAG should be dry and clean—free of dust, loose scaly rust, paint and grease. When surface is painted with asphalt products, same should be entirely removed before application.

INSULAG is applied by either hand application, premixed pneumatic guns, syphon guns or gunniting. INSULAG should be applied to uniform thickness—allow bloating action to take place and INSULAG to set. Smooth hard finish is obtained by wet troweling finishing coat, which makes INSULAG water resistant.

All applications exceeding ½" should be reinforced, preferably with 2" x 2" x 14 gauge square mesh tied or affixed to the surface being insulated,

this to be on approximately 16" centers. Each additional 1" to 1½" should be similarly reinforced. The previous applied INSULAG should be scored or scratched while still moist to insure proper bonding of the additional thickness.

For hot application, a small quantity of INSULAG should be diluted into a thick paint consistency and painted on the entire surface, which will rapidly dry. Then spot-coat with regular mix INSULAG, allow the spot-coats to set up, and then fill with INSULAG. For additional thickness, use reinforcing as described above.

Where INSULAG is applied over porous surfaces the reinforcement, as described above, should be applied and securely fastened. INSULAG diluted to a stucco consistency should be painted to seal any absorption of this porous material i.e., (85% magnesia, asbestos, rockwool, fibreglass, block insulation). After this priming coat, the normal INSULAG application can be made.

INSULAG will set up hard in 8 to 24 hours depending upon temperature and atmospheric conditions.

For large valves, flanges and intricate shapes, INSULAG may be hand molded to this equipment.

INSULAG, when set, will not dissolve or collapse from contact with water, oil or creosote; is resistant to vapors of steam, acid or alkaline solutions. Should it become wet, heat will restore its original insulating value.

The above instructions cover general applications. However, for large surfaces or Gun applications, or when it is desired to use INSULAG alone or in combination with other materials to form panel construction, recommendations will be furnished upon request.

QUIGLEY COMPANY INC.

Manufacturers of Refractory Specialties and Paints

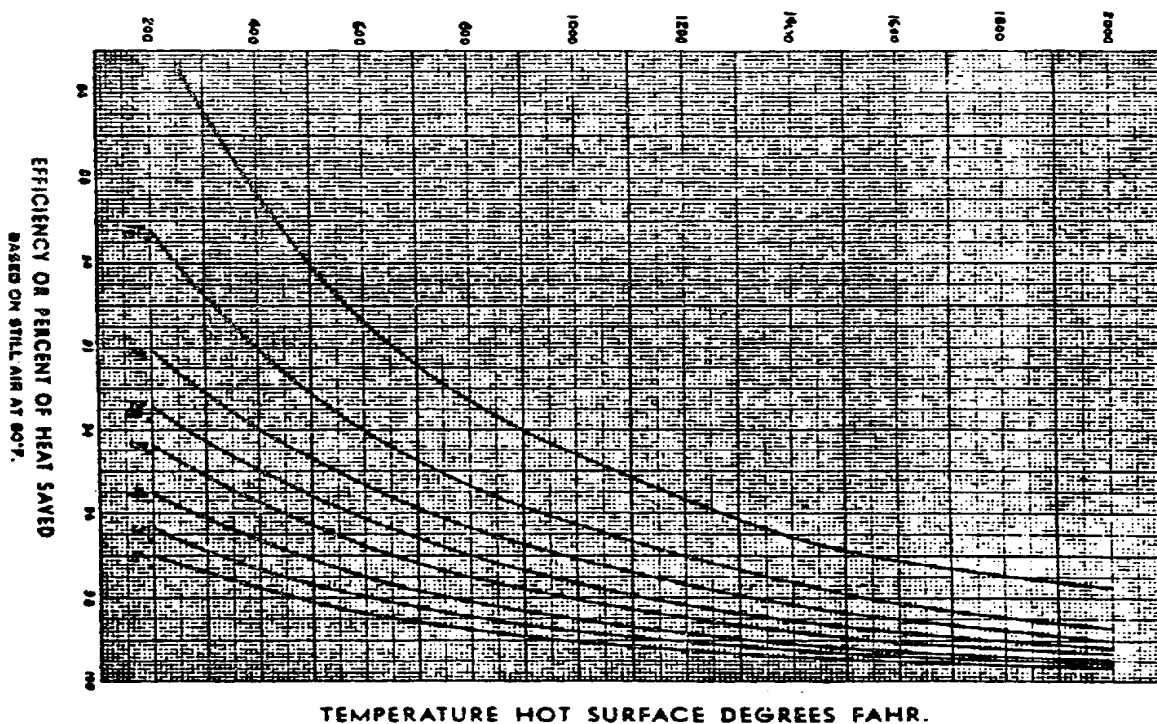
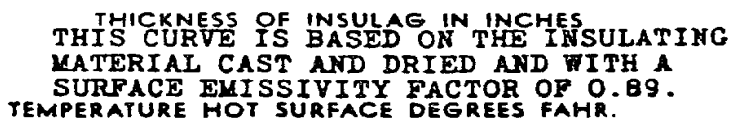
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Distributors with Stocks and Service in Every Industrial Center

Get Quigley-Wise...To Economize

INSULAG-D1-5M - 8-58 - AMP.

EFFICIENCY OF VARIOUS THICKNESSES OF INSULATION



TEMPERATURE OUTSIDE FACE OF INSULATION DEGREES FAHR

Example: During conditions as that given under "1" from 120° F. at bottom of chart follow upward until you read 95 H. U. 's on the upper scale.

**EFFICIENCY OR PERCENT OF HEAT SAVED
BASED ON STILL AIR AT 60°F.**

Example: For some conditions used for chart program, from 600° F. following horizontal line until you intersect it in curve line and reading directly downward you have 96.75. Therefore the application of 2 in INSLULOX is a hot face of 600° F. saves 96.75 of the radiation losses.



235 E. 42ND ST. NEW YORK, N.Y 10017

TYPICAL ANALYSIS DATA

INSULAG

INSULATING LAGGING MATERIAL

CONE 9 (2345°F)

2000°F (Exposed), 2200°F (Interface)

CHEMICAL ANALYSIS:

THERMAL CONDUCTIVITY:
(BTU/Sq. Ft./Hr./°F/In.)

SiO ₂	46.0%
Al ₂ O ₃	24.6
Fe ₂ O ₃	1.4
CaO	19.5
MgO	4.9
TiO ₂	0.6
Alkalies	1.1
L.O.I.	1.9

<u>Mean Temp.</u>	<u>'K'</u>
500°F	.56
1000°F	.70
1500°F	.84

MODULUS OF RUPTURE: SEE CHART A-4797

PTURE: SEE CHART A-4797

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CHAS. PFIZER & CO., INC.

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QUIGLEY COMPANY INC.

Manufacturers of Industrial Specialties
527 Fifth Avenue—New York 17, N. Y.

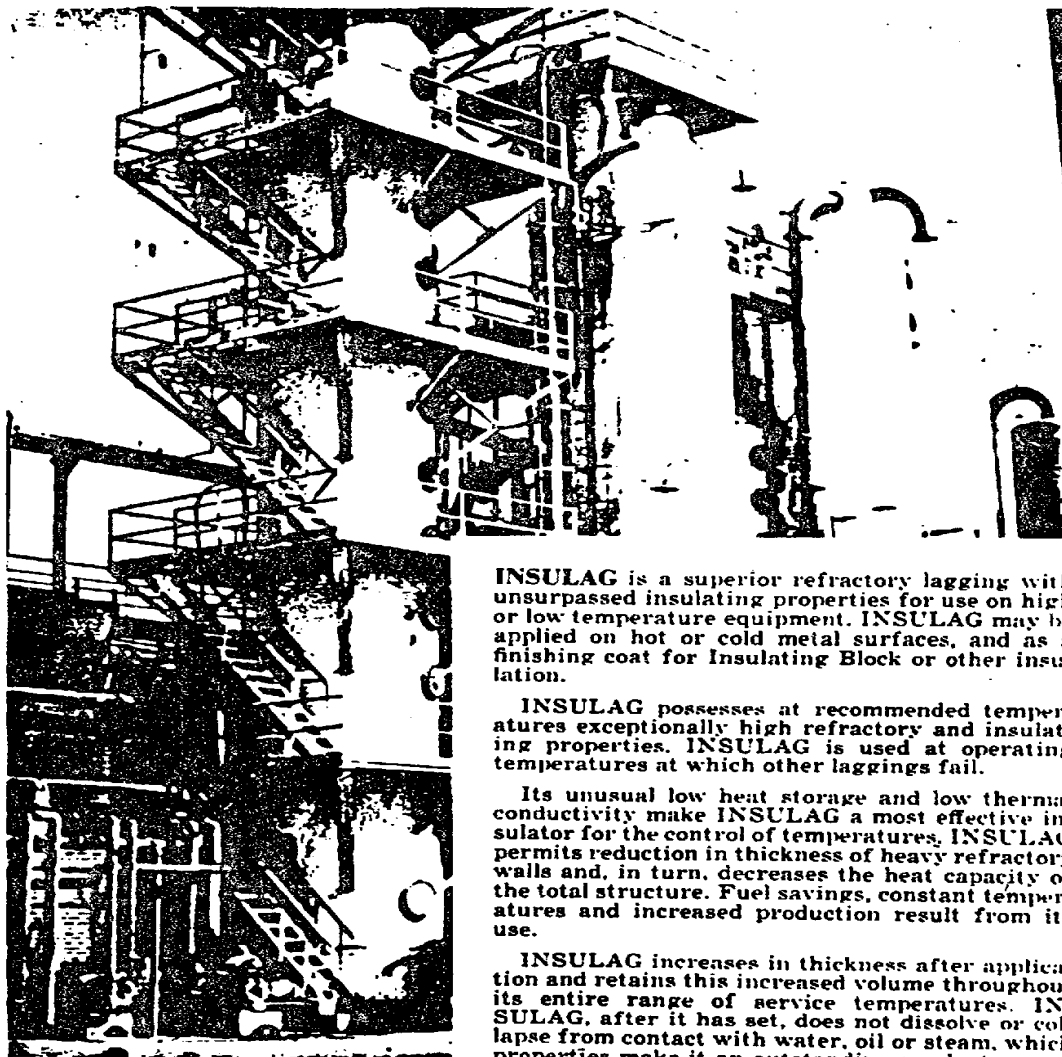
REFRACTORY DIVISION

BULLETIN No. 327-H

INSULAG

(Patents Pending—Reg. U. S. Pat. Off.)

REFRACTORY PLASTIC INSULATING LAGGING



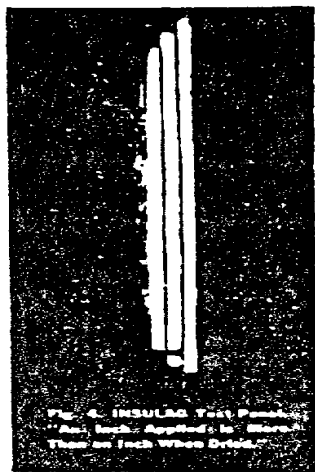
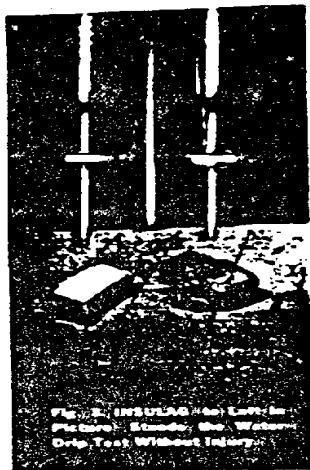
Oil Refinery Towers

INSULAG is a superior refractory lagging with unsurpassed insulating properties for use on high or low temperature equipment. INSULAG may be applied on hot or cold metal surfaces, and as a finishing coat for Insulating Block or other insulation.

INSULAG possesses at recommended temperatures exceptionally high refractory and insulating properties. INSULAG is used at operating temperatures at which other laggings fail.

Its unusual low heat storage and low thermal conductivity make INSULAG a most effective insulator for the control of temperatures. INSULAG permits reduction in thickness of heavy refractory walls and, in turn, decreases the heat capacity of the total structure. Fuel savings, constant temperatures and increased production result from its use.

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Heat Storage for same insulating effect	1:40	1.

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USES OF INSULAG

PETROLEUM INDUSTRY—Refineries and Natural Gasoline plants use INSULAG on towers, tanks, treaters, stills, boilers, breechings, pipe lines and for fire proofing supporting steelwork, panel construction of still furnaces, baffle plates and door linings.

METALLURGICAL FURNACES—INSULAG is used for insulating heat treating, forging, annealing, recuperators, reverberatory, and open hearth furnaces; for hot blast stoves, bustle pipes, hot blast mains, flues, pipes and other heated equipment where insulation is required.

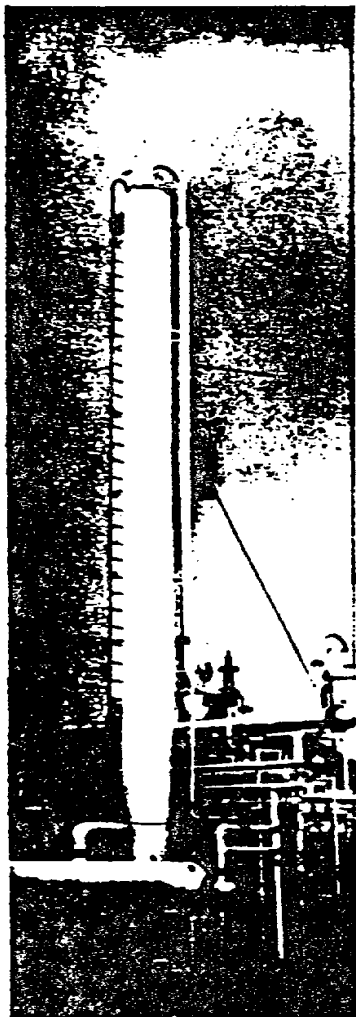


Fig. 1—Tower and Oil Heating Tank insulated with INSULAG. Petroleum Industry Has Found INSULAG Unsurpassed for Insulation.

CERAMIC PLANTS—INSULAG is used on kilns, glass lehrs, glass tanks, hot air pipes, underground flues, recuperators and checker chambers.

Plants manufacturing pottery, glass, brick, etc., find it most adaptable.

POWER PLANTS—INSULAG meets the engineer's demand for a suitable material for covering turbines, feed water heaters, hot liquid storage tanks, drums, smoke flues, stacks, pipes and flanges. It is also recommended as insulation in back of refractory tile of water wall boilers and outside fire brick walls in boiler furnace construction.

GENERAL USES—INSULAG has such a wide range of uses that it is indispensable as a plastic lagging in plants using fuel fired furnaces. It is "the lagging material of a thousand uses."

FIRE-PROOFING—Bins, walls, roof structures, furnace rooms, columns, etc., may be protected against fire by applying INSULAG as a veneer coating. The fire retardant properties of INSULAG render it ideal for this purpose.

WEATHER-PROOFING—While INSULAG is not injured by contact with the weather, yet to retain maximum insulating efficiency at all times it is often desirable to waterproof INSULAG with TRIPLE-A Products.

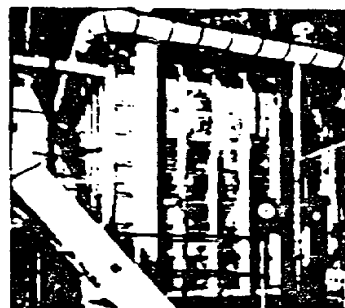


Fig. 2—Walls, Ducts, Casings, Drums of Large Boilers Insulated With INSULAG.

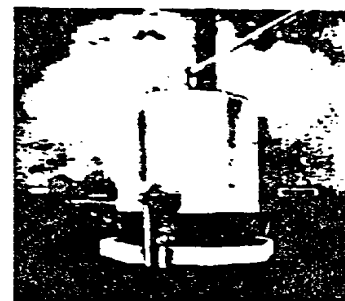


Fig. 3—Field Oil Heater Insulated With INSULAG.

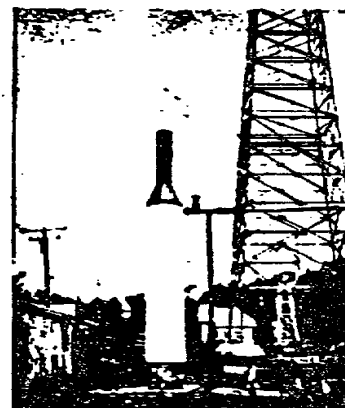


Fig. 4—Field Oil Treater Insulated With INSULAG.

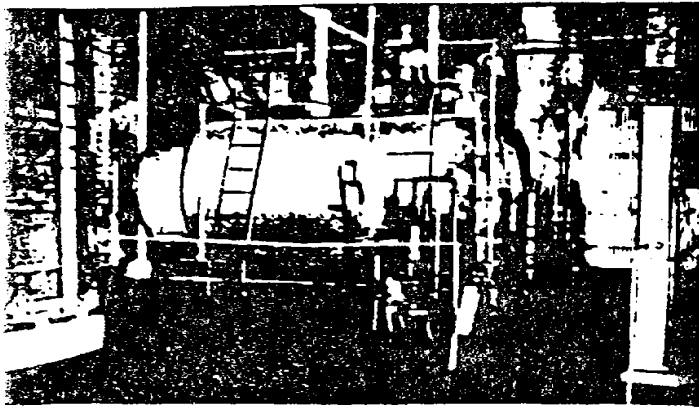


Fig. 5—Smoke Box and Exterior of Oil Fired Marine Type Boilers Insulated With INSULAG.

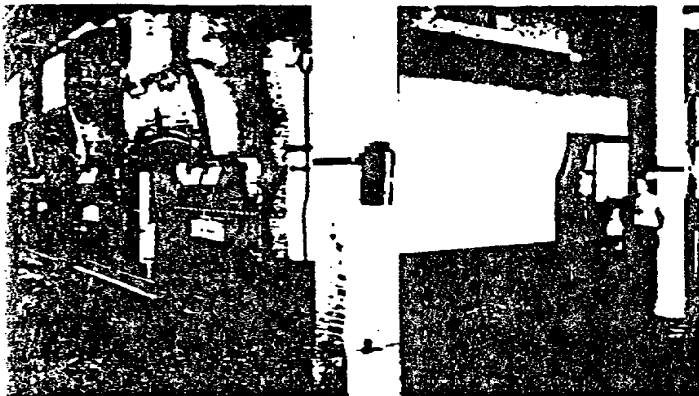


Fig. 6—Boilers Insulated With INSULAG.

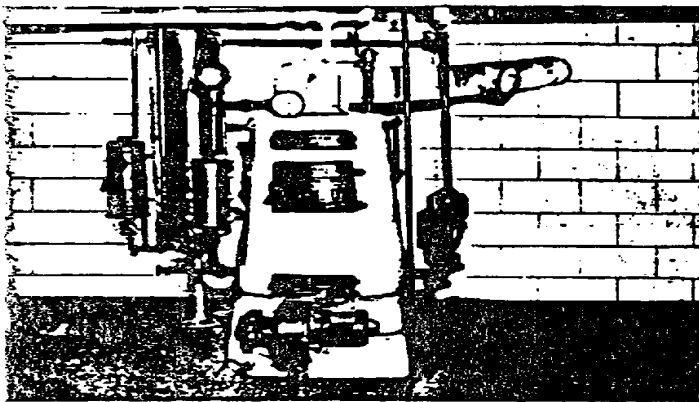


Fig. 7—Water Tank and Boiler Domestic Fuel Oil Burner Insulated With INSULAG.

INSULAG

Cuts Heat Losses • Reduces Fuel Costs • Improves Heat Control

Widely Used in Oil Industry—Oil producers find nothing like INSULAG to insulate field equipment. Permits better heat control. Requires less fuel to maintain constant heat. They simply fasten metal lath on equipment and apply INSULAG, which sets quickly—adheres to hot or cold surfaces—expands after application and retains volume when set—develops high mechanical strength — withstands shock, moderate abrasion and vibration—durable—defies weather—does not lose insulating value after repeated heating and cooling. Makes a white, hard-finish surface, unaffected by moisture.

Good Results on Many Applications—Famous soap manufacturers use INSULAG for insulating steam headers, breechings and hot water tanks with good results.

On Boiler Drums — INSULAG, used on the boiler drums because it does not crack in service, can be walked on without destruction, and does not collapse due to steam leaks or water dripping on same.

For Oil Burners—Internationally known oil corporation's technical engineer recommends INSULBRIX and INSULAG to fuel oil burner installers in his district for all oil burner work. "Quigley INSULBRIX, combined with INSULAG, have all the desirable requirements for domestic combustion chamber lining and insulation."

INSULAG Applied With Boilers, Stills and Furnaces on the Line—Chief engineers and superintendents who cannot believe brick walls can be insulated successfully with boilers or stills on the line, are invited to look at installations with INSULAG applied under these conditions. INSULAG can be used in Quigley Panel Type Construction which has worked out successfully in many oil refinery stills.

On Regenerator Chamber Ovens — Eastern Public Service Corporation coke plant uses INSULAG in walls of ovens. Former practice in repairing fronts of regenerator chambers was to use two $4\frac{1}{2}$ in. walls of fire-brick with a 7 in. clear space in which they used insulating powder in the bottom and middle sections, and insulating brick at top. The outside wall of these regenerator chambers is built of a thickness of $4\frac{1}{2}$ in. of fire-brick. The inside temperature of chamber is 2300°F . In using INSULAG they laid up both the inside and outside fire brick wall, then filled the center with 7 in. of INSULAG. Well pleased with adoption of INSULAG due to increased insulating value, plus ease of application.

On Foundry Furnace Wall — Large foundry applied INSULAG $2\frac{1}{2}$ in. thick on $13\frac{1}{2}$ in. silica brick wall while furnace was under heat. On the very hot surfaces they brush coated the wall of equipment to be insulated with a diluted batter of INSULAG of heavy paint consistency to obtain good adhesion and then built up $2\frac{1}{2}$ in. thickness in three layers applied at intervals. Resulted in a smooth coat which did not shrink or crack. Used nails in wall to help anchor INSULAG.

In Coke Oven Plants—INSULAG shields used for coke oven patching at plant of a large eastern utility. One used on pusher side of ovens and another on coke side. These have been in use several months doing an excellent job in closing the oven and effectively protecting men from the heat. Shields of this character should be used in every by-product coke oven plant for:

1. Protection of the silica brick from the chilling action of the air which might result in spalling.
2. Protection of the men from the blistering effects of the radiant heat; thus permitting them to do a more efficient job of patching.

Supersedes Water Cooling System— Manufacturer of locomotive parts well pleased with results of using INSULAG to insulate small industrial furnaces. These furnaces were formerly water cooled but this was abandoned in favor of INSULAG which is more satisfactory in every way and eliminates water freezing in winter.

[5]

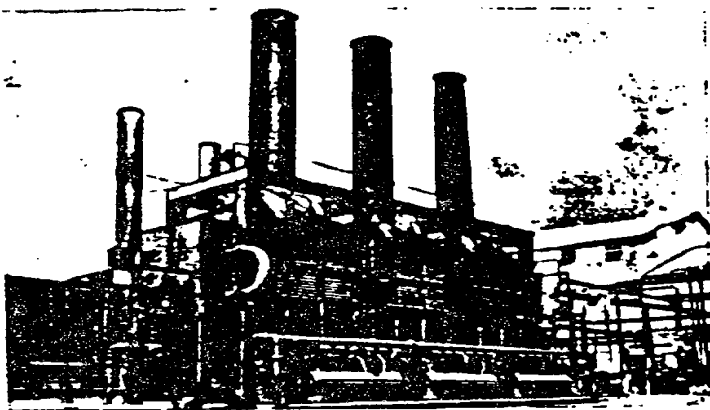


Fig. 8—This ON SH. Constructed of INSULAG Panels in Upper Section, with INSULBRICK, INSULAG and INSULCRETE in Lower Section, Has Not Had a Hot Spot.

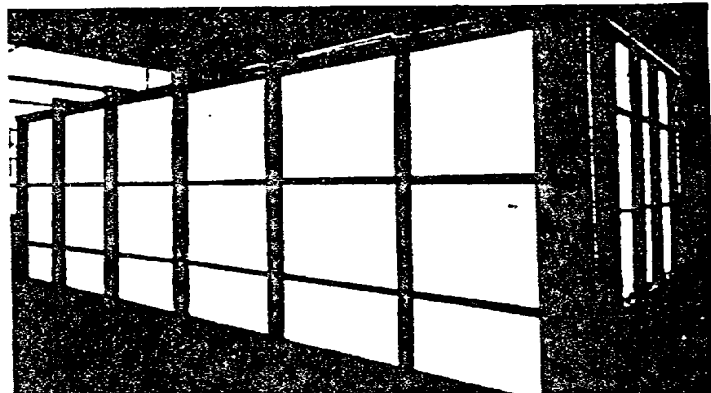
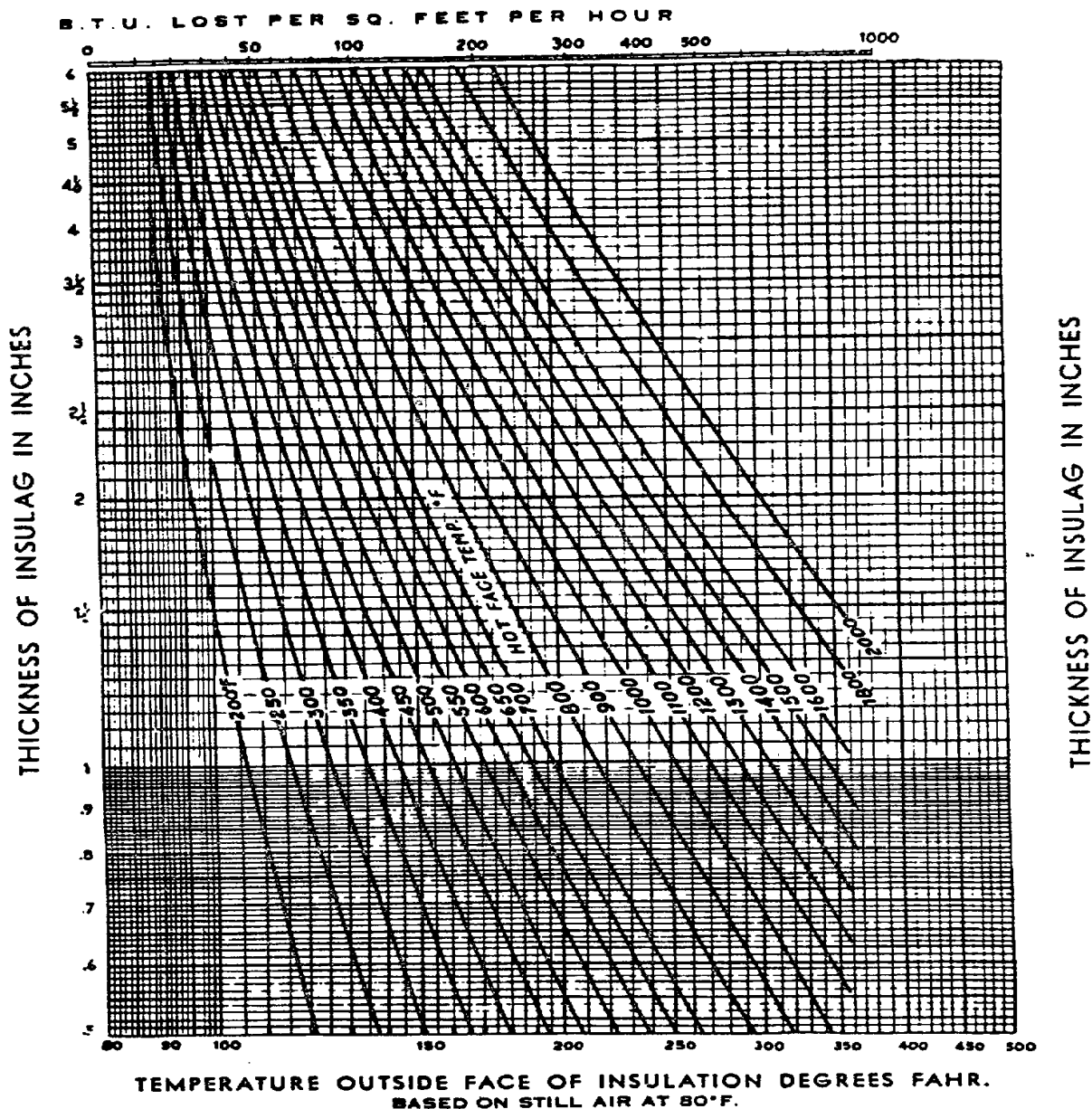


Fig. 9—Stress Relieving Furnace Insulated With INSULAG.

QUICK SUMMARY

- 1" equals 9" of fire brick in insulating value.
- $\frac{1}{40}$ heat storage capacity of fire brick for same heat flow.
- High mechanical strength.
- Operating temperature 2200°F . interface.
- Light weight—yet rugged and strong.
- Sets quickly.
- Adaptable—suitable for practically every lagging need.
- Water resistant—steam, oil or water leaks do not destroy.
- Expands—an inch applied is more than an inch when dried.
- 3 lbs. of Insulag covers 1 sq. ft. 1" thick.
- Packed in 100 lb. bags.

INSULAG—THICKNESS IN INCHES REQUIRED FOR VARIOUS HOT FACE TEMPERATURES



How to Determine Heat Savings Effected by INSULAG.

Chart above indicates the heat loss through graduated combination thicknesses of INSULAG, as well as the temperature of the outside surface of the INSULAG at given temperature for the hot surface.

1. To determine the thickness of INSULAG required to give an outside surface temperature.

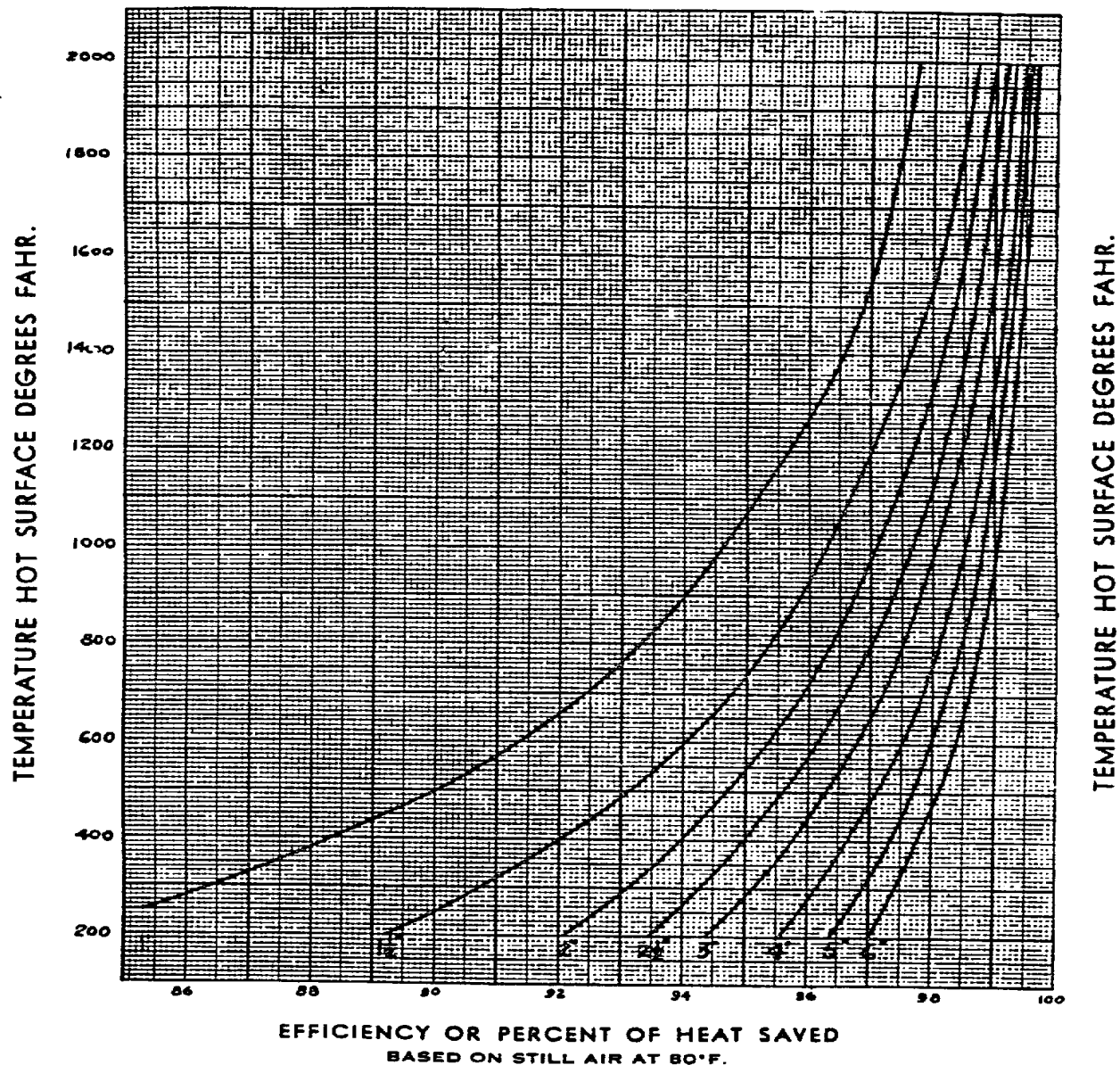
Example: Temperature of the hot surface is 500°F. What total thickness will give a temperature of about

130°F? Follow 500°F. line upward until it meets 130°F. curve line. At this point follow horizontal line and read 2 in. Therefore a 2 in. thickness of INSULAG is required.

2. To determine the heat loss through given thickness of INSULAG or from outside face temperature.

Example: Similar conditions as that given under "1". From 130°F. at bottom of chart follow upward until you read 90 B. t. u.'s on the upper scale.

EFFICIENCY OF VARIOUS THICKNESSES OF INSULAG



The efficiency of INSULAG is obtained by subtracting the heat loss through the INSULAG from the heat loss of the surface not insulated and dividing the difference by the heat loss of the surface not insulated.

Chart above indicates the efficiency or percent of heat saved by the application of various thicknesses of INSULAG.

Example: For same conditions used for chart page "6", from 500°F. following horizontal line until you intersect 2 in. curve line and reading directly downward you have 94.7%. Therefore the application of 2 in. INSULAG in a hot face of 500°F. saves 94.7% of the radiation losses.

OTHER QUIGLEY INSULINE PRODUCTS

INSULBRIX

(Reg. U. S. Pat. Off.)

INSULBRIX are light weight cellular low heat storage insulating fire brick for direct or indirect exposure to temperatures in boilers, stills, metallurgical furnaces, ovens, and kilns. Made for service temperatures up to 3000°F.

INSULBRIX are made in several brands from one-tenth to one-seventeenth the heat storage capacity of heavy refractories for same heat flows. 1" has an insulating value of 2 1/4" to 5" of fire brick, permits heated equipment to reach operating conditions in less time and meet fluctuations more rapidly.

Result in increased output, conservation of fuel, decreased labor costs, improved furnace control and greater comfort to the workmen.

INSULCRETE

(Reg. U. S. Pat. Off.)

INSULCRETE is a light weight cellular insulating refractory concrete for furnace linings, floors, door linings, heat shields, shapes, covers, and kindred uses; recommended for temperatures up to 2500°F. No cutting, fitting or ramming—just pour into place.

1" of INSULCRETE equals about 4" of fire brick in insulating value and has about one-seventh the heat storage capacity of fire brick walls of equal heat flow.

INSULCLAD

(Reg. U. S. Pat. Off.)

INSULCLAD—is a surfacing material used for armor coating insulating brick. It seals the pores making an impermeable monolithic surface which greatly reduces dusting and gas absorption, reduces heat flow through walls, resists abrasion and penetration.

INSULBOND

(Reg. U. S. Pat. Off.)

INSULBOND—a high refractory bonding mortar in dry or plastic form, for bonding INSULBRIX.

INSULINE

(Reg. U. S. Pat. Off.)

INSULINE GROUND—used as an insulating fill of low heat storage capacity in back of thin furnace walls at service temperatures up to 2600°F. 1" of INSULINE GROUND has insulating properties equal to about 6" of fire brick.

INSULINE SIZED AGGREGATE—used as an insulating fill or with Portland cement or other suitable binders to make an insulating concrete.

OTHER QUIGLEY PRODUCTS

A Quigley Product for every refractory purpose

BONDING MORTARS—For Fire Brick-Silica Brick Insulating Fire Brick

Hytempite—Airset (wet)
Fyre Mortar—Airset (dry)
QT Set—Heat Set (dry)
Q-Chrome—Airset Chrome (dry)
Insulbond 2600—Airset (wet)
Insulbond 2800—Airset (wet)
Insulbond 3000—Airset (wet)

CASTABLES—Fire Brick-Insulating Fire Brick Chrome Ore

Cast Refract—Fire Clay Fire Brick Castable
Insulcrete—Castable Lightweight Insulating Fire Brick
Hearth-Crete—Chrome Magnesite Castable
Chromecrete—Chrome Base Castable

PLASTICS—Fire Brick-Chrome Ore

Mono-Line—Plastic Fire Brick
Chromix—Chrome Ore Plastic

FIRE BRICK—First Class—Super Duty and High Alumina

Missouri
Pennsylvania

INSULATING FIRE BRICK

Insulbrix—2600
Insulbrix—2800
Insulbrix—3000

REFRACTORY COATINGS for Insulating Fire Brick Plastics and Castables

Q-Chromastic—Airset Chrome base (wet)
Insulclad—Airset (dry) Alumina Base

INSULATION

Insulag—Plastic Insulation

ACID PROOF CEMENTS

Black Acid Proof Cement—Airset (wet)
Gray Acid Proof Cement—Airset (wet)
Quick-Setting Acid Proof Cement—Airset (dry)
White Acid Proof Cement—Quickset (dry)

For further information write

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NEW YORK 17, N. Y.

527 Fifth Avenue

In Canada, Quigley Company of Canada, Ltd., Lachine, P. Q.
Distributors With Stocks and Service in Important Industrial Centers Throughout the United States, Canada, and in 32 Other Countries.