

COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MANUAL

This registered copy of the Owens-Corning Fiberglas C. & I. Manual is prepared for:

Please fill out the "Registration" card and return in mail. Owens-Corning Fiberglas will keep your name and address and will send you and others information to help you select the right insulation for your application. Please note that a "Change of Address" card is only to be used if your address changes.

"CHANGE OF ADDRESS" CARD COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MANUAL

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Commercial & Industrial Insulation Systems Manual

OWENS-CORNING
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Organized To Help Solve Design Problems
This manual has been organized by system rather than by product to aid engineers and other specifying factors in the choice of the proper insulation for a given application.

In general, the greatest benefit will be realized if the book is used as follows:

A. Identify type of application by system.

Commercial
Plumbing
Mechanical Piping
Equipment
Air Handling

Industrial

Piping
Equipment
Vessels and tanks
Boilers and chimneys

B. Determine Temperature Range

C. Choose products from the Selection Guide Index

D. Refer to PRODUCT DATA sheets for technical data.

E. Refer to SPECIFICATIONS for recommended products and application in the appropriate sections

Each section is self-contained with product data and detailed specifications

OWENS-CORNING FIBERGLAS CORPORATION

Industrial and Commercial Construction Division, 717 Fifth Avenue, New York, N. Y. 10022 291306
General Offices, Toledo, Ohio 43601

Pub. No. I-1013371-D

Rev. 10-1968

Pub. No. CC-8896, 1/68

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**COMMERCIAL & INDUSTRIAL
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**DIVIDEND
DE
ENGINEERING**

a service to aid in selecting optimum insulation thickness

introduction

Dividend Engineering is a new system for calculating optimum thickness of insulation which in-
cludes performance and cost considerations.

basic reasons for insulation / The basic reasons for using in-
sulation usually combine all or some of the following:

- Process Control
- Personnel Protection
- Condensation Prevention
- Heat (gain or loss) Saving

The first three factors are usually straight forward and present no problems. Heat Saving, how-
ever, due to economic variables is complex.

DE solves the economic dilemma / The purpose of Div-
idend Engineering is to provide a usable tool for designers so that they can determine true
economic thickness of insulation and its relation to return on investment and to equipment
needed to produce heat or to refrigerate.

factors considered in DE / To determine true economic thickness
these significant factors are included in a Dividend Engineering analysis.

1. Cost of insulation applied
2. Cost of heat energy
3. Cost of money
4. Deprecia-
tion plant
5. Depreciation-insulation
6. Conductivity (k) of insulation
7. Operating
temperature
8. Size of pipe or surface area
9. Capital investment in heat-producing
equipment
10. Hours of operation
11. Maintenance Costs.

how to get dividend engineering / Contact your local
Fiberglas Branch Office to see how easily you can take advantage of the Owens-Corning Fiberglas
Dividend Engineering Service.

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INSULATION OF PLUMBING PIPING & EQUIPMENT SYSTEMS

Products shown in BOLD FACE type are recommended for use for the services shown
based on performance and widespread acceptance. Other products are listed be-
cause of local conditions or product preference.

selection guide

system	temp. range	products	data page	spec. page
PIPING				
Chilled Drinking Water Refrigerator Loaders	35-50F	PIPE INSULATIONS		
		Heavy Density	1.1	1.S.1
		One-Piece	1.2	1.S.1
		Fiberglass 25 C-P	1.3	1.S.7
Drain Lines (Sheet Soft Copper Connections)	35-50F	O-C Flexible Taping	1.3	1.S.2
Domestic Cold Water Boiler Makeup Water	50-60F	Heavy Density	1.1	1.S.3
		One-Piece	1.2	1.S.3
		Fiberglass 25 C-P	1.3	1.S.7
Domestic Hot Water Tempered Water Booster Heater Water	to 180F	Heavy Density	1.1	1.S.4
		One-Piece	1.2	1.S.4
		Fiberglass 25 H-P	1.7	1.S.6
		EQUIPMENT		
Hot Water Storage Tanks Heat Exchangers Hot Water Generators Booster Heaters	150-180F	EQUIPMENT INSULATIONS		
		700 Series	1.5	1.S.5
		Kaylo Block	1.6	1.S.5
		Fiberglass 25 H-E	1.9	1.S.8

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OWENS CORNING
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plumbing piping systems
mechanical piping systems
January 1983

Pipe Insulation

Heavy Density Sectional Pipe Insulation

a multi-purpose rigid pipe insulation
for all types of piping systems
operating at temperatures from -120°F to 450°F

uses

Fiberglas Heavy Density Sectional Pipe Insulation has a broad range of uses for hot and cold piping. It is available with a variety of factory-applied jackets to provide for appearance, vapor barrier, fire safety or weatherproofing to permit selection of the correct insulation for the service requirements from -120°F to 450°F. See page 2 for a complete selection guide.

description

Fiberglas Heavy Density Sectional Pipe Insulation is precision molded pipe covering composed of Fiberglas wool resin-bonded and formed in two half cylinders up to 12" IPS. It is available in 3 ft. long sections for all sizes of pipe and tubing from 1/2" IPS to 33

benefits

superior thermal efficiency—Fiberglas Sectional Pipe Insulation because of its low k factor provides high efficiency with resultant cost savings. The closely knit glass fibers form millions of air pockets to retard the flow of heat for greater fuel savings and more precise temperature control.

resists compression—Heavy Density Fiberglas Pipe Insulation resists compression and mechanical damage because it is denser than other glass fiber pipe insulations. This means less chance of unsightly damage and puncture of the vapor barrier on cold lines.

dimensionally stable—Fiberglas will not shrink or rot and will withstand thermal shock.

easy to fabricate—Fiberglas Heavy Density Pipe Insulation is easy to cut and fit in the field with

an ordinary knife. No special tools are required and the firm clearest sections knit tightly together forming an efficient thermal barrier at fittings and joints. The rigid, sectional form lends itself to accurate shop fabrication of valve and fitting covers.

long-life—The special compressed glass fibers are completely inert. They will not corrode steel, copper or aluminum pipe and will not cause stress corrosion in stainless steel.

factory applied jackets—A wide variety of factory-applied jackets are available to provide vapor barrier protection, weather resistance, fire safety or damage resistance. These jackets speed application in the field. The new Self-Sealing Lap Jacket further simplifies installation and assures a moisture vapor barrier seal at the joints.

*Trademark Registered Owens-Corning Fiberglas Corp.

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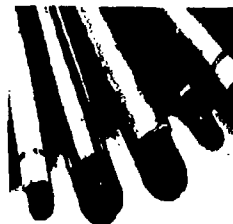
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plumbing piping systems 1.1
mechanical piping systems 2.1
January 1969

Pipe Insulations

Heavy Density Sectional Pipe Insulation

a multi-purpose rigid pipe insulation
for all types of piping systems
operating at temperatures from -120°F to 450°F

uses

Fiberglas Heavy Density Sectional Pipe Insulation has a broad range of uses for hot and cold piping. It is available with a variety of factory-applied jackets to provide for appearance, vapor barrier, fire safety or weatherproofing to permit selection of the correct insulation for the service requirements from -120°F to 450°F. See page 2 for a complete selection guide.

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benefits

superior thermal efficiency - Fiberglas Sectional Pipe Insulation because of its low k factor provides high efficiency with resultant cost savings. The closely laid glass fibers form millions of air pockets to retard the flow of heat for greater fuel savings and more precise temperature control.

resists compression - Heavy Density Fiberglas Pipe Insulation resists compression and mechanical damage because it is denser than other glass wool pipe insulations. This means less chance of crushing damage and puncture of the vapor barrier on cold lines.

dimensionally stable - Fiberglas will not shrink or expand with changing thermal loads.

easy to fabricate - Fiberglas Heavy Density Pipe Insulation is easy to cut and fit in the field with

no ordinary tools. No special tools are required and the firm clean-cut sections knit tightly together forming an efficient thermal barrier at fittings and joints. The rigid, sectional form allows itself to accurately shape fabrication of valve and fitting covers.

inorganic - The special compounded glass fibers are completely inert. They will not corrode steel, copper or aluminum pipe and will not cause stress corrosion in stainless steel.

factory applied jackets - A wide variety of factory-applied jackets are available to provide vapor barrier protection, weather resistance, fire safety or damage resistance. These jackets speed application in the field. The new Self-Sealing Lap Jacket further simplifies installation and assures a moisture vapor barrier seal at the joints.

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LIBROGLAS

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moisture absorption
0.2% by volume - 9 in. x 12 in. x 1/2 in.

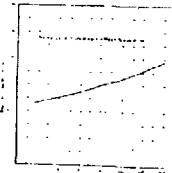
capillary
negligible (over 24 hours)

alkalinity
pH 7

specific heat
0.2 BTU/lb. °F

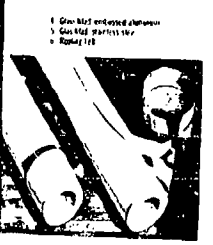
water absorption
not more than 0.5% by volume after 24 hours

thermal conductivity



mean temperature
30 50 100 150 200

specification compliance
Type I, Class 1 and 2
Type II, Class 1 and 2
Type III, Class 1 and 2
Type IV, Class 1 and 2



PIPE INSULATION SELECTION CHART—PLUMBING & MECHANICAL SYSTEMS

SERVICE REQUIREMENT	TEMPERATURE °F	JACKET AVAILABLE (RECOMMENDED IN BOLD FACE TYPE)	
		CONCEALED	EXPOSED
HOT PIPING			
Plumbing Domestic Hot Water Tempered Water	100-120 120-150	Pre-Set Glass Cloth—completely enclose pipe with jacket, pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.	Pre-Set Glass Cloth—pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.
Mechanical Heating Hot Water Steam and Condensate Cooling Water High Temperature Hot Water	150-200 200-250 250-300 300-350	FRG with Self Sealing Lap. FRG Glass Cloth—completely enclose pipe with jacket, pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.	FRG with Self Sealing Lap. FRG Glass Cloth—completely enclose pipe with jacket, pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.
COLD PIPING			
Plumbing Domestic Cold Water Cooling Water Rain Water Exposed	50-60 60-70 70-80	ADG or FRG with Self Sealing Lap. ADG Glass Cloth—completely enclose pipe with jacket, pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.	ADG or FRG with Self Sealing Lap. ADG Glass Cloth—completely enclose pipe with jacket, pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.
Mechanical Chilled Water—Primary and Secondary Cooling Water Refrigerant Suction	30-40 40-50 50-60	ADG or FRG with Self Sealing Lap. ADG Glass Cloth—completely enclose pipe with jacket, pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.	ADG or FRG with Self Sealing Lap. ADG Glass Cloth—completely enclose pipe with jacket, pre-set for joint form. Jacket must be properly fastened. Information: Pre-Set Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Standard Glass Cloth—also known as 18 mil polypropylene to secure joints of CSA Type 101.1, Type C. Also available with 24 mil polypropylene to secure joints of CSA Type 101.1, Type C.

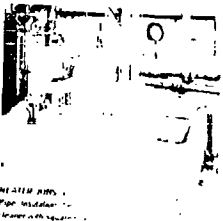
DESIGN CONSIDERATIONS

The only temperature range of Fiberglas Heavy Duty Pipe Jacket from one manufacturer to another is the mechanical and chemical resistance, not the thermal resistance. A selection of jackets mentioned in the manual is shown in the manual.

Self Sealing Lap on FRG (or FRG Jacket) is shown in the manual. The manual also shows a selection of jackets mentioned in the manual. The manual also shows a selection of jackets mentioned in the manual.

Pre-Set Glass Cloth (ADG) Jacket is shown in the manual. The manual also shows a selection of jackets mentioned in the manual. The manual also shows a selection of jackets mentioned in the manual.

ADG or FRG with Self Sealing Lap is shown in the manual. The manual also shows a selection of jackets mentioned in the manual. The manual also shows a selection of jackets mentioned in the manual.



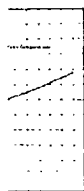
FRG WITH SELF SEALING LAP—insulated by the unique method eliminates the need for stitching bands and lap adhesives. The contact type adhesive offers a positive seal at all joints and speeds application. It's as easy as 1, 2, 3. (1) Start to peel the adhesive off the inner liner. (2) Apply to pipe and peel off the balance. (3) Press the adhesive into the pipe.

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Characteristics

and 95% CI

1. List of states is used



10. The following is a list of the items found in the box, Type II, Class 2 and 3:



... ..
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- 1 Standard Canvas
- 2 Pro Sized Glass Floor
- 3 Large Glass Box 9' in front



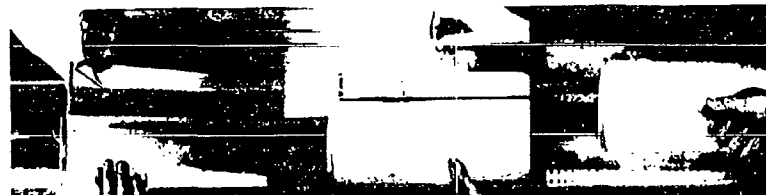
- Glass clad embossed aluminum
- Glass clad stainless steel
- Roofing felt



1. The defendant is not
2. The defendant is self-sufficient

[illegible]

SERVICE REQUIREMENT	TEMPERATURE °F	JACKETS AVAILABLE (RECOMMENDED IN BOLD FACE TYPE)	OUTDOORS	
		CONCEALED	EXPOSED	
HOT PIPING				
Permaning		Pre-Stressed Glass (PSG)—completely dry and sealed with factory-applied sealant. Used just after curing finished.	Pre-Stressed Glass (PSG)—pre-stressed surface eliminates field painting. May be left air or painted any color.	Glass-Kind—factory finished. All exterior aluminum or 200 stainless steel. Complete weathering (including Pittsburgh seam and built-in ridge) that leak and the weather. Built-in ridge are hardened with weather-resistant protected film release paper. Also available with 200 stainless steel conventional Pittsburgh seam, having a two inch overlap at the longitudinal seam and a 2" overlap at end joint.
Domestic Hot Water Tempered Water	110-180 180-230	Universal Fire Retardant—Type 1—used for use to 200 and below. Complies to requirements of CSA Spec. 301.1, Type C.	Concrete—4 or 6 in.—specially mixed and poured.	Roofing felt—available with a texture, applied 3/4 in. or 5/8 in., covering felt completely with rigid insulation. End joint steps required.
Mechanical		Standard Concrete Jacket—6 to 8 in.—provides base for painting. Meets 6 to 8 in. joints available.		
Heating Hot Water Steam and Condensate Fuel Oil Piping High Temperature Hot Water	150-210 210-250 250-350 250-350	FRJ with Self Sealing Lap—FRJ (Fire Retardant Jacket) is a laminate of multiple shell and foil reinforced with glass fibers, laminated with flame resistant, self-sealing requirements of CSA 301.1, Type A. Factors can be used on heated, and dual temperature forces up to 1500. End joint steps in clean end joints are furnished. Also available without the Self Sealing Lap feature.	FRJ with Self Sealing Lap—no further finish required. Near water attachment finish. Or may be painted with water based paint.	FRJ with Self Sealing Lap—no further finish required. Near water attachment finish. Or may be painted with water based paint.
			*May be furnished with field applied 6 in. concrete, string & paint.	
COLD PIPING				
Permaning		ABOVE 60° Universal Fire Retardant (UFR)—low smoke—4" vapor barrier designed for burning up along all joints and near electric requirements of CSA 301.1 Type C.	UFR—no further finish required. Near water attachment finish.	Glass-Kind—factory finished. All exterior aluminum or 200 stainless steel. Complete weathering (including Pittsburgh seam and built-in ridge) that leak and the weather. Built-in ridge are hardened with weather-resistant protected film release paper. Also available with 200 stainless steel conventional Pittsburgh seam, having a two inch overlap at the longitudinal seam and a 2" overlap at end joint.
Domestic Cold Water Chilled Drinking Water Rain Water Leaders	30-65 30-65 30-65	BELOW 60° FRJ with Self Sealing Lap—provides positive vapor seal for all cold and chilled water lines. FRJ (Fire Retardant Jacket) is a laminate of multiple shell and foil reinforced with glass fibers, laminated with flame resistant, self-sealing requirements of CSA 301.1, Type A. Factors, Laminated with flame resistant, self-sealing requirements of CSA 301.1, Type A. Factors can be used on heated, dual temperature and refrigerant lines from -20°F to 150°F. Built-in joints to clean end joints are furnished. Also available without the Self Sealing Lap feature.	FRJ with Self Sealing Lap—no further finish required. White appearance presents best finished job.	Roofing felt—available factory finish 3/4 in. or 5/8 in. to comply for complete with rigid insulation. End joint steps required.
Mechanical				
Chilled Water—Primary and Secondary Deep Temp Refrigerant Section	10-30 -20-30 -20-30			Note: All cold lines running outdoors require a vapor trapping system in addition to the factory applied vapor barrier of 1/2" thermal break film applied to the outside.



1. With SELF SEALING TAP installed by this unique method eliminates the need for slanting bands and lap adhesives. The contact type adhesive allows a positive vapor seal at all joints and speeds application. It's as easy as 1, 2, 3. (1) Start to peel the release paper off the vapor barrier. (2) Apply to pipe and peel off the release. (3) Press the tape

placed at the center and, pressing hard, would force the air out and push with the blunt edge of a knife. End joints are sealed with a 1/2" wide strip of the White Self Sealing nonporous material.

DESIGN CONSIDERATIONS

The wide temperature range of Densglas Plus Density Pipe Installation permits the specifier to select material from one manufacturer to 240-21 at the mechanical and plumbing system installation requirements, concealed, exposed, outdoors, hot or cold. A selection of joints furnished to end user and factory applied to the installation assures maximum performance at the most economical cost.

Self Sealing Tap on FMI (Fire Retardant Insulated) Insulation provides a secure seal and serves to hold the insulation in place. This technology is ideal for companies in which chemical bonding is a great time and money saver and holds the insulation in place. The bond also becomes stronger with age. Built upon stages of the same chemical are used on the road joints. The use of slip-stitching and epoxy adhesives are eliminated and the associated problems of fire-retardant and other application effects are added. FMI Self Sealing Tap is fire-retardant, provides a neat and appearance and a great time and money saver.

Pre-Etched Glass Cloth Jacket of factory applied to Fibreglass Downy Pipe Insulation is completely fire safe
resistant for heated lines. No lagging is required before painting. The jacket is tough, scuffs, scratches and will
not rub off in use. UL tests show it is a Heavy Specialized 18. Fuel Consumption 0.5000 (lb/hr/ft²) (1)

Universal Fire Retardant Jacket, applied to 1" and 1 1/2" thickness provides a fire resistive economical solution for cold storage plumbing and condenser. The vapor barrier characteristics are adequate for use on cold water service lines down to 50°F. For solder lines, from - 60 to - 200, FRJ is required.

filings for cold lines are insulated with rotated segments, or pre-rotated fiberglass filings which is subsequently wrapped with glass fabric and coated with vapor barrier mastic. For hot lines the lining is cold smooth with an outer layer (insent, cement and seal).

1 foot plus 4 1/2 not bare, not in shorts. With the addition of FRG or Pre Sized Glass Cloth (Jacket) the resolution is completely safe.

The exceptional low factor means maximum economy and performance for all piping systems conceived, as stated by authors.

7/10/1987

291311

COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN

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"CHANGE OF ADDRESS" CARD COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN

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Title _____

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recommended thickness
cold piping & dual-temperature (minus 60 to 200F) (90F ambient air)

pipe outside diameter	10% relative humidity										30% relative humidity									
	40 F	32 F	24 F	16 F	8 F	-8 F	-16 F	-24 F	-32 F	-40 F	40 F	32 F	24 F	16 F	8 F	-8 F	-16 F	-24 F	-32 F	-40 F
insulation thickness	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches
pipe class	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
1	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
2	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
3	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
5	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
6	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
7	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
9	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
10	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
11	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
12	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
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18	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
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27	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
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35	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
36	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
37	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
38	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
39	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
40	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4

Minimum thickness of insulation is 1/2 inch for 1/2 inch pipe, 3/4 inch for 3/4 inch pipe, 1 inch for 1 inch pipe, 1 1/4 inch for 1 1/4 inch pipe, 1 1/2 inch for 1 1/2 inch pipe, 2 inch for 2 inch pipe, 2 1/2 inch for 2 1/2 inch pipe, 3 inch for 3 inch pipe, 3 1/2 inch for 3 1/2 inch pipe, 4 inch for 4 inch pipe.

OWENS-CORNING FIBERGLAS CORPORATION
Industrial and Commercial Division 717 Fifth Avenue, New York, New York 10022
General Offices, Toledo, Ohio 43601

OWENS-CORNING FIBERGLAS

plumbing piping systems 1.2
mechanical piping systems 2.2
January 1969
Pipe Insulations



One-Piece Pipe Insulations

A versatile, efficient, quick applying pipe insulation for hot and cold piping from -30F to 400F.

uses

Fiberglas One-Piece Pipe Insulation is adaptable to all types of piping systems operating at temperatures from -30F to 400F. It is available with a variety of factory-applied jackets for appearance, vapor barrier, fireproofing or waterproofing to permit selection of the right combination of insulation and jacket for the service condition requirement.

description

Fiberglas One-Piece Pipe Insulation is a resilient light-weight pipe insulation molded from fine glass fibers in cylindrical form. A single longitudinal seam, which is opened to apply to the pipe, springs closed when in place. It is available with a variety of factory-applied jackets for appearance and function.

benefits

mechanical application—One-piece unit is applied quickly, easily, even in the larger sizes easy fabrication—Only a knife is needed for fabrication of the most intricate fittings.
efficient—Because of its very low k factor, it is possible to reduce the thickness of insulation to provide thermal efficiency equivalent to other non-fiberglass materials with savings in material costs. Conversely, the same thickness of One-piece provides better thermal efficiency, which results in savings in operating expense due to reduction in heat loss.
permanent—Completely U.L. rated—Inorganic

glass fiber construction will not shrink, rot or cause metal corrosion.
multi-purpose—The variety of applications means less inventory. A selection of factory-applied jackets are available for surface finish, vapor barrier, weather protection, fire proofing or damage resistance. The new Self-Sealing lap jacket speeds application in the field and assures a positive vapor barrier.
damage resistant—The resilient glass fibers spring back when bumped, and One Piece will not break if accidentally dropped during installation.

© U.S. Pat. O.C.F. Div.

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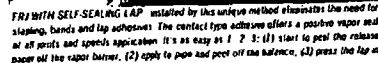
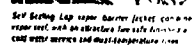
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you 10, Class 12



Caution: Oxygen-Curing Formulas Installation are to be applied only with approved solvents, methods and mechanical fastening devices as published in Auxiliary Materials Ltd. Pub. No. 4-1013030. Oxygen-Curing Formulas accept no responsibility or liability for the performance of materials other than those listed in the list of materials approved in writing by D-CF Test Laboratories.



place at the center and, pressing hard, work out toward the end. Rub with the blunt edge of a knife. End joints are sealed with a 3" wide self-stick of the same Self-Seal-
more barrier material.

COMMERCIAL & INDUSTRIAL ISULATION SYSTEMS' MANU

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and "Fiberglas" Fiberglas will keep your re
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COMMERCIAL & INDUSTRIAL
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NAME

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CITY

STATE

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performance characteristics

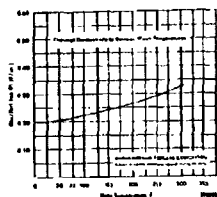
moisture absorption: 0.2% by volume 15 hrs
at 120°F and 95% RH

specific heat: 0.20 Btu/lb. F.

shrinkage: None

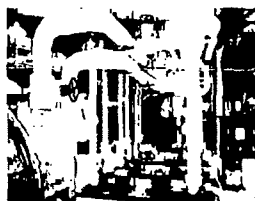
alkalinity: pH

thermal conductivity: Unusually low thermal
conductivity shown on chart



mean temperature
150
400
0.71

specification complies:
NHL-552 Type I Class A and B
NHL-558a Form D, Type III, Class 12
NHL-562 Type II
NHL-57244B (Shops)



Heat Finished Appearance on the wall insulated chiller water
system is one of the reasons why One-Piece Pipe Ins. is
is used widely in equipment rooms



1. Standard Curve



2. Rolling Fit



3. FRI
4. FRI with Seal-Striping Lip



Seal Striping lip has a strong
resist seal with on the
low water service and is

recommended thickness

based piping to 450° (90° ambient air)

pipe temp. temp. diff. (°F)	200 120			300 220			400 320		
	RT	HL	ST	RT	HL	ST	RT	HL	ST
15	1	13	91	1	24	101	1 1/2	27	100
30	1	15	94	1	29	106	1 1/2	42	104
45	1	16	97	1	30	107	1 1/2	42	104
60	1	17	98	1 1/2	27	95	1 1/2	45	104
75	1	18	99	1 1/2	31	96	1 1/2	50	104
90	1	19	100	1 1/2	36	97	1 1/2	56	104
105	1 1/2	24	91	2	35	95	2	60	104
120	1 1/2	25	90	2	39	94			
135	1 1/2	31	92	2	47	96			
150	1 1/2	30	90	2	47	94			
165	1 1/2	34	92	2	50	97			
180	1 1/2	38	91	2	60	95			
195	1 1/2	29	88	2	56	94			
210	1 1/2	41	91	2	74	95			
225	1 1/2	50	91	2	76	95			
240	1 1/2	50	91	2	80	96			
255	2	40	88						
270	2	50	89						
285	2	62	89						

Specify Fiberglas Heavy Density Pipe Insulation
for thickness above 2".

RT-recommended thickness (inches) HL-heat loss ... BTU/hr./sq.ft. ST-surface temperature (°F)

cold and dual-temperature lines (40°F at 90% R.H.)

pipe surface temperature	50 F or above		40 F to 35 F		34 F to 0 F		0 F to -24 F	
	RT	HD	RT	HD	RT	HD	RT	HD
1/2	1/2	4	1/2	5	1	8	1 1/2	8
3/4	1/2	5	1/2	6	1	9	1 1/2	10
1	1/2	6	1/2	7	1 1/2	8	1 1/2	11
1 1/4	1/2	7	1/2	8	1 1/2	9	1 1/2	12
1 1/2	1/2	8	1/2	9	1 1/2	10	1 1/2	13
2	1/2	10	1/2	11	1 1/2	12	1 1/2	15
2 1/2	1/2	12	1/2	13	1 1/2	15	2	15
3	1/2	11	1/2	15	1 1/2	16	2	17
3 1/2	1/2	12	1	12	1 1/2	18	2	19
4	1/2	13	1	14	1 1/2	18	2	20
4 1/2	1/2	14	1	15	1 1/2	22	2	23
5	1/2	15	1	16	1 1/2	23	2	25
6	1/2	17	1	22	1 1/2	25	2	26
7	1	18	1	25	1 1/2	28	2	29
8	1	20	1	27	1 1/2	31	2	32
9	1	22	1	29	1 1/2	34	2	35
10	1	25	1	32	1 1/2	36	2	38
11	1	25	1	34	1 1/2	39	2	41
12	1	26	1	35	1 1/2	43	2	44

RT-recommended thickness (inches) HD-heat gain

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN

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Manual for

over 100 out the "Fiberglas" card and
why Owens Corning Fiberglas will keep you at
all the rest and called attention to
the fact that it is "Durable of 100
1% more at 1/2 your cost."

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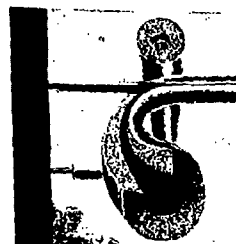
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OWENS CORNING
FIBERGLAS

plumbing systems 1,2
mechanical piping systems 3,4
October, 1968

Piping Insulations



O-C Flexible Tubing and Sheet Insulation

a flexible foamed plastic insulation for hot
or cold copper tubing and iron pipe
operating at temperatures from -50° to 220°F.

uses

O-C Flexible Tubing is recommended for use on cooling and heating
water lines, chilled drinking water and refrigerant suction lines. The
flexible feature of this resilient insulation allows it to conform to
partial bends. Available unsilt to slide over tubing or pipes before
they are installed, or, silt to apply over piping already in place.

description

O-C Flexible Tubing insulation is made from an expanded elastomeric
plastic blend. Millions of tiny cells, each filled with an inert gas,
make this product an extremely efficient insulator. It is resilient and
soft, returning to full thickness after being compressed. The testing
surface is powdered to make it easy to slip over the pipe or tubing.

benefits

Efficient—a low thermal conductivity of 0.25 at
70° mean temperature assures minimum heat
loss or gain—maximum performance of equip-
ment.

Built-In Vapor Barrier—the closed cell struc-
ture eliminates the need for a separate vapor
barrier and protects against moisture conden-
sation on cold lines.

Uniform Thickness—strict quality control as-
sures constant diameters and thicknesses, pro-
viding a snug fit on the pipe, and smooth butt
joints.

Fast Application—available in two forms, silt
and unsilt. Means faster application. No bond-
ing required. The unsilt material slips over
gradual bends with ease.

Broad Uses—temperature range from -50° to
220°F makes possible insulation of most lines
commonly used in commercial heating and air
conditioning.

Flexible and Resilient—designed for excep-
tional ease of handling. It is so flexible it can
be tied in knots—so resilient it springs back to
original shape when untied. Resists mechan-
ical abuse. Softer for winter flexibility and ease
of application.

OWENS-CORNING FIBERGLAS CORPORATION
Fiberglas Division, 217 North Avenue, New York, New York 10022



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Litho in U.S.A. for 1968

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MANU

A complete copy of the Fiberglas Manual is available for your information.

See all the "Fiberglas" card and copy. Copying Fiberglas will keep you up to date on all the latest information. Also, note that a "Change of Address" is to advise us of your address changes.

RANGE OF ADDRESS" CAN COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MANU

NAME _____
FIRM _____
TITLE _____
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CITY _____
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performance characteristics

density, lbs./cu ft. (avg.).....	6½	water vapor transmission, perm-in.....	less than 0.05
thermal conductivity (8 in./sq. ft.-hr/°F)		maximum temperature limit continuous use F.....	-50° to 220°
70°F mean temperature.....	0.26	fire rating per ASTM D-635.....	Self extinguishing
90°F mean temperature.....	0.27	ozone resistance.....	Good
water absorption, % by volume (ASTM D1056).....	0.5	odor.....	Extremely low level

Recommended Thicknesses

	DESIGN CONSIDERATIONS*	PIPE SIZE	O-C Flexible Tubing Thicknesses for Line Temperatures		
			50 F	21 F	0 F
PIPE	Thickness of insulation on boiler piping varies in proportion to pressure, up to 150 and 150, 0.8. Typical of pipe thicknesses, not an absolute value, are used.	1" - 24" 2" 175 Over 2" 175 - 24" 175	Min. 1 1/2" Max. 1 1/2"	Min. 1 1/2" Max. 1 1/2"	Min. 1 1/2" Max. 1 1/2"
NOBILITE	Thickness of insulation on boiler piping varies in proportion to pressure, up to 150 and 150, 0.8. Typical of pipe thicknesses, not an absolute value, are used.	1" - 24" 2" 175 Over 2" 175 - 24" 175	Min. 1 1/2" Max. 1 1/2"	Min. 1 1/2" Max. 1 1/2"	Min. 1 1/2" Max. 1 1/2"
SEVERE	Thickness of insulation on boiler piping varies in proportion to pressure, up to 150 and 150, 0.8. Typical of pipe thicknesses, not an absolute value, are used.	1" - 24" 2" 175 Over 2" 175 - 24" 175	Min. 1 1/2" Max. 1 1/2"	Min. 1 1/2" Max. 1 1/2"	Min. 1 1/2" Max. 1 1/2"

*For information on installation, see Manual and contact nearest Owens-Corning Fiberglas Division for more complete information.

flexible tubing sizes

pipe sizes (IPS) 1/2" to 4"
copper tubing (CT) 1/2" O.D. - 3/4" O.D.
wall thickness—mils (nominal) 5/16", 3/8", 1/2", 5/8"
inside diameters—mils 3/8" to 1 1/2"
Up to 2" IPS and CT only

Length of Sections
Standard Canon
Made to order

6 Feet
Any length
Cut lengths up to 75 ft.

flexible sheet sizes

Standard size—24" x 72"
Sheet thickness—5/16", 3/8", 1/2", 5/8", 1"
continuous roll—5/16" x 24" x 150'
3/8" x 24" x 120'
1/2" x 24" x 75'

specification compliance

ISO-1 (D251)
MIL-P-15789 D

application

Insulation can be slipped over pipe or tubing before installation or snapped over piping already connected. All joints are sealed with O-C 500 adhesive. Paint both edges of slit as porous surfaces of tubing require it for firm bond. This insulative adhesive forms a strong resilient bond which grows stronger with age. It is water and oil resistant.

Flexible tubing insulation can be slipped right over copper tube fittings. Cast bronze fittings or fittings on iron pipe can be "sleeved" with a larger diameter of insulation sealed over the covering on the pipe and adhered with O-C 500 adhesive. O-C Flexible Tubing Insulation should be protected from the weather or have running outdoors with: Omajonite (Foster's RI 51 55), Insul-Corcrete (YAC 550) or Alkali-Catalyzed Rubber Paint or Plexiglas 702 protective coating.



OWENS-CORNING FIBERGLAS

climbing systems 1.5
mechanical equipment 2.2
air handling systems 4.4
power & process equipment 5.1
roads & tanks 7.2
boilers & chimneys 8.5
January, 1969

Equipment Insulation

Industrial Insulation 700 Series

a highly versatile group of Fiberglas insulating boards designed to insulate ductwork and equipment operating at temperatures up to 450°F.

uses

description

The 700 Series boards have been designed primarily to insulate heating and air conditioning ducts, ovens, tanks, boilers, hot water generators and other hot equipment.

type 700—a low cost flexible material suitable for resurfacing factory-fabricated metal panels and for packing into irregular spaces

type 701—A lightweight resilient insulation, in board form, used on vessels having irregular surfaces where the exterior finish is supported by welded studs, pins or other mechanical attachments

type 702—More rigid than 701 and is recommended for use on equipment and ductwork subject to minimum maintenance and construction abuse

type 703—A semi-rigid board recommended for use on equipment, vessels and air conditioning ductwork.

Fiberglas® 700 Series Industrial Insulations are made of inorganic glass fibers pre-formed into semi-rigid to rigid rectangular boards of varying densities. The series consists of Type 700, 701, 702, 703, 704 and 705. Each type has specific thermal and physical characteristics which make it suitable for the uses described. Type 703, 704 and 705 are available with a variety of factory-applied vapor-barrier facings to prevent condensation on cold surfaces and to provide a neat finished appearance. Fire Retardant facings are available

type 704—A rigid board recommended for use on heating and air conditioning ductwork in exposed areas where sharp, true corners and smooth surfaces are desired.

type 705—A rigid board with very high strength characteristics for use on chillers, hot and cold equipment, heating and air conditioning ductwork where greater abuse resistance and good appearance is required.

benefits

lower operating costs—the exceptional thermal efficiency of Fiberglas 700 Series Insulations lowers operating costs.

end-use tailored—a variety of densities and facings offers a selection of products to meet specific performance and economic requirements.

continuous in-place performance—700 Series resists

damage, maintains structural integrity and efficiency. Thickness stays uniform.

neat, finished appearance—the boardlike character of the heavier density 703, 704 and 705 products provides neat square corners. The factory-applied facings present an attractive finished appearance.

fire safe—Fiberglas is inherently fire safe. The unfaced boards and the Marmulux Foil Faced 703, 704 and 705 have UL Flame Spread ratings of less than 25.

*Fiberglas, Owens-Corning Corp.

OWENS-CORNING FIBERGLAS CORPORATION

One of the world's largest commercial construction materials companies, 717 Fifth Avenue, New York, New York 10022
Regional Offices: Atlanta, Ga. 43401

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MANUAL

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copy. Copy the card and keep your re-
ad type card and contact information for
use. Note also that a "Change of Add-
ress" is advised as it may change.

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performance chart

sound absorption coefficients (2" thick 95 mounting)

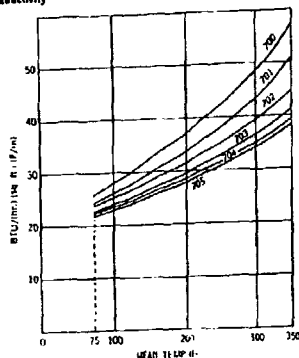
TYPE	125	250	500	1000	2048	4000	NRC
701	.34	.70	.96	.97	.86	.83	.87
702	.28	.77	.96	.94	.87	.85	.89
703	.32	.74	.97	.98	.88	.85	.91
704	.27	.79	.98	.99	.90	.86	.92
705	.48	.82	.97	.99			

size and density

Type	Density (pcf)	Thickness (inches)	Compressive strength (psi at 1% deflection)	Standard Size	Time to set (min)
700	1.88	1"-4"	31		0.260
701	1.58	1"-4"	4.51	24" x 48"	0.242
702	2.25	1"-3"	9.51		0.235
703	3.00	1"-2"	100		0.230
704	4.20	1"-2"	200		0.230
705	6.00	1"-2"	350		0.220

*For special applications, boards up to 48" x 96" are available. Other compression strengths.

thermal conductivity



moisture absorption
bacteria and fungus resistance
odor
humidity and temperature effect
corrosion

less than 0.2% by volume
does not breed nor promote
odorless
cycling conditions and moisture vapor or condensing
does not accelerate corrosion of copper, steel or aluminum.

facings

Type 701, 704 and 705 are also available with the following

factory applied vapor barrier facings:

15 — 305 aluminum foil (N.Rated)
15X — For reinforced lead
SF — Duplex Laminated lead

fire hazard classification

	Unfaced (701, 704, 705)	Unfaced (702, 703, 704, 705)	Unfaced (701, 704, 705)
Flame spread	15-20	15	15-30
Smoke developed	10-15	15	15-35
Smoke developed	0-20	0	0

(compared to untreated Red Oak at 100)

application recommendations

Type 700, 701, 702 — Lightweight unfaced flexible insulations
in board form for use on nearly any irregular surface
where the surface is supported by rigid studs or stiffened
and not by the insulation itself. The products are self-sup-
porting but are generally secured with mechanical fasteners
and protected by sheet metal.

Type 701, 704, 705 — These board insulations are normally
installed on welded plate on flat surfaces. They are cut in
segments and bonded in place on irregular surfaces. Unbonded
boards are normally finished with laminated metal or coated
or weatherproof plastic. Faced boards, with joints taped to
provide a continuous vapor barrier, may be left unfinished
or may be painted.

recommended thickness — heated equipment

Temp. (°F)	Type 701			Type 702			Type 704		
	RT	HL	ST	RT	HL	ST	RT	HL	ST
100	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
200	2	2	2	2	2	2	2	2	2
300	3	3	3	3	3	3	3	3	3
400	4	4	4	4	4	4	4	4	4

RT — recommended economic thickness, inches
HL — heat loss (Btu/ft²·hr)
ST — surface temperature (°F)

thickness to prevent condensation
solid ducts and equipment

The following chart indicates the recommended thickness
of Type 701, 704, 705 Faced Duct Insulation for installation
on cold or ducts at various temperature differences (duct
to air). Also shown are values for heat gain and approximate
maximum relative humidity allowable.

Temperature Difference	Recommended Thickness (inches)	Heat Gain Btu/ft ² ·hr	Permissible Relative Humidity
70	1 1/2	5.1	80%
75	1 1/2	6.4	87%
80	1 1/2	7.7	94%
85	1 1/2	9.0	100%
90	1 1/2	10.3	100%
95	1 1/2	11.6	100%
100	1 1/2	12.9	100%

specification compliance

ASTM A-542, Type I	700
ASTM A-542, Type II	701, 702, 703
ASTM A-542, Form A, Class 1	702, 703, 704, 705
ASTM A-542, Form A, Class 2	703, 704, 705
ASTM A-542, Form B, Type 1, Class 1	701, 702, 703
ASTM A-542, Type 1, Class 2	703, 704, 705
ASTM A-542, Type 1, Class 3	701, 702, 703
ASTM A-542, Form C & D, Class A	703, 704, 705
ASTM A-542, Form C & D, Class B	703, 704, 705
ASTM A-542, Form C & D, Class C	703, 704, 705
ASTM A-542, Form C & D, Class D	703, 704, 705
ASTM A-542, Form C & D, Class E	703, 704, 705
ASTM A-542, Form C & D, Class F	703, 704, 705
ASTM A-542, Form C & D, Class G	703, 704, 705
ASTM A-542, Form C & D, Class H	703, 704, 705
ASTM A-542, Form C & D, Class I	703, 704, 705
ASTM A-542, Form C & D, Class J	703, 704, 705
ASTM A-542, Form C & D, Class K	703, 704, 705
ASTM A-542, Form C & D, Class L	703, 704, 705
ASTM A-542, Form C & D, Class M	703, 704, 705
ASTM A-542, Form C & D, Class N	703, 704, 705
ASTM A-542, Form C & D, Class O	703, 704, 705
ASTM A-542, Form C & D, Class P	703, 704, 705
ASTM A-542, Form C & D, Class Q	703, 704, 705
ASTM A-542, Form C & D, Class R	703, 704, 705
ASTM A-542, Form C & D, Class S	703, 704, 705
ASTM A-542, Form C & D, Class T	703, 704, 705
ASTM A-542, Form C & D, Class U	703, 704, 705
ASTM A-542, Form C & D, Class V	703, 704, 705
ASTM A-542, Form C & D, Class W	703, 704, 705
ASTM A-542, Form C & D, Class X	703, 704, 705
ASTM A-542, Form C & D, Class Y	703, 704, 705
ASTM A-542, Form C & D, Class Z	703, 704, 705

ASTM A-542, Form C & D, Class A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

limitations

Industrial insulation 700 series, plain, should not be used on
surfaces operating at temperatures above 450°F. Types 701,
704, 705 faced products should not be used on surfaces op-
erating at temperatures greater than 250°F except that FF may
be used at a maximum thickness of 2 1/2 inches up to 450°F.

caution

Owens-Corning Fiberglas insulations are to be applied only
with approved adhesives, mastics and mechanical fasten-
ing devices as published in Accessory Materials List. Fasten-
ing devices as published in Accessory Materials List, except no respo-
nsibility of liability for the performance of materials other
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ing Laboratories.

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Pub. No. 1 IN-2813 K

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Listed in U.S.A. Jan. 1969

OWENS-CORNING
FIBERGLAS



Kaylo & Kaylo 20 Block Insulation

rigid calcium silicate insulation for
all types of hot equipment operating at
temperatures up to 1800°F.

uses

Kaylo® Block is for use on indoor or outdoor equipment operating at temperatures up to 1800°F. Kaylo block is ideally suited for use on stainless steel vessels and equipment as it helps inhibit stress corrosion cracking. Typical applications are for boilers, breeching, tanks, vessels. Kaylo Block is white in color.

Kaylo 20* with its high temperature limit of 1800°F extends its use to include refractory wall backing for furnaces and boilers and fireproofing of equipment and vessel shells.

description

Kaylo and Kaylo 20 Block Insulations are rigid hydrous calcium silicate heat insulations reinforced with asbestos fibers. They are strong, efficient and are highly resistant to abrasion and moisture damage. Kaylo 20 has a slightly pink color to distinguish it from Kaylo.

benefits

high thermal efficiency—both Kaylo and Kaylo 20 offer excellent thermal efficiency coupled with high strength. A low k of .40 for Kaylo and .52 for Kaylo 20 at 200°F mean temperature proves that Kaylo will provide significant savings in operating costs over the life of the equipment.

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

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

will not cause stress corrosion cracking—Kaylo will not cause stress corrosion cracking of stainless steel because Kaylo contains less than 200 ppm soluble chlorides as well as an inhibitor which prevents trace quantities of chlorides from the

atmosphere or other sources from causing cracking and possible failure of piping and equipment.

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

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

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

*Kaylo is a registered trademark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corp.

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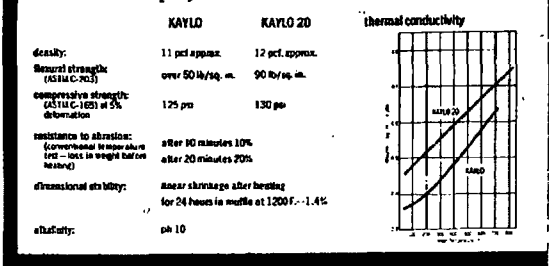
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performance characteristics



economic thickness*

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

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

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

economic thickness - Kaylo block to 1200 F. - ambient still air 80 F

Thick	200 F	300 F	400 F	500 F	600 F	700 F	800 F	900 F	1000 F	1100 F	1200 F
1.600	35	103	72	124	109	147					
1.500	27	96	61	111	98	131	145				
2.000	21	90	48	104	60	117	83	130	107	145	
2.500	17	90	33	100	49	110	68	121	87	123	146
3.000	14	89	28	97	42	105	57	115	74	125	148
3.500	13	88	24	95	36	102	49	110	64	119	150
4.000	11	87	21	93	32	99	44	107	58	114	152
4.500	10	86	19	91	28	97	39	104	54	111	153
5.000	9	85	17	90	25	96	35	102	49	108	154
5.500	8	84	16	89	23	94	32	100	45	106	155
6.000	7	83	14	88	22	93	30	98	42	104	156

*Tabulated

Kaylo 20 Block to 1800 F. - ambient still air 80 F

Operating Temp. F	ET	Power	HL	ST	Process	HL	ST
1300	7%	111	134	6	135	148	
1400	8	117	139	6%	143	152	
1500	8	123	142	7	151	155	
1600	8%	129	145	7	158	159	
1700	9	135	148	7%	165	163	
1800	9%	141	151	7%	172	166	

specification compliance

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

AK-1-2819c Insulation Block, Thermal, Class 1, 2, and 3, ASTM C533-67.

AK-1-24244 (ships) Insulating Materials, Thermal, with Special Corrosion and Chloride Requirements (Kaylo only), type 3A, 3B.



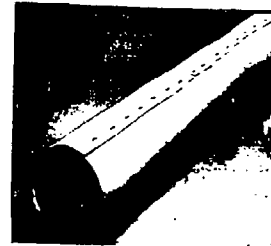
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Industrial and Commercial Construction Materials Division
717 First Avenue, New York, New York 10022 - General Offices, Toledo, Ohio 43601

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OWENS CORNING FIBERGLAS



Fiberglas 25 H-P Pipe Insulation System

A noncombustible pipe insulation system
for hot service piping operating
at temperatures up to 450° F.

uses

Recommended for use on all heated piping operating at temperatures up to 450° F. where a complete noncombustible insulation system is desired, for commercial and institutional buildings, schools, hospitals and places of public assembly. Also recommended for processing lines where fire safety is a paramount criterion.

description

Fiberglas 25° H-P Pipe Insulation System is composed of Fiberglas Heavy Density Sectional Pipe Insulation Jacketed with a white pre-sized glass cloth jacket. Longitudinal jacket flaps are secured with flare-door staples. End joints are closed with a glass cloth tape stapled firmly in place.

benefits

fire safety - a complete insulation system with a UL rating including pipe fittings, and aesthetic when installed in accordance with recommended procedures.

damage resistant - the extra heavy density pipe insulation and extra tough woven glass cloth jacket resists damage on exposed lines.

ready for painting - factory pre-sized glass cloth jacket and matching tape and mastic systems do not require field sizing. If desired, painting may be omitted. "See Application Recommendations."

lower operating cost - the exceptional thermal efficiency of Fiberglas Heavy Density pipe insulation contributes to lower operating cost of heating equipment and piping.

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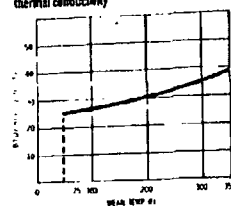
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performance characteristics

Insulation
dimensional stability:
will not warp, shrink, rot or decompose
specific heat:
0.20 Btu/lb. f.
vermin and rodent resistance:
provides no sustenance
temperature fluctuation:
resists down to 450°
chemicals:
ph 9
stress corrosion:
will not cause stress corrosion cracking
of stainless steel

thermal conductivity



Jacket
performance:
is fire resistant. Will not rot or shrink.
Vermin and rodent proof.
burst strength:
exceptional glass cloth strength
exceeds that of canvas
Pre-sized 8 or
Glass Cloth 211 psi
100 psi

fire hazard classification

Maximum Fire Hazard Classification for building materials
and insulations as noncombustible has been established
as follows:

	Acceptable
Flame Spread	25
Fuel Contributed	50
Smoke Developed	50

Fiberglas 25 H.P. Insulation System, including fittings, is
below the maximum allowable. This is your assurance that
you can specify and use Fiberglas 25 H.P. Pipe Insulation
System without the danger of contributing to the spread of
fire or that combustion will liberate excessive smoke. The
system has been designed to meet the stringent fire safety
requirements of the GSA and Corps of Engineers.

Underwriters Laboratories
(Pipe & Equipment Coverings R5583 40 U B 15)

	Fiberglas 25 H.P. Pipe Insulation System
Flame Spread	20*
Fuel Contributed	15
Smoke Developed	20

*Note: This rating is for the use
of Fiberglas in a piping system
as used.

**Note: This rating is for the use
of Fiberglas in a piping system
as used.

finish

The factory pre-sized white finish eliminates the necessity
of sizing the jacket before painting and the neat white sur-
face may be left unpainted if desired. Filling finish is also
compatible with the insulation jacket. If painting is re-
quired, Glidden acrylic latex paint (No. S370) is approved
for use.

application recommendations

Fiberglas 25 H.P. Insulation System is installed on the pipe
by stapling the longitudinal jacket flap securely with flare-
door staples on 2" centers. End joints are closed by wrap-
ping with factory-furnished pre-sized glass cloth tape
stapled in place.

Fittings are insulated with Fiberglas molded or segmental
insulation and wrapped with O-CF Joint Sealing Tape, Type
H. The wrapping is subsequently coated with O-CF Fitting
Mastic, Type H or Benjamin Foster 90-56.

federal specification compliance

Fiberglas 25 H.P. Pipe Insulation System meets the re-
quirements of Federal Specifications, HH-158a Form
D, Type III, Class 12
ASTM C547

recommended thickness

selection of an insulation thickness for any specific applica-
tion should take into consideration the following important
criteria: 1. Cost of insulation applied, 2. Cost of heat energy,
3. Cost of capital, 4. Cost of depreciation plant and insula-
tion, 5. Capital investment in heat protection equipment,
6. Temperature differential, 7. Size of the pipe surface.

8. Conductivity of insulation.

The thicknesses shown in the table, below, are based on the
optimum balance of these considerations for selecting an in-
sulation thickness for performance and economy.

recommended thickness—based piping to 450° (90° Ambient still air.)

Pipe Temp. Temp. (°F)	200 120			300 220			400 320			450 370		
PS	RT	HL	ST	RT	HL	ST	RT	HL	ST	RT	HL	ST
1/4	1	19	105	1/4	34	125	1	39	115	1	47	129
1/2	1	22	107	1	29	105	1	45	122	1	56	131
1	1	25	107	1	30	102	1	48	117	1	60	129
1 1/2	1	20	85	1	37	108	1	62	125	1	75	135
2	1	21	83	1	39	106	1	63	121	1 1/2	82	112
2 1/2	1	24	94	1	45	106	1	73	122	1 1/2	94	115
3	1	28	94	1 1/2	60	101	1 1/2	74	113	1 1/2	88	121
3 1/2	1	32	94	1 1/2	50	101	1 1/2	76	110	1 1/2	93	116
4	1	30	95	1 1/2	56	103	1 1/2	94	111	1 1/2	114	118
4 1/2	1	39	98	1 1/2	57	101	1 1/2	94	112	1 1/2	114	118
5	1	38	95	1 1/2	72	104	1 1/2	110	115	1 1/2	148	121
6	1	50	98	1 1/2	70	100	1 1/2	114	115	1 1/2	148	121
7	1	57	97	1 1/2	85	101	1 1/2	128	115	2	125	110
8	1	62	96	1 1/2	90	100	1 1/2	142	110	2	135	108
9	1	68	96	1 1/2	100	101	2	125	107	2	164	111
10	1	80	97	1 1/2	110	101	2	138	105	2	174	111
11	1 1/4	69	91	1 1/2	110	101	2	145	105	2	180	111
12	1 1/4	64	91	1 1/2	120	101	2	168	106	2	194	111
13	1 1/2	80	95	1 1/2	149	107	2	171	105	2	200	112
14	1 1/2	92	92	1 1/2	131	110	2	180	108	2 1/2	195	107
15	1 1/2	93	92	2	133	97	2 1/2	181	103	2 1/2	225	106
16	1 1/4	101	92	2	148	97	2 1/2	204	103	2 1/2	248	106
18	2	110	92	2	162	97	2 1/2	222	103	2 1/2	271	106
20	2	131	93	2	194	98	2 1/2	266	104	2 1/2	320	109
24	2	132	92	2	257	98	2 1/2	323	103	2 1/2	381	105

RT—recommended thickness HL—heat loss, Btu/hr./ft. ST—surface temperature (°F) HD—heat gain

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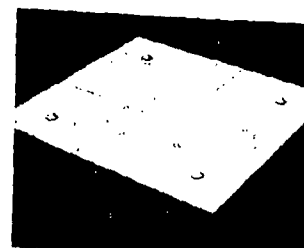
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1-1 and Commercial Construction Div., 35 Division
1000 East Main Street, New York, New York 10022 • General Office, Toledo, Ohio 43601

OWENS-CORNING FIBERGLAS



Fiberglas 25 H-E Equipment Insulation System

A noncombustible rigid board insulation system for hot service ducts and equipment operating at temperatures up to 450° F.

uses

Recommended for use on all hot mechanical equipment and ductwork operating up to 450° F., where the ultimate in noncombustibility is desired.

description

A Fiberglas 25° H-E Equipment Insulation System for heated surface service consists of a rigid insulation board of glass fibers faced with a noncombustible pre-sized Fiberglas cloth. Other components of the system include a noncombustible pressure sealing joint tape and pre-finished metal fastener caps attached to welded pin anchors.

benefits

Fire safety—a complete insulation system with UL rating on board, facing, joint tape, fastening device.

Damage resistant—the tough finely woven glass cloth facing resists damage and the rigid insulation board absorbs most impact blows without damage.

Ready for painting—the pre-sized white glass cloth facing, matching tape and fastener caps do not require flat sizing prior to painting. If painting is required, use recommended paint.

Lower operating cost—the uniform, factory controlled board thickness assures consistent thermal efficiency performance.

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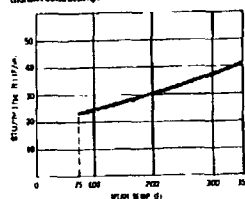
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performance characteristics

dimensional stability:
will not warp, shrink, rot or decompose
vermin and rodent resistant
provides no sustenance
Rains hazard classification:
Flame Spread 25
Fuel Contributed 10
Smoke Developed 50
Temperature Limitations:
recommended for heated surfaces
when temperatures do not exceed
450°F
Jacket burst strength:
300 psi

thermal conductivity



sizes
Width 24", Length 48", Thickness 1", 1 1/2", 2".

fire hazard classification

Maximum Fire Hazard classification for building materials
and insulation as noncombustible has been established as
follows:

	Acceptable
Flame Spread	25
Fuel Contributed	10
Smoke Developed	50

Fiberglas 25 H-E Insulation System, including fittings, per-
forms below the maximum allowable. This is your assur-
ance that you can specify and use this system without the
danger of contributing to the spread of fire or that com-
bustion will liberate excessive smoke. The system has been
designed to meet the stringent fire safety requirements of
GSA and Corps of Engineers.

Underwriters Laboratories
(Pipe & Equipment Coverings R5583 40 U.S. 15)

	*Fiberglas 25 H-E Insulation System
Flame Spread	25
Fuel Contributed	10
Smoke Developed	50

*Note: This rating is for the composite product and includes the use of
O-CF Tape or Joint Sealing Tape if materials and application conform
to these recommendations.

specification compliance

meets the stringent fire safety requirements of GSA
and Corps of Engineers IIII 558, Form A, Class 1 & 2
ASTM C392-63

Meets NFPA 90A fire hazard requirements.

application recommendations

Fiberglas 25 H-E Equipment Insulation System is in-
stalled by impaling the insulation boards on welded pins
spaced 3" in from each corner of the board with inter-
mediate pins as no greater than 21" centers.

After boards are impaled, the welded pins are cut to extend
1/4" beyond the face of the board and a self-locking cap is
pushed onto the pin.

All insulation raw edges and butt joints are to be sealed
with O-CF Joint Sealing Tape, Type H. Tape is a pressure-
sealing type requiring no separate adhesive. Pressurize
tape by rubbing hard with a plastic sealing tool.

Ductwork and other sharp radius bends require pre-
slicing of the insulation board to conform to the curved
surface.

If painting is required, no sizing is necessary, but to main-
tain the noncombustibility of the system, only Glidden
acrylic latex paint (No. 5370) is approved for use.

recommended thickness—heated equipment (20°F ambient outside air)

Operating Temp.	RT	KL	ST
150°	1	1 1/2	2
250°	1 1/2	2	2 1/2
350°	2	2 1/2	3
450°	2 1/2	3	3 1/2

RT — recommended economic thickness, inches.

KL — heat loss (Btu/Hr/Ft²)

ST — surface temperature (°F)

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Plumbing Systems 1.5.1

Date 1-10-66

Revised

application specifications

CHILLED DRINKING WATER RAINWATER LEADERS

Insulate all (Chilled Drinking Water) (Horizontal Rainwater Leader) piping 35F to 50F
with --- inch nominal thick Fiberglas:

- a) Heavy Density Sectional
- b) One Piece

pipe insulation having a factory applied

- a) Self Sealing Lap (SSL)
- b) Fire Retardent (FR)
- c) Dual Temp (WT)

vapor barrier jacket.

CONCEALED

Piping - Apply insulation to pipe with all sides and end joints butted
tightly. Seal off ends of insulation with Vapor Barrier Mastic*
at each fitting and at 21' intervals on continuous runs.

- a) Adhere SSL jacket by removing release paper after the
insulation is installed on pipe and sealing the lap
starting in the center of each section, working towards
ends. Lap must be pressurized by rubbing with hard tool
such as the back of a knife blade. 3" Butt Strips are
installed in the same manner at the joint between sections.
- b) Adhere the factory applied (FR) (WT) Vapor Barrier lap
smoothly and securely at the longitudinal laps with a white
Vapor Barrier Adhesive.* Adhere 3" wide butt strips smoothly
and securely over all end joints with the Vapor Barrier
Adhesive to insure a continuous Vapor Barrier.

Fittings - Insulate all fittings, flanges, valves and strainers with mitered
segments of pipe insulation, oversized pipe insulation, or molded
fittings. Coat each fitting with two 1/8" coats of an approved
Vapor Barrier Mastic* reinforced with Glass Fabric extending 2"
onto adjacent pipes.

EXPOSED

All piping exposed in finished spaces and Mechanical Equipment Rooms shall be
additionally finished with:

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The above specification is general in nature. Application procedure is at the discretion and responsibility
of the Design Engineer to meet specific job requirements.
*Refer to necessary Materials list for suggested manufacturers of mastics, adhesives & other
necessary materials.

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(page 2 of 1.5.1)

- a) 6 oz. canvas smoothly pasted in place with Lagging Adhesive and sixed with one brush coat of Lagging Adhesive.²
- b) Pre-Sized Glass Cloth adhered with lagging adhesive.² Fittings shall be covered with 6 oz. canvas saturated with Lagging Adhesive.²

OUTDOOR

- Piping** - All piping exposed to the weather shall be additionally finished with:
- a) 45 lb. roofing felt wired at 9" o. c. with 16 ga. annealed Copper wire with all joints lapped a minimum of 2" and positioned to shed water.
 - b) .010" corrugated aluminum jacket, all joints lapped a minimum of 2" secured with 1/2" aluminum strappings and seals, at 12" o. c.

Fittings - Shall be weather proofed with:

- a) Two 1/8" thick wet coats of Outdoor Breather Plastic² reinforced with Glass fabric² extending two inches onto the adjacent pipe insulation.
- b) Preformed Metal covers secured in place with aluminum strapping.

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General Office, Tel. JA 1-13801 - Pacific Coast Division, Santa Clara, California 95052

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LITHO U.S.A. JAN 1964

PUB. NO. 348-8411

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Plumbing Systems 1.5.2

application specifications

DRAIN LINES

Best Soft Copper Connections

Date 1.10.64

Revised

Insulate all drain lines from drip pans or equipment to soil piping, and all bent soft copper connections in other cold plumbing systems, that normally contain 35F to 70F water with _____ inch thick O. C. Flexible Tubing.

CONCEALED

- Piping** - On pipe or tubing not yet installed, Unsilt Flexible Tubing shall be slipped over the full length of the piping or tubing leaving a sufficient amount of exposed piping for connections. After connections are made and tested, apply insulation over fittings so as to cover all piping completely. Silt insulation shall be used on systems which are to be insulated after installation. Seal all butt joints and silt insulations with OC-500 Adhesive.

- Fittings** - Flexible tubing shall be slipped over copper tubing fittings. Iron pipe or cast bronze fittings are to be sleeved (insulated) with a larger diameter of flexible tubing insulation seated over the covering on adjacent piping and adhered with OC-500 Adhesive.

EXPOSED AND OUTDOORS

Exposed piping may be finished (by others) with an approved Non-bleeding paint.

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² Refer to Accessing Materials list for suggested manufacturers of materials, adhesives & other necessary materials.

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Page 1 of 1

* Refer to Accessory Materials List for suggested manufacturers of matrices, adhesives & other accessory materials.

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(page 2 of 1.5.3)

Fittings - Shall be covered with 6 oz. canvas saturated with Lagging
Adhesive.*

NOTE: Staples are not to be used on any Vapor Barrier Jacket.

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Plumbing Systems 1.5.4

Date 1-10-66

Revised

application specifications

DOMESTIC HOT WATER - TEMPERED WATER BOOSTER HEATER WATER

Insulate all Domestic (Hot Water Piping) (Tempered Water) Booster Heater Water)
up to 180°F with _____ inch thick Fiberglas:

- a) Heavy Density Sectional
- b) One Piece

pipe insulation having a factory applied

- a) Universal Fire Retardent
- b) White Universal
- c) Pre-Sized Glass Cloth
- d) Standard Canvas

jacket.

CONCEALED

Piping - Apply insulation to the pipe with side and end joints butted
tightly. Seal jacket legs and butt joint strips with an
approved Lagging Adhesive.*

Fittings - Insulate fittings for piping up to 3" IPS with OC-110 Cement
and on longer sizes with Molded Fittings or mitered segments,
wired in place to the same thickness as adjacent insulation.
Jacket fittings with 6 oz. canvas saturated with lagging adhesive.*

EXPOSED

Piping - In exposed locations and Mechanical Equipment Rooms shall be
jacketed with factory applied:

- a) 6 oz. Canvas
- b) Pre-Sized Glass Cloth

Fittings - Shall be covered with 6 oz. canvas saturated with Lagging
Adhesive.*

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These specifications are general in nature. Application procedure is at the discretion and responsibility of the Design Engineer to meet specific job requirements.
*Refer to Divisional Manuals List for suggested manufacturers of adhesives, sealants & other necessary materials.

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Plumbing Systems 1.5.5

application specifications

Date 1-10-66

Revised 2-4-69

HOT WATER STORAGE TANKS · HEAT EXCHANGERS
HOT WATER GENERATORS · BOOSTER HEATERS

Insulate all (Hot Water Storage Tanks), (Heat Exchangers), (Hot Water Generators), (Booster Heaters) 150F to 180F, with _____ inch thick Owens-Corning Fiberglas:

- a) Type 704
- b) Kaylo Block

The insulation shall be cut or mitered where necessary to fit the shape and contour of the equipment. The insulation shall be banded or wired in place on 12 inch centers or impaled over pins on 18 inch centers. Points up all open joints with CC-110 Insulating Cement.

Apply 1" hexagonal mesh over insulation, lacing edges together. Apply 1/2" thick coat of CC-110 Insulating Cement and trowel to a smooth finish. Adhere 8 oz. canvas over the cement with an approved lagging adhesive.* Size canvas with one brush coat of lagging adhesive.*

* Refer to Accessory Materials List for suggested manufacturers of mastics, adhesives & other accessory materials.

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COMMERCIAL & INDUSTRIAL
FIBERGLAS

application specification
FIBERGLAS 25* : H-P
hot piping up to 450F

Plumbing Systems 1.5.6
Mechanical Piping Systems 2.5.5
Power & Process Piping 5.5.5

Date 4-1-67
Revised 7-10-68

Figure 1
Apply Fiberglas Molded or Segmental Insulation to fittings equal in thickness to that of the insulation to be applied to adjoining pipe and securely fasten in place, using wire.



Figure 2
Apply pipe insulation and staple the longitudinal overlap using 1/4" coated staples at 2" spacings. The stapler shall have a flaring attachment for better staple holding power. Butt adjoining sections firmly together.
†DUO-FAST or equal.



Figure 3
Apply butt-joint strips, making sure the coated or dull side is out. (The side imprinted with a trademark is the inside face of the cloth). Center the strip for a snug fit and fasten with two staples, one each approximately 1/2" from each edge.



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Figure 4

Apply a skim coat of SC 30 Insulating Cement to the insulated fitting, if needed, to produce a smooth surface. After cement is dry, apply a light coat of either OCF Fitting Mastic, Type H or Benjamin Foster Seallas Mastic #30-36, U.L. labeled.



Figure 5

Wrap the fitting with Fiberglas Fitting Tape overlapping the preceding layer by 1 to 2". Also overlap mastic and Fiberglas Fitting Tape by 2" on adjoining sections of pipe insulation.



Figure 6

Apply a second coat of mastic over the Fiberglas Fitting Tape, working it into the mesh of the cloth — smooth the surface. Mastic shall be applied at a rate of not less than 40 sq. ft. per gallon (approximately 1/4" wet film thickness) for rated performance.



OWENS-CORNING
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Plumbing Systems 1.5.7
Mechanical Piping Systems 2.5.6
Power & Process Piping 5.5.4

Date 7-10-68

Revised

application specification
FIBERGLAS 25* : C-P
cold piping system down to 35F

Figure 1

Apply Fiberglas Molded or Segmental Insulation to fittings equal in thickness to that of the insulation to be applied to adjoining pipe and securely fasten in place, using wire.



Figure 2

Apply pipe insulation and remove release paper from factory applied pressure sensitive adhesive strip on the longitudinal lap.

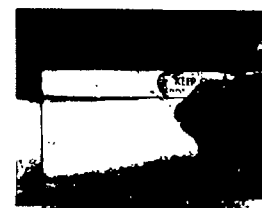


Figure 3

Seal longitudinal lap to the adjacent surface starting at the center of the section and working toward each edge. Rub hard with the back of a knife or a nylon sealing tool for proper seal.



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Figure 4

Apply the pressure sensitive adhesive coated butt strips and rub down firmly using the back of a knife or a nylon sealing tool to obtain good bonding. Note: Minimum ambient application temperature for this adhesive is 35°F. Surfaces must be thoroughly dry and free from dust.



Figure 5

Apply a thin coat of SC-30 Insulating cement to the insulated fitting, if needed, to produce a smooth surface. After cement is dry, apply OCF Fitting Mastic, Type C, U.L. labeled.



Figure 6

Wrap the fitting with Fiberglas Fitting Tape overlapping the preceding layer by 1 to 2". Also overlap mastic and Fiberglas Fitting Tape by 2" on adjoining sections of pipe insulation.



Figure 7

Apply a second coat of OCF Fitting Mastic Type C over the Fiberglas Fitting Tape, working it into the mesh of the cloth. Smooth the surface. Mastic shall be applied at a rate of not less than 10 sq. ft. per gallon (approximately 1/4" wet film thickness) for rated performance.



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FIBERGLAS

application specifications
FIBERGLAS 25* : H-E
hot equipment up to 450F

Plumbing Systems 12.8
Mechanical Equipment 3.5.3
Air Handling Systems 4.5.10

Date 4-1-67
Revised 7-10-68

Figure 1 — Tools and accessory items:

- A. Scissors
- B. Nylon sealing tool
- C. Stanley knife
- D. Screw driver
- E. End-cutting nippers
- F. Pre-finished fastener caps
- G. OCF Joint Sealing Tape, Type H (Pressure Sensitive, U.L. labeled)



Figure 2

Attach pins to surface. Locate pins three inches in from each corner of the board. On surfaces where cross breaking is used for stiffening, additional pins may be required to hold the insulation tightly against the surface. For a neat job, keep pins in straight lines. Pins are to be on maximum 21 inch centers.



Figure 3

Cut Fiberglas 25 Insulation in dimension and impale on pins. Apply pressure on facing in the area of the pin penetration. For elbows, cut pie-shaped pieces for top and bottom. Make sure insulation fits tightly at the seams before impaling.



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Figure 4

Apply the pressure sensitive adhesive coated bull strips and rub down firmly using the back of a knife or a nylon sealing tool to obtain good bonding. Note: Minimum ambient application temperature for this adhesive is 35°F. Surfaces must be thoroughly dry and free from dust.



Figure 5

Apply a skim coat of SC-30 Insulating cement to the insulated fitting, if needed, to produce a smooth surface. After cement is dry, apply OCF Fitting Mastic, Type C, U.L. labeled.



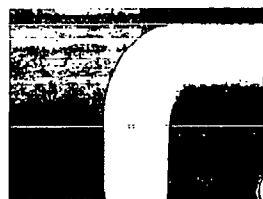
Figure 6

Wrap the fitting with Fiberglas Fitting Tape overlapping the preceding layer by 1 to 2". Also overlap mastic and Fiberglas Fitting Tape by 2" on adjoining sections of pipe insulation.



Figure 7

Apply a second coat of OCF Fitting Mastic Type C over the Fiberglas Fitting Tape, working it into the mesh of the cloth—smooth the surface. Mastic shall be applied at a rate of not less than 40 sq. ft. per gallon (approximately 3/4" wet film thickness) for rated performance.



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**OWENS-CORNING
FIBERGLAS**

application specifications
FIBERGLAS 25* : H-E
hot equipment up to 450°F

Plumbing Systems 1.5.8
Mechanical Equipment 3.5.3
Air Handling Systems 4.5.10

Date 4-1-67
Revised 7-10-68

Figure 1—Tools and accessory items:

- A. Scissors
- B. Nylon sealing tool
- C. Stanley knife
- D. Screw driver
- E. End-cutting nippers
- F. Pre-finished fastener caps
- G. OCF Joint Sealing Tape, Type H (Pressure Sensitive, U.L. labeled)



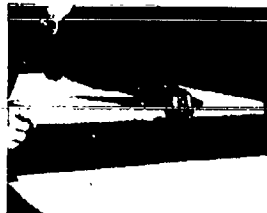
Figure 2

Attach pins to surface. Locate pins three inches in from each corner of the board. On surfaces where cross bracing is used for stiffening, additional pins may be required to hold the insulation tightly against the surface. For a neat job, keep pins in straight lines. Pins are to be on maximum 21 inch centers.



Figure 3

Cut Fiberglas 25 Insulation to dimension and impale on pins. Apply pressure on facing in the area of the pin penetration. For elbows, cut pie-shaped pieces for top and bottom. Make sure insulation fits tightly at the seams before impaling.



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Figure 4

Groove Fiberglas 25 board for curved surfaces and fabricate flanges. The board should be scored with a grooving tool, saw or knife to half the board thickness, and the material removed from the slot. Flanges should not overlap the top and bottom boards. All wool shall be scraped from the flanges before sealing.

The smaller the radius of the board, the smaller the space between cuts.



Figure 5

Install side pieces making sure the edge of the insulation is flush with the top and bottom board surfaces.



Figure 6

Cut pins to length as required and apply pre-finished fastener caps. Pins should protrude $\frac{1}{8}$ " to $\frac{1}{4}$ " above the surface of the insulation. If more than $\frac{1}{4}$ " shows, cut it off to the correct length before applying the cap. This will assure a tight fit of insulation to the surface.



291319

Figure 7

Apply OCF Joint Sealing Tape Type H to all transverse and longitudinal seams after insuring you have a dry dust-free surface. Use the nylon sealing tool to apply pressure to the joint and make a good bond. Do not remove all the release paper from the tape but rather gradually pull it back as required. This keeps dust, etc. from fouling the adhesive surface. Make sure the tape is properly aligned with the seam before it is sealed down.



Figure 8

Use nylon sealing tool on all taped joints. This will result in a good bond and reduce air pocket and "fish-mouths." For a superior bond, use a 300F. iron on the tape.



Figure 9

Insulating the throat of an elbow. Prepare a Fiberglas 25 board of correct dimensions for the throat and fabricate the top and bottom flanges. Next, use a grooving tool, knife or saw and groove the board facing side up. Cut at least half way through the insulation.

Slit sections may also be used as an alternate to the one-piece method described above.



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Figure 10

Complete insulating the throat. Impale insulation, cut pins to correct length, install caps, and strip the top and bottom flaps.



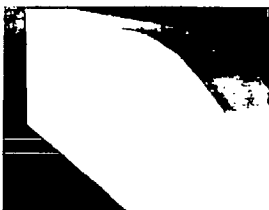
Figure 11

Where curved surfaces are encountered and the joint sealing tape must be notched to conform to the curvature, cut an additional length of tape to half width and apply over the notched tape surface. This will yield a neater finished appearance and improve adhesion in these areas.



Figure 12

Completed insulation of rectangular duct.



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Industrial and General Offices, 717 Fifth Avenue, New York, New York 10022

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OWENS CORNING
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INSULATION OF MECHANICAL PIPING SYSTEMS

Products shown in BOLD FACE type are recommended for use for the services shown
based on performance and widespread acceptance. Other products are listed by
cause of local conditions or product preference.

selection guide

System	Temp. range	Products	data page	spec. page
PIPING		PIPE INSULATIONS		
Refrigerant Suction Chilled Water (Primary and Secondary) Cooling Tower Water (PS)	-20 to 35F	Heavy Density One-Piece Fiberglas 25 C-P	2.1 2.2 2.7	2.S.1 2.S.1 2.S.6
Refrigerant Suction Chilled Water (Bent Soft Copper Connections)	0 to 70F	O.C. Flexible Tubing	2.3	2.S.2
Dual-Temperature Make-Up Water	35 to 60F	Heavy Density One-Piece Fiberglas 25 C-P	2.1 2.2 2.7	2.S.3 2.S.3 2.S.6
Heating Hot Water Fuel Oil Piping High Temperature Hot Water Steam and Condensate	to 1200	Heavy Density (to 450F) One-Piece (to 400F) Kaylo (to 1700 F) Fiberglas 25 H-P (to 450F)	2.1 2.2 2.5 2.6	2.S.4 2.S.4 2.S.4 2.S.5

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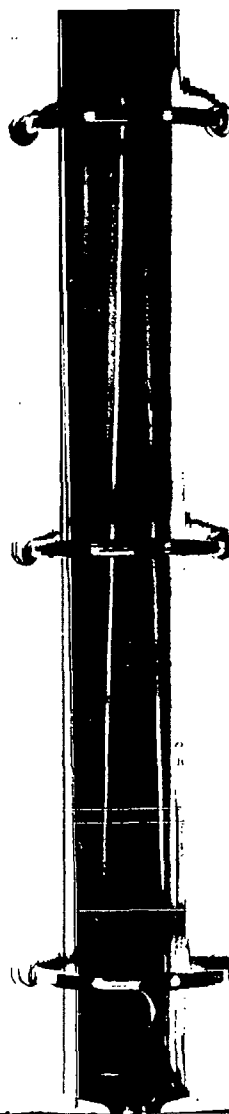
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plumbing piping systems 1.3
mechanical piping systems 6.4
January 1963

Pipe Insulations



One-Piece Pipe Insulations

A versatile, efficient, quick applying pipe insulation
for hot and cold piping
from -30F to 400F.

uses

Fiberglas One Piece Pipe Insulation is adaptable to all types of piping systems operating at temperatures from -30F to 400F. It is available with a variety of factory-applied jackets for appearance, vapor barrier, fireproofing or waterproofing to permit selection of the right combination of insulation and jacket for the service condition requirement.

description

Fiberglas One-Piece Pipe Insulation is a resilient light-weight pipe insulation molded from fine glass fibers in cylindrical form. A single longitudinal seam, which is opened to apply to the pipe, springs closed when in place. It is available with a variety of factory-applied jackets for appearance and function.

benefits

economical application—One-piece unit is applied quickly, easily, even in the larger sizes. easy fabrication—Only a knife is needed for fabrication of the most intricate fittings.

efficient—Because of its very low k factor, it is possible to reduce the thickness of insulation to provide thermal efficiency equivalent to other non-fibrous materials with savings in material costs. Conversely, the same thickness of One-piece provides better thermal efficiency, which results in savings in operating expense due to reduction in heat loss.

permanent—Completely U.L. rated—Inorganic

glass fiber construction will not shrink, rot or cause metal corrosion.

multi-purpose—The variety of applications means less inventory. A selection of factory-applied jackets are available for surface finish, vapor barrier, weather protection, fire proofing or damage resistance. The new Self Sealing lap jacket speeds application in the field and assures a positive vapor barrier.

damage resistant—The resilient glass fibers spring back when bumped, and One-Piece will not break if accidentally dropped during installation.

*TM Reg. O.C.P. One

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over 60 out of the "Insulation" and "Energy-Conserving" programs with basic and advanced information. Make sure that a "Change" will be added to your edition.

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performance characteristics

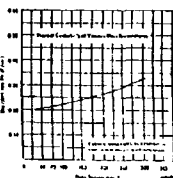
moisture absorption: 0.7% by volume by test at 100% and 105% RH

specific heat: 0.20 Btu/lb. °F

shrinkage: None

density: 4.5

thermal conductivity: Unusually low thermal conductivity shown on chart



mean temperature
°F 0 71
°C 40 21

specification compliance
HN552 Type 1, Class A and B
HN550A Series D, Type 1A, Class 12
HN562 Type II
NHL 1223468 (Sheets)

PIPE INSULATION SELECTION CHART—PLUMBING & MECHANICAL SYSTEMS

SERVICE REQUIREMENT	TEMPERATURE °F	JACKET AVAILABLE (RECOMMENDED IN BOLD FACE TYPE)		OUTDOORS
		CONDENSED	EXPOSED	
HOT PIPING				
Plumbing				
Domestic Hot Water Tempered Water	110-180 110-110	Standard Crown Jacket - covered - provides base for painting, plaster or 1 or 2 weights available.		Blanketing Jacket - available with a factory applied 1/2" or 1" thick polyurethane insulation and long-term life expectancy.
Mechanical				
Waste Hot Water Steam and Condensate Fast Oil Piping High Temperature Hot Water	250-320 210-420 210-420 250-410	FBI with Self Sealing Lap - FBI (Fiberglass Insulation) is a laminate of white kraft and foil, reinforced with strong glass yarns, laminated with Fiberglas 3500 adhesive. Meets requirements of ASME Section I, Type A. Jacket can be used on heated and cold pipes. Temperature limit up to 450°F. Self-sealing joints are furnished. Also available without the Self Sealing Lap feature.	Fiberglas 3500 - a completely U.I. rated hot pipe insulation system. U.I. rating in chart jacket insulation, sheets and accessories. Available in Fiberglas Heavy Density Pipe Insulation only. See data sheet 1-10-202.	Blanketing Jacket - available with a factory applied 1/2" or 1" thick polyurethane insulation and long-term life expectancy.
COLD PIPING				
Plumbing				
Domestic Cold Water Cold Chilling Water Free Water Leakers	32-65 32-65 32-65	FBI with Self Sealing Lap - provides a positive vapor seal for all cold and chilled water lines. FBI (Fiberglass Insulation) is a laminate of white kraft and foil reinforced with strong glass yarns. Meets requirements of ASME Section I, Type A jacket. Laminated with Fiberglas 3500 adhesive. Jacket can be used on heated, duct temperature and cold pipes. Temperature limit up to 450°F. Self-sealing joints are furnished. Also available without the Self Sealing Lap feature.	Fiberglas 3500 - a completely U.I. rated cold pipe insulation system. U.I. rating in chart jacket insulation, sheets and accessories. Available in Fiberglas Heavy Density Pipe Insulation only. See data sheet 1-10-202.	Blanketing Jacket - available with a factory applied 1/2" or 1" thick polyurethane insulation and long-term life expectancy.
Mechanical				
Chilled Water - Primary and Secondary Refrigerant Systems	32-55 -40-210 -20 to -30	FBI with Self Sealing Lap - provides a positive vapor seal for all cold and chilled water lines. FBI (Fiberglass Insulation) is a laminate of white kraft and foil reinforced with strong glass yarns. Meets requirements of ASME Section I, Type A jacket. Laminated with Fiberglas 3500 adhesive. Jacket can be used on heated, duct temperature and cold pipes. Temperature limit up to 450°F. Self-sealing joints are furnished. Also available without the Self Sealing Lap feature.	Fiberglas 3500 - a completely U.I. rated cold pipe insulation system. U.I. rating in chart jacket insulation, sheets and accessories. Available in Fiberglas Heavy Density Pipe Insulation only. See data sheet 1-10-202.	Blanketing Jacket - available with a factory applied 1/2" or 1" thick polyurethane insulation and long-term life expectancy.

DESIGN CONSIDERATIONS

The design engineer should specify the use of Fiberglas 3500 in all piping and mechanical systems requiring insulation. The use of Fiberglas 3500 in all piping and mechanical systems requires minimum 1/2" or 1" thickness of jacket insulation in hot and cold water piping.

The Self Sealing Lap (FBI) with Self Sealing Lap (FBI) provides a positive vapor seal and ensures that the pipe is completely insulated. The use of Fiberglas 3500 in all piping and mechanical systems requires minimum 1/2" or 1" thickness of jacket insulation in hot and cold water piping. The use of Fiberglas 3500 in all piping and mechanical systems requires minimum 1/2" or 1" thickness of jacket insulation in hot and cold water piping.

For hot water piping, the jacket should be applied to the pipe before the pipe is painted. The jacket should be applied to the pipe before the pipe is painted. The jacket should be applied to the pipe before the pipe is painted.

For cold water piping, the jacket should be applied to the pipe before the pipe is painted. The jacket should be applied to the pipe before the pipe is painted. The jacket should be applied to the pipe before the pipe is painted.

Fiberglas 3500 is a completely U.I. rated hot pipe insulation system. U.I. rating in chart jacket insulation, sheets and accessories. Available in Fiberglas Heavy Density Pipe Insulation only. See data sheet 1-10-202.

Blanketing Jacket - available with a factory applied 1/2" or 1" thick polyurethane insulation and long-term life expectancy. The jacket should be applied to the pipe before the pipe is painted.

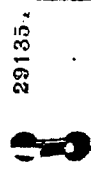
For hot water piping, the jacket should be applied to the pipe before the pipe is painted. The jacket should be applied to the pipe before the pipe is painted. The jacket should be applied to the pipe before the pipe is painted.



Self Sealing Lap (FBI) applied to pipe. The unique method provides the most secure joint. The contact type adhesive offers a positive vapor seal at all points and speeds application. It's as easy as 1, 2, 3! (1) Start in pipe the release paper off the vapor barrier. (2) Apply to pipe and pull off the balance. (3) Press the lap in place.



Self Sealing Lap (FBI) applied to pipe. The unique method provides the most secure joint. The contact type adhesive offers a positive vapor seal at all points and speeds application. It's as easy as 1, 2, 3! (1) Start in pipe the release paper off the vapor barrier. (2) Apply to pipe and pull off the balance. (3) Press the lap in place.



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PIPE INSULATION SELECTION CHART—PLUMBING & MECHANICAL SYSTEMS

SERVICE REQUIREMENT	TEMPERATURE °F	JACKET AVAILABLE (RECOMMENDED IN BOLD FACE TYPE)		OUTDOORS
		CONCRETE	EXPOSED	
HOT PIPING				
Plumbing Domestic Hot Water Tempered Water	110-180 110-130	Standard Concrete Jacket—low cost—provides base for painting. Heavier 6 or 8 in. weight available.	Fiberglas 25 H-P—a completely U.L. rated hot pipe insulation system. U.L. rating includes jacket, insulation, fittings and accessories. Available on Fiberglas Heavy Density Pipe Insulation only. See data sheet 1-14-478.	Roofing Felt—on cable with a factory applied 6 in. roofing felt complete with longitudinal overlap. End joint straps supplied.
Mechanical Boiling Hot Water Steam and Condensate Fuel Oil Piping High Temperature Hot Water	150-210 210-450 210-450 250-450	FRJ with Self Sealing Lap—FRJ (Fiberglass Jacket) is a minimum of white kraft and foil, reinforced with dense glass yarn, laminated with flame retarding adhesive. Meets requirements of CSA 101-4, Type A. Jacket can be used on heated, and hot-temperature lines up to 400° F. Self seal strips to close end joints are furnished. Also seal the weld on the Self Sealing Lap feature.		
COLD PIPING				
Plumbing Domestic Cold Water Chilled Drinking Water Rain Water Leaders	59-65 33-65 33-65	FRJ with Self Sealing Lap—provides a positive vapor seal for cold and chilled water lines. FRJ (Fiberglass Jacket) is a minimum of white kraft and foil reinforced with dense glass yarn. Meets requirements of CSA 101-4, Type A jacket. Laminated with flame retarding adhesive. Excellent vapor barrier with low permeability. Jacket can be used on heated, hot-temperature and refrigerant lines from -30° to 400° F. Self seal strips to close end joints are furnished. Also available without the Self Sealing Lap feature.	Fiberglas 25 H-P—a completely U.L. rated hot pipe insulation system. U.L. rating includes jacket, insulation, fittings and accessories. Available on Fiberglas Heavy Density Pipe Insulation only. See data sheet 1-14-478.	Roofing Felt—on cable with a factory applied 6 in. roofing felt complete with longitudinal overlap. End joint straps are glued.
Mechanical Chilled Water—Primary and Secondary Dual-Temp Refrigerant Section	35-55 40-210 -30 to -35		Fiberglas 25 H-P—a completely U.L. rated hot pipe insulation system. U.L. rating includes jacket, insulation, fittings and accessories. Available on Fiberglas Heavy Density Pipe Insulation only. See data sheet 1-14-478.	Roofing Felt—on cable with a factory applied 6 in. roofing felt complete with longitudinal overlap. End joint straps are glued. All cold lines running outdoors require an additional weatherproofing jacket of roofing felt or metal, field-applied to the installation.

GENERAL CONSIDERATIONS

The wide temperature range of Fiberglas One-Piece Pipe Insulation permits the specifier to select material from one manufacturer to insure all the mechanical and plumbing system insulation requirements, concrete, exposed, outdoors, hot or cold. A selection of jackets suitable to end use and factory applied to the installation insures maximum performance at the lowest economical cost.

The Self Sealing Lap on FRJ (Fiberglass Jacket) creates a positive vapor seal and serves to hold the installation on the pipe. This technological advance employs a unique chemical bonding agent that instantly seals and holds the joint lap tightly in place. The bond also incorporates together with age, both joint, edges of the same material are used on the end joints. The usual staples, bands and epoxy adhesives are eliminated and the associated problems of shrinkage and other application defects are eliminated. In addition FRJ with Self Sealing Lap in five instances, prevents a wet wall appearance and in glass fibers reinforced to avoid damage.

FRJ (Fiberglass Jacket) factory-applied on Fiberglas One-Piece Pipe Insulation is a completely U.L. rated installation for heated lines. No lagging is required before painting. The jacket is tough, resists damage and will not melt or sag, it will stand a low flame spread of 16. See Data Sheet 1-14-478, Single Development 0.

Fiberglas for cold lines is insulated with mineral segments, or pre-molded Fiberglas Gaps which are subsequently wrapped with glass fabric and coated with vapor barrier material. For hot lines the FRJ is made enough with line being covered, covered and sealed.

Fiberglas will not burn, rot or shrink. With the addition of FRJ or Pre-Size Glass Cap Jacket, the assembly is completely U.L. rated.

The exceptional low cost factor means maximum economy and performance for all piping systems, concrete, exposed or indoors.

Notes: Gross Weight Fiberglas Insulation can be applied only with approved adhesives, staples and mechanical fastening devices as published in necessary literature. See Pub. No. 4 (H-3420) Gross Weight Fiberglas accepts no responsibility or liability for the performance of materials other than those listed in the test system approved in writing by D.C. Testing Laboratories.



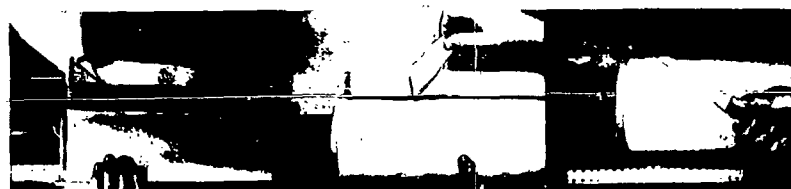
1. Standard Gaps.



2. Roofing Felt



3. FRJ with Self Sealing Lap.



FRJ WITH SELF SEALING LAP—installed by this unique method eliminates the need for stapling, bands and lap adhesives. The contact type adhesive offers a positive vapor seal at all joints and speeds application. It's as easy as 1, 2, 3: (1) start to peel the release paper off the vapor barrier; (2) apply to pipe and peel off the balance; (3) press the lap in place at this center and, pressing hard, work out line and either end. Rub with the blunt edge of a knife. End joints are sealed with a 3" wide butt strip of the same Self Sealing vapor barrier material.

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performance characteristics

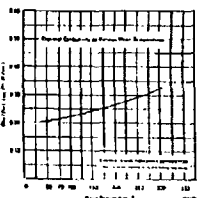
moisture absorption: 0.2% by volume 95 hrs at 120F and 95% RH

specific heat: 0.20 Btu/lb. °F

shrinkage: None

alkalinity: pH 9

thermal conductivity: Unusually low thermal conductivity shown on chart



mean temperature °F
k
0.02
0.01

specification compliance:

- NH-552 Type I, Class A and B
- NH-552a Form D, Type III, Class 12
- NH-562 Type II
- NH-1-2234B (Ships)



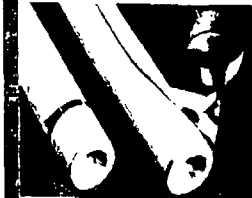
Heat Protected Access system is one of the many uses of Fiberglas Insulation in industrial applications.



1. Standard Curves



2. Rolling (ft.)



3. FRI
4. FRI with Self-Sealing Lap



Self-Sealing Lap... provides a moisture barrier... and provides the most secure seal.

recommended thickness

based piping to 60F (NH ambient air)

pipe temp. temp. diff. °F	220 120			100 120			400 120		
	RT	NH	ST	RT	NH	ST	RT	NH	ST
1/2	1	12	21	1	24	34	1 1/2	32	100
3/4	1	15	24	1	29	38	1 1/2	42	104
1	1	18	27	1	34	42	1 1/2	48	108
1 1/4	1	21	30	1 1/2	39	46	1 1/2	54	112
1 1/2	1	24	33	1 1/2	44	50	1 1/2	60	116
2	1	27	36	1 1/2	49	54	1 1/2	66	120
2 1/2	1 1/2	30	39	2	54	58	2	72	124
3	1 1/2	33	42	2	59	62	2	81	128
3 1/2	1 1/2	36	45	2	64	66	2	90	132
4	1 1/2	39	48	2	69	69	2	100	136
4 1/2	1 1/2	42	51	2	74	72	2	110	140
5	1 1/2	45	54	2	79	75	2	120	144
5 1/2	1 1/2	48	57	2	84	78	2	130	148
6	1 1/2	51	60	2	89	81	2	140	152
6 1/2	1 1/2	54	63	2	94	84	2	150	156
7	1 1/2	57	66	2	99	87	2	160	160
7 1/2	1 1/2	60	69	2	104	90	2	170	164
8	1 1/2	63	72	2	109	93	2	180	168
8 1/2	1 1/2	66	75	2	114	96	2	190	172
9	1 1/2	69	78	2	119	99	2	200	176
9 1/2	1 1/2	72	81	2	124	102	2	210	180
10	1 1/2	75	84	2	129	105	2	220	184
10 1/2	1 1/2	78	87	2	134	108	2	230	188
11	1 1/2	81	90	2	139	111	2	240	192
11 1/2	1 1/2	84	93	2	144	114	2	250	196
12	1 1/2	87	96	2	149	117	2	260	200
12 1/2	1 1/2	90	99	2	154	120	2	270	204

Specify Fiberglas Heavy Density Pipe Insulation for thickness above 2".

RT-recommended thickness (inches) NH-ambient air ST-surface temperature (°F)

cold and dual-temperature lines (NH at 50F, W.H.)

pipe surface temperature	50 F or above		41 F to 55 F		34 F to 47 F		4 F to 20 F	
	RT	HQ	RT	HQ	RT	HQ	RT	HQ
1/2	1/2	4	1/2	5	1	8	1 1/2	8
3/4	1/2	5	1/2	6	1	9	1 1/2	10
1	1/2	6	1/2	7	1 1/2	10	1 1/2	11
1 1/4	1/2	7	1/2	8	1 1/2	11	1 1/2	12
1 1/2	1/2	8	1/2	9	1 1/2	12	1 1/2	13
2	1/2	10	1/2	11	1 1/2	13	1 1/2	14
2 1/2	1/2	12	1/2	13	1 1/2	15	2	15
3	1/2	14	1/2	15	1 1/2	16	2	17
3 1/2	1/2	16	1	17	1 1/2	18	2	19
4	1/2	18	1	19	1 1/2	20	2	21
4 1/2	1/2	20	1	21	1 1/2	22	2	23
5	1/2	22	1	23	1 1/2	24	2	25
5 1/2	1/2	24	1	25	1 1/2	26	2	27
6	1/2	26	1	27	1 1/2	28	2	29
6 1/2	1/2	28	1	29	1 1/2	30	2	31
7	1/2	30	1	31	1 1/2	32	2	33
7 1/2	1/2	32	1	33	1 1/2	34	2	35
8	1/2	34	1	35	1 1/2	36	2	37
8 1/2	1/2	36	1	37	1 1/2	38	2	39
9	1/2	38	1	39	1 1/2	40	2	41
9 1/2	1/2	40	1	41	1 1/2	42	2	43
10	1/2	42	1	43	1 1/2	44	2	45
10 1/2	1/2	44	1	45	1 1/2	46	2	47
11	1/2	46	1	47	1 1/2	48	2	49
11 1/2	1/2	48	1	49	1 1/2	50	2	51
12	1/2	50	1	51	1 1/2	52	2	53

RT-recommended thickness (inches) HQ-hot gas

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General Office

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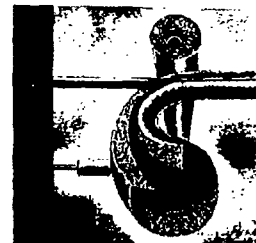
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plumbing systems 1.3
mechanical piping systems 2.2
October, 1968

Piping Insulations



O-C Flexible Tubing and Sheet Insulation

a flexible formed plastic insulation for hot
or cold copper tubing and iron pipe
operating at temperatures from -50° to 220°F.

uses

O-C Flexible Tubing is recommended for use on cooling and heating
water lines, chilled drinking water and refrigeration suction lines. The
flexible feature of this resilient insulation allows it to conform to
gradual bends. Available in a unit to slide over tubing or pipes before
they are installed, or, slit to apply over piping already in place.

description

O-C Flexible Tubing insulation is made from an expanded elastomeric
plastic blend. Millions of tiny cells, each filled with an inert gas,
make this product an extremely efficient insulator. It is resilient and
soft, returning to full thickness after being compressed. The inside
surface is powdered to make it easy to slip over the pipe or tubing.

benefits

Efficient—a low thermal conductivity of 0.26 at
70° mean temperature assures minimum heat
loss or gain—maximum performance of equip-
ment.

Built-In Vapor Barrier—the closed cell struc-
ture eliminates the need for a separate vapor
barrier and protects against moisture conden-
sation on cold lines.

Uniform Thickness—strict quality control as-
sures constant diameters and thicknesses, pro-
viding a snug fit on the pipe, and smooth butt
joints.

Fast Application—available in two forms, slit
and unslit. Means faster application. No band-
ing required. The unslit material slips over
gradual bends with ease.

Broad Uses—temperature range from -50° to
220°F makes possible insulation of most lines
commonly used in commercial heating and air
conditioning.

Flexible and Resilient—designed for excep-
tional ease of handling. It is so flexible it can
be tied in knots—so resilient it springs back to
original shape when untied. Resists mechan-
ical abuse. Soft for winter flexibility and ease
of application.

291359

COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN

See registered copy of the Fiberglass Manual for

name fill out the "Insulation" part of the Owens-Corning Fiberglass Manual and you will get the latest information. Note also that a "Change of Address" card is included in the manual.

CHANGE OF ADDRESS CARD COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN

Name _____
 Title _____
 Address _____
 City _____ State _____
 Please Print or

performance characteristics

density, lbs./cu.ft. (avg.)	0.64	water vapor transmission, perm-in.	less than 0.05
thermal conductivity (Btu-in./sq.ft.-hr-F)	0.26	maximum temperature (limit continuous use F)	-50° to 220°
70°F mean temperature	0.26	fire rating per ASTM D-635	Self-extinguishing
90°F mean temperature	0.27	acoustic resistance	Good
water absorption, % by volume (ASTM D1055)	0.5	odor	Extremely low level

Recommended Thicknesses

RECOMMENDED THICKNESSES		O-C Flexible Tubing Thicknesses for Line Connections			
STEEL CONNECTIONS*		PIPE SIZES	50 F	75 F	90 F
1/8" ID	Maximum wall thickness of 1/8" for 1/2" and 3/4" O.D. pipes; 1/4" for 1" and 1 1/2" O.D. pipes; 3/8" for 2" and 2 1/2" O.D. pipes; 1/2" for 3" and 3 1/2" O.D. pipes; 5/8" for 4" and 4 1/2" O.D. pipes; 3/4" for 5" and 5 1/2" O.D. pipes; 7/8" for 6" and 6 1/2" O.D. pipes; 1" for 7" and 7 1/2" O.D. pipes; 1 1/4" for 8" and 8 1/2" O.D. pipes; 1 1/2" for 9" and 9 1/2" O.D. pipes; 1 3/4" for 10" and 10 1/2" O.D. pipes; 2" for 12" and 12 1/2" O.D. pipes; 2 1/4" for 14" and 14 1/2" O.D. pipes; 2 1/2" for 16" and 16 1/2" O.D. pipes; 2 3/4" for 18" and 18 1/2" O.D. pipes; 3" for 20" and 20 1/2" O.D. pipes; 3 1/4" for 22" and 22 1/2" O.D. pipes; 3 1/2" for 24" and 24 1/2" O.D. pipes; 3 3/4" for 26" and 26 1/2" O.D. pipes; 4" for 28" and 28 1/2" O.D. pipes; 4 1/4" for 30" and 30 1/2" O.D. pipes; 4 1/2" for 32" and 32 1/2" O.D. pipes; 4 3/4" for 34" and 34 1/2" O.D. pipes; 5" for 36" and 36 1/2" O.D. pipes; 5 1/4" for 38" and 38 1/2" O.D. pipes; 5 1/2" for 40" and 40 1/2" O.D. pipes; 5 3/4" for 42" and 42 1/2" O.D. pipes; 6" for 44" and 44 1/2" O.D. pipes; 6 1/4" for 46" and 46 1/2" O.D. pipes; 6 1/2" for 48" and 48 1/2" O.D. pipes; 6 3/4" for 50" and 50 1/2" O.D. pipes; 7" for 52" and 52 1/2" O.D. pipes; 7 1/4" for 54" and 54 1/2" O.D. pipes; 7 1/2" for 56" and 56 1/2" O.D. pipes; 7 3/4" for 58" and 58 1/2" O.D. pipes; 8" for 60" and 60 1/2" O.D. pipes; 8 1/4" for 62" and 62 1/2" O.D. pipes; 8 1/2" for 64" and 64 1/2" O.D. pipes; 8 3/4" for 66" and 66 1/2" O.D. pipes; 9" for 68" and 68 1/2" O.D. pipes; 9 1/4" for 70" and 70 1/2" O.D. pipes; 9 1/2" for 72" and 72 1/2" O.D. pipes; 9 3/4" for 74" and 74 1/2" O.D. pipes; 10" for 76" and 76 1/2" O.D. pipes; 10 1/4" for 78" and 78 1/2" O.D. pipes; 10 1/2" for 80" and 80 1/2" O.D. pipes; 10 3/4" for 82" and 82 1/2" O.D. pipes; 11" for 84" and 84 1/2" O.D. pipes; 11 1/4" for 86" and 86 1/2" O.D. pipes; 11 1/2" for 88" and 88 1/2" O.D. pipes; 11 3/4" for 90" and 90 1/2" O.D. pipes; 12" for 92" and 92 1/2" O.D. pipes; 12 1/4" for 94" and 94 1/2" O.D. pipes; 12 1/2" for 96" and 96 1/2" O.D. pipes; 12 3/4" for 98" and 98 1/2" O.D. pipes; 13" for 100" and 100 1/2" O.D. pipes; 13 1/4" for 102" and 102 1/2" O.D. pipes; 13 1/2" for 104" and 104 1/2" O.D. pipes; 13 3/4" for 106" and 106 1/2" O.D. pipes; 14" for 108" and 108 1/2" O.D. pipes; 14 1/4" for 110" and 110 1/2" O.D. pipes; 14 1/2" for 112" and 112 1/2" O.D. pipes; 14 3/4" for 114" and 114 1/2" O.D. pipes; 15" for 116" and 116 1/2" O.D. pipes; 15 1/4" for 118" and 118 1/2" O.D. pipes; 15 1/2" for 120" and 120 1/2" O.D. pipes; 15 3/4" for 122" and 122 1/2" O.D. pipes; 16" for 124" and 124 1/2" O.D. pipes; 16 1/4" for 126" and 126 1/2" O.D. pipes; 16 1/2" for 128" and 128 1/2" O.D. pipes; 16 3/4" for 130" and 130 1/2" O.D. pipes; 17" for 132" and 132 1/2" O.D. pipes; 17 1/4" for 134" and 134 1/2" O.D. pipes; 17 1/2" for 136" and 136 1/2" O.D. pipes; 17 3/4" for 138" and 138 1/2" O.D. pipes; 18" for 140" and 140 1/2" O.D. pipes; 18 1/4" for 142" and 142 1/2" O.D. pipes; 18 1/2" for 144" and 144 1/2" O.D. pipes; 18 3/4" for 146" and 146 1/2" O.D. pipes; 19" for 148" and 148 1/2" O.D. pipes; 19 1/4" for 150" and 150 1/2" O.D. pipes; 19 1/2" for 152" and 152 1/2" O.D. pipes; 19 3/4" for 154" and 154 1/2" O.D. pipes; 20" for 156" and 156 1/2" O.D. pipes; 20 1/4" for 158" and 158 1/2" O.D. pipes; 20 1/2" for 160" and 160 1/2" O.D. pipes; 20 3/4" for 162" and 162 1/2" O.D. pipes; 21" for 164" and 164 1/2" O.D. pipes; 21 1/4" for 166" and 166 1/2" O.D. pipes; 21 1/2" for 168" and 168 1/2" O.D. pipes; 21 3/4" for 170" and 170 1/2" O.D. pipes; 22" for 172" and 172 1/2" O.D. pipes; 22 1/4" for 174" and 174 1/2" O.D. pipes; 22 1/2" for 176" and 176 1/2" O.D. pipes; 22 3/4" for 178" and 178 1/2" O.D. pipes; 23" for 180" and 180 1/2" O.D. pipes; 23 1/4" for 182" and 182 1/2" O.D. pipes; 23 1/2" for 184" and 184 1/2" O.D. pipes; 23 3/4" for 186" and 186 1/2" O.D. pipes; 24" for 188" and 188 1/2" O.D. pipes; 24 1/4" for 190" and 190 1/2" O.D. pipes; 24 1/2" for 192" and 192 1/2" O.D. pipes; 24 3/4" for 194" and 194 1/2" O.D. pipes; 25" for 196" and 196 1/2" O.D. pipes; 25 1/4" for 198" and 198 1/2" O.D. pipes; 25 1/2" for 200" and 200 1/2" O.D. pipes; 25 3/4" for 202" and 202 1/2" O.D. pipes; 26" for 204" and 204 1/2" O.D. pipes; 26 1/4" for 206" and 206 1/2" O.D. pipes; 26 1/2" for 208" and 208 1/2" O.D. pipes; 26 3/4" for 210" and 210 1/2" O.D. pipes; 27" for 212" and 212 1/2" O.D. pipes; 27 1/4" for 214" and 214 1/2" O.D. pipes; 27 1/2" for 216" and 216 1/2" O.D. pipes; 27 3/4" for 218" and 218 1/2" O.D. pipes; 28" for 220" and 220 1/2" O.D. pipes; 28 1/4" for 222" and 222 1/2" O.D. pipes; 28 1/2" for 224" and 224 1/2" O.D. pipes; 28 3/4" for 226" and 226 1/2" O.D. pipes; 29" for 228" and 228 1/2" O.D. pipes; 29 1/4" for 230" and 230 1/2" O.D. pipes; 29 1/2" for 232" and 232 1/2" O.D. pipes; 29 3/4" for 234" and 234 1/2" O.D. pipes; 30" for 236" and 236 1/2" O.D. pipes; 30 1/4" for 238" and 238 1/2" O.D. pipes; 30 1/2" for 240" and 240 1/2" O.D. pipes; 30 3/4" for 242" and 242 1/2" O.D. pipes; 31" for 244" and 244 1/2" O.D. pipes; 31 1/4" for 246" and 246 1/2" O.D. pipes; 31 1/2" for 248" and 248 1/2" O.D. pipes; 31 3/4" for 250" and 250 1/2" O.D. pipes; 32" for 252" and 252 1/2" O.D. pipes; 32 1/4" for 254" and 254 1/2" O.D. pipes; 32 1/2" for 256" and 256 1/2" O.D. pipes; 32 3/4" for 258" and 258 1/2" O.D. pipes; 33" for 260" and 260 1/2" O.D. pipes; 33 1/4" for 262" and 262 1/2" O.D. pipes; 33 1/2" for 264" and 264 1/2" O.D. pipes; 33 3/4" for 266" and 266 1/2" O.D. pipes; 34" for 268" and 268 1/2" O.D. pipes; 34 1/4" for 270" and 270 1/2" O.D. pipes; 34 1/2" for 272" and 272 1/2" O.D. pipes; 34 3/4" for 274" and 274 1/2" O.D. pipes; 35" for 276" and 276 1/2" O.D. pipes; 35 1/4" for 278" and 278 1/2" O.D. pipes; 35 1/2" for 280" and 280 1/2" O.D. pipes; 35 3/4" for 282" and 282 1/2" O.D. pipes; 36" for 284" and 284 1/2" O.D. pipes; 36 1/4" for 286" and 286 1/2" O.D. pipes; 36 1/2" for 288" and 288 1/2" O.D. pipes; 36 3/4" for 290" and 290 1/2" O.D. pipes; 37" for 292" and 292 1/2" O.D. pipes; 37 1/4" for 294" and 294 1/2" O.D. pipes; 37 1/2" for 296" and 296 1/2" O.D. pipes; 37 3/4" for 298" and 298 1/2" O.D. pipes; 38" for 300" and 300 1/2" O.D. pipes; 38 1/4" for 302" and 302 1/2" O.D. pipes; 38 1/2" for 304" and 304 1/2" O.D. pipes; 38 3/4" for 306" and 306 1/2" O.D. pipes; 39" for 308" and 308 1/2" O.D. pipes; 39 1/4" for 310" and 310 1/2" O.D. pipes; 39 1/2" for 312" and 312 1/2" O.D. pipes; 39 3/4" for 314" and 314 1/2" O.D. pipes; 40" for 316" and 316 1/2" O.D. pipes; 40 1/4" for 318" and 318 1/2" O.D. pipes; 40 1/2" for 320" and 320 1/2" O.D. pipes; 40 3/4" for 322" and 322 1/2" O.D. pipes; 41" for 324" and 324 1/2" O.D. pipes; 41 1/4" for 326" and 326 1/2" O.D. pipes; 41 1/2" for 328" and 328 1/2" O.D. pipes; 41 3/4" for 330" and 330 1/2" O.D. pipes; 42" for 332" and 332 1/2" O.D. pipes; 42 1/4" for 334" and 334 1/2" O.D. pipes; 42 1/2" for 336" and 336 1/2" O.D. pipes; 42 3/4" for 338" and 338 1/2" O.D. pipes; 43" for 340" and 340 1/2" O.D. pipes; 43 1/4" for 342" and 342 1/2" O.D. pipes; 43 1/2" for 344" and 344 1/2" O.D. pipes; 43 3/4" for 346" and 346 1/2" O.D. pipes; 44" for 348" and 348 1/2" O.D. pipes; 44 1/4" for 350" and 350 1/2" O.D. pipes; 44 1/2" for 352" and 352 1/2" O.D. pipes; 44 3/4" for 354" and 354 1/2" O.D. pipes; 45" for 356" and 356 1/2" O.D. pipes; 45 1/4" for 358" and 358 1/2" O.D. pipes; 45 1/2" for 360" and 360 1/2" O.D. pipes; 45 3/4" for 362" and 362 1/2" O.D. pipes; 46" for 364" and 364 1/2" O.D. pipes; 46 1/4" for 366" and 366 1/2" O.D. pipes; 46 1/2" for 368" and 368 1/2" O.D. pipes; 46 3/4" for 370" and 370 1/2" O.D. pipes; 47" for 372" and 372 1/2" O.D. pipes; 47 1/4" for 374" and 374 1/2" O.D. pipes; 47 1/2" for 376" and 376 1/2" O.D. pipes; 47 3/4" for 378" and 378 1/2" O.D. pipes; 48" for 380" and 380 1/2" O.D. pipes; 48 1/4" for 382" and 382 1/2" O.D. pipes; 48 1/2" for 384" and 384 1/2" O.D. pipes; 48 3/4" for 386" and 386 1/2" O.D. pipes; 49" for 388" and 388 1/2" O.D. pipes; 49 1/4" for 390" and 390 1/2" O.D. pipes; 49 1/2" for 392" and 392 1/2" O.D. pipes; 49 3/4" for 394" and 394 1/2" O.D. pipes; 50" for 396" and 396 1/2" O.D. pipes; 50 1/4" for 398" and 398 1/2" O.D. pipes; 50 1/2" for 400" and 400 1/2" O.D. pipes; 50 3/4" for 402" and 402 1/2" O.D. pipes; 51" for 404" and 404 1/2" O.D. pipes; 51 1/4" for 406" and 406 1/2" O.D. pipes; 51 1/2" for 408" and 408 1/2" O.D. pipes; 51 3/4" for 410" and 410 1/2" O.D. pipes; 52" for 412" and 412 1/2" O.D. pipes; 52 1/4" for 414" and 414 1/2" O.D. pipes; 52 1/2" for 416" and 416 1/2" O.D. pipes; 52 3/4" for 418" and 418 1/2" O.D. pipes; 53" for 420" and 420 1/2" O.D. pipes; 53 1/4" for 422" and 422 1/2" O.D. pipes; 53 1/2" for 424" and 424 1/2" O.D. pipes; 53 3/4" for 426" and 426 1/2" O.D. pipes; 54" for 428" and 428 1/2" O.D. pipes; 54 1/4" for 430" and 430 1/2" O.D. pipes; 54 1/2" for 432" and 432 1/2" O.D. pipes; 54 3/4" for 434" and 434 1/2" O.D. pipes; 55" for 436" and 436 1/2" O.D. pipes; 55 1/4" for 438" and 438 1/2" O.D. pipes; 55 1/2" for 440" and 440 1/2" O.D. pipes; 55 3/4" for 442" and 442 1/2" O.D. pipes; 56" for 444" and 444 1/2" O.D. pipes; 56 1/4" for 446" and 446 1/2" O.D. pipes; 56 1/2" for 448" and 448 1/2" O.D. pipes; 56 3/4" for 450" and 450 1/2" O.D. pipes; 57" for 452" and 452 1/2" O.D. pipes; 57 1/4" for 454" and 454 1/2" O.D. pipes; 57 1/2" for 456" and 456 1/2" O.D. pipes; 57 3/4" for 458" and 458 1/2" O.D. pipes; 58" for 460" and 460 1/2" O.D. pipes; 58 1/4" for 462" and 462 1/2" O.D. pipes; 58 1/2" for 464" and 464 1/2" O.D. pipes; 58 3/4" for 466" and 466 1/2" O.D. pipes; 59" for 468" and 468 1/2" O.D. pipes; 59 1/4" for 470" and 470 1/2" O.D. pipes; 59 1/2" for 472" and 472 1/2" O.D. pipes; 59 3/4" for 474" and 474 1/2" O.D. pipes; 60" for 476" and 476 1/2" O.D. pipes; 60 1/4" for 478" and 478 1/2" O.D. pipes; 60 1/2" for 480" and 480 1/2" O.D. pipes; 60 3/4" for 482" and 482 1/2" O.D. pipes; 61" for 484" and 484 1/2" O.D. pipes; 61 1/4" for 486" and 486 1/2" O.D. pipes; 61 1/2" for 488" and 488 1/2" O.D. pipes; 61 3/4" for 490" and 490 1/2" O.D. pipes; 62" for 492" and 492 1/2" O.D. pipes; 62 1/4" for 494" and 494 1/2" O.D. pipes; 62 1/2" for 496" and 496 1/2" O.D. pipes; 62 3/4" for 498" and 498 1/2" O.D. pipes; 63" for 500" and 500 1/2" O.D. pipes; 63 1/4" for 502" and 502 1/2" O.D. pipes; 63 1/2" for 504" and 504 1/2" O.D. pipes; 63 3/4" for 506" and 506 1/2" O.D. pipes; 64" for 508" and 508 1/2" O.D. pipes; 64 1/4" for 510" and 510 1/2" O.D. pipes; 64 1/2" for 512" and 512 1/2" O.D. pipes; 64 3/4" for 514" and 514 1/2" O.D. pipes; 65" for 516" and 516 1/2" O.D. pipes; 65 1/4" for 518" and 518 1/2" O.D. pipes; 65 1/2" for 520" and 520 1/2" O.D. pipes; 65 3/4" for 522" and 522 1/2" O.D. pipes; 66" for 524" and 524 1/2" O.D. pipes; 66 1/4" for 526" and 526 1/2" O.D. pipes; 66 1/2" for 528" and 528 1/2" O.D. pipes; 66 3/4" for 530" and 530 1/2" O.D. pipes; 67" for 532" and 532 1/2" O.D. pipes; 67 1/4" for 534" and 534 1/2" O.D. pipes; 67 1/2" for 536" and 536 1/2" O.D. pipes; 67 3/4" for 538" and 538 1/2" O.D. pipes; 68" for 540" and 540 1/2" O.D. pipes; 68 1/4" for 542" and 542 1/2" O.D. pipes; 68 1/2" for 544" and 544 1/2" O.D. pipes; 68 3/4" for 546" and 546 1/2" O.D. pipes; 69" for 548" and 548 1/2" O.D. pipes; 69 1/4" for 550" and 550 1/2" O.D. pipes; 69 1/2" for 552" and 552 1/2" O.D. pipes; 69 3/4" for 554" and 554 1/2" O.D. pipes; 70" for 556" and 556 1/2" O.D. pipes; 70 1/4" for 558" and 558 1/2" O.D. pipes; 70 1/2" for 560" and 560 1/2" O.D. pipes; 70 3/4" for 562" and 562 1/2" O.D. pipes; 71" for 564" and 564 1/2" O.D. pipes; 71 1/4" for 566" and 566 1/2" O.D. pipes; 71 1/2" for 568" and 568 1/2" O.D. pipes; 71 3/4" for 570" and 570 1/2" O.D. pipes; 72" for 572" and 572 1/2" O.D. pipes; 72 1/4" for 574" and 574 1/2" O.D. pipes; 72 1/2" for 576" and 576 1/2" O.D. pipes; 72 3/4" for 578" and 578 1/2" O.D. pipes; 73" for 580" and 580 1/2" O.D. pipes; 73 1/4" for 582" and 582 1/2" O.D. pipes; 73 1/2" for 584" and 584 1/2" O.D. pipes; 73 3/4" for 586" and 586 1/2" O.D. pipes; 74" for 588" and 588 1/2" O.D. pipes; 74 1/4" for 590" and 590 1/2" O.D. pipes; 74 1/2" for 592" and 592 1/2" O.D. pipes; 74 3/4" for 594" and 594 1/2" O.D. pipes; 75" for 596" and 596 1/2" O.D. pipes; 75 1/4" for 598" and 598 1/2" O.D. pipes; 75 1/2" for 600" and 600 1/2" O.D. pipes; 75 3/4" for 602" and 602 1/2" O.D. pipes; 76" for 604" and 604 1/2" O.D. pipes; 76 1/4" for 606" and 606 1/2" O.D. pipes; 76 1/2" for 608" and 608 1/2" O.D. pipes; 76 3/4" for 610" and 610 1/2" O.D. pipes; 77" for 612" and 612 1/2" O.D. pipes; 77 1/4" for 614" and 614 1/2" O.D. pipes; 77 1/2" for 616" and 616 1/2" O.D. pipes; 77 3/4" for 618" and 618 1/2" O.D. pipes; 78" for 620" and 620 1/2" O.D. pipes; 78 1/4" for 622" and 622 1/2" O.D. pipes; 78 1/2" for 624" and 624 1/2" O.D. pipes; 78 3/4" for 626" and 626 1/2" O.D. pipes; 79" for 628" and 628 1/2" O.D. pipes; 79 1/4" for 630" and 630 1/2" O.D. pipes; 79 1/2" for 632" and 632 1/2" O.D. pipes; 79 3/4" for 634" and 634 1/2" O.D. pipes; 80" for 636" and 636 1/2" O.D. pipes; 80 1/4" for 638" and 638 1/2" O.D. pipes; 80 1/2" for 640" and 640 1/2" O.D. pipes; 80 3/4" for 642" and 642 1/2" O.D. pipes; 81" for 644" and 644 1/2" O.D. pipes; 81 1/4" for 646" and 646 1/2" O.D. pipes; 81 1/2" for 648" and 648 1/2" O.D. pipes; 81 3/4" for 650" and 650 1/2" O.D. pipes; 82" for 652" and 652 1/2" O.D. pipes; 82 1/4" for 654" and 654 1/2" O.D. pipes; 82 1/2" for 656" and 656 1/2" O.D. pipes; 82 3/4" for 658" and 658 1/2" O.D. pipes; 83" for 660" and 660 1/2" O.D. pipes; 83 1/4" for 662" and 662 1/2" O.D. pipes; 83 1/2" for 664" and 664 1/2" O.D. pipes; 83 3/4" for 666" and 666 1/2" O.D. pipes; 84" for 668" and 668 1/2" O.D. pipes; 84 1/4" for 670" and 670 1/2" O.D. pipes; 84 1/2" for 672" and 672 1/2" O.D. pipes; 84 3/4" for 674" and 674 1/2" O.D. pipes; 85" for 676" and 676 1/2" O.D. pipes; 85 1/4" for 678" and 678 1/2" O.D. pipes; 85 1/2" for 680" and 680 1/2" O.D. pipes; 85 3/4" for 682" and 682 1/2" O.D. pipes; 86" for 684" and 684 1/2" O.D. pipes; 86 1/4" for 686" and 686 1/2" O.D. pipes; 86 1/2" for 688" and 688 1/2" O.D. pipes; 86 3/4" for 690" and 690 1/2" O.D. pipes; 87" for 692" and 692 1/2" O.D. pipes; 87 1/4" for 694" and 694 1/2" O.D. pipes; 87 1/2" for 696" and 696 1/2" O.D. pipes; 87 3/4" for 698" and 698 1/2" O.D. pipes; 88" for 700" and 700 1/2" O.D. pipes; 88 1/4" for 702" and 702 1/2" O.D. pipes; 88 1/2" for 704" and 704 1/2" O.D. pipes; 88 3/4" for 706" and 706 1/2" O.D. pipes; 89" for 708" and 708 1/2" O.D. pipes; 89 1/4" for 710" and 710 1/2" O.D. pipes; 89 1/2" for 712" and 712 1/2" O.D. pipes; 89 3/4" for 714" and 714 1/2" O.D. pipes; 90" for 716" and 716 1/2" O.D. pipes; 90 1/4" for 718" and 718 1/2" O.D. pipes; 90 1/2" for 720" and 720 1/2" O.D. pipes; 90 3/4" for 722" and 722 1/2" O.D. pipes; 91" for 724" and 724 1/2" O.D. pipes; 91 1/4" for 726" and 726 1/2" O.D. pipes; 91 1/2" for 728" and 728 1/2" O.D. pipes; 91 3/4" for 730" and 730 1/2" O.D. pipes; 92" for 732" and 732 1/2" O.D. pipes; 92 1/4" for 734" and 734 1/2" O.D. pipes; 92 1/2" for 736" and 736 1/2" O.D. pipes; 92 3/4" for 738" and 738 1/2" O.D. pipes; 93" for 740" and 740 1/2" O.D. pipes; 93 1/4" for 742" and 742 1/2" O.D. pipes; 93 1/2" for 744" and 744 1/2" O.D. pipes; 93 3/4" for 746" and 746 1/2" O.D. pipes; 94" for 748" and 748 1/2" O.D. pipes; 94 1/4" for 750" and 750 1/2" O.D. pipes; 94 1/2" for 752" and 752 1/2" O.D. pipes; 94 3/4" for 754" and 754 1/2" O.D. pipes; 95" for 756" and 756 1/2" O.D. pipes; 95 1/4" for 758" and 758 1/2" O.D. pipes; 95 1/2" for 760" and 760 1/2" O.D. pipes; 95 3/4" for 762" and 762 1/2" O.D. pipes; 96" for 764" and 764 1/2" O.D. pipes; 96 1/4" for 766" and 766 1/2" O.D. pipes; 96 1/2" for 768" and 768 1/2" O.D. pipes; 96 3/4" for 770" and 770 1/2" O.D. pipes; 97" for 772" and 772 1/2" O.D. pipes; 97 1/4" for 774" and 774 1/2" O.D. pipes; 97 1/2" for 776" and 776 1/2" O.D. pipes; 97 3/4" for 778" and 778 1/2" O.D. pipes; 98" for 780" and 780 1/2" O.D. pipes; 98 1/4" for 782" and 782 1/2" O.D. pipes; 98 1/2" for 784" and 784 1/2" O.D. pipes; 98 3/4" for 786" and 786 1/2" O.D. pipes; 99" for 788" and 788 1/2" O.D. pipes; 99 1/4" for 790" and 790 1/2" O.D. pipes; 99 1/2" for 792" and 792 1/2" O.D. pipes; 99 3/4" for 794" and 794 1/2" O.D. pipes; 100" for 796" and 796 1/2" O.D. pipes; 100 1/4" for 798" and 798 1/2" O.D. pipes; 100 1/2" for 800" and 800 1/2" O.D. pipes; 100 3/4" for 802" and 802 1/2" O.D. pipes; 101" for 804" and 804 1/2" O.D. pipes; 101 1/4" for 806" and 806 1/2" O.D. pipes; 101 1/2" for 808" and 808 1/2" O.D. pipes; 101 3/4" for 810" and 810 1/2" O.D. pipes; 102" for 812" and 812 1/2" O.D. pipes; 102 1/4" for 814" and 814 1/2" O.D. pipes; 102 1/2" for 816" and 816 1/2" O.D. pipes; 102 3/4" for 818" and 818 1/2" O.D. pipes; 103" for 820" and 820 1/2" O.D. pipes; 103 1/4" for 822" and 822 1/2" O.D. pipes; 103 1/2" for 824" and 824 1/2" O.D. pipes; 103 3/4" for 826" and 826 1/2" O.D. pipes; 104" for 828" and 828 1/2" O.D. pipes; 104 1/4" for 830" and 830 1/2" O.D. pipes; 104 1/2" for 832" and 832 1/2" O.D. pipes; 104 3/4" for 834" and 834 1/2" O.D. pipes; 105" for 836" and 836 1/2" O.D. pipes; 105 1/4" for 838" and 838 1/2" O.D. pipes; 105 1/2" for 840" and 840 1/2" O.D. pipes; 105 3/4" for 842" and 842 1/2" O.D. pipes; 106" for 844" and 844 1/2" O.D. pipes; 106 1/4" for 846" and 846 1/2" O.D. pipes; 106 1/2" for 848" and 848 1/2" O.D. pipes; 106 3/4" for 850" and 850 1/2" O.D. pipes; 107" for 852" and 852 1/2" O.D. pipes; 107 1/4" for 854" and 854 1/2" O.D. pipes; 107 1/2" for 856" and 856 1/2" O.D. pipes; 107 3/4" for 858" and 858 1/2" O.D. pipes; 108" for 860" and 860 1/2" O.D. pipes; 108 1/4" for 862" and 862 1/2" O.D. pipes; 108 1/2" for 864" and 864 1/2" O.D. pipes; 108 3/4" for 866" and 866 1/2" O.D. pipes; 109" for 868" and 868 1/2" O.D. pipes; 109 1/4" for 870" and 870 1/2" O.D. pipes; 109 1/2" for 872" and 872 1/2" O.D. pipes; 109 3/4" for 874" and 874 1/2" O.D. pipes; 110" for 876" and 87				

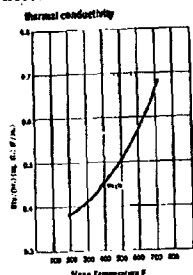
Make it and the "Baptist" and the "Lutheran" churches will keep you and your own and revised information. Note also that a "Change of" is in order in your office chron-

CHANGE OF ADDRESS" COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MANUFACTURING

Name _____
 Page _____
 Date _____
 Address _____
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performance characteristics

density.....	approximately 11 lbs. per sq. in.
flaxural strength (ASTM C-446).....	over 50 lb. per sq. in.
resistance to abrasion (conventional tumbling test-loss in weight after 1000 F.).....	0%
before heating.....	0%
after heating for 24 hours.....	0%
at 750 F.....	5%
at 1000 F.....	5%
at 1200 F.....	3%
alkalinity.....	ph 10
dimensional stability.....	0%
linear shrinkage after heating for 24 hours in traffic.....	0%
at 750 F.....	0.8%
at 1000 F.....	0.8%
at 1200 F.....	1.4%
specific heat.....	0.22 Btu/F.



specification compliance

HM-1-00523c Insulation Block, Pipe Covering and Cement, Thermal, Calcium silicate (for temperatures up to 1200F) Type II (Pipe covering) Classes A thru E.

economic thickness—ambient air at 80F

[illegible]

economic thickness

table 18y
EI —economic thickness (inches) H_L —heat loss (Btu/eff. hr)

HL heat loss (Btu/ft², hr)
ST surface temperature (°F)

importance of specifying

Selection of insulation thicknesses for any specific building should take into consideration at least the following:

1. Cost of insulation applied. 2. Cost of heat energy. 3. Cost of capital. 4. Cost of depreciation: plant and insulation. 5. Capital investment in heat production equipment. 6. Temperature differential. 7. Size of the pipe or surface. 8. Conductivity of insulation.

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

*From "How to Determine Fenestration Thickness of Insulation"—National Insulation Manufacturers Association. Economic thickness—based F-60 to 1200F (RDT ambient air dry)

sizes
Thickness: Kaylo Pipe Insulation is available in single layer thicknesses from 1" to 3" depending upon pipe size. Kaylo Copper Tubing Insulation is available in single layer thicknesses of 1/8" and 1/4".

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

Ppn Temp. Trop. (°F)	220 120			480 120			680 120		
	ET	ST	ET	ST	ET	ST	ET	ST	
6	2	4	45	3	3	150	4	140	154
7	2	4	47	3	104	103	4	155	167
8	2	4	50	3	115	109	4	169	106
9	2	2	56	3	123	86	4	187	110
10	2	2	65	3	124	58	4	202	107
11	2	2	73	3	132	36	4	220	105
12	2	2	81	3	136	142	5	213	103
13	2	2	90	3	142	98	5	213	103
14	2	2	98	3	148	97	5	207	99
15	2	2	107	3	152	92	6	212	97
16	2	2	116	3	156	93	6	229	95
17	2	2	125	3	161	93	6	246	93
18	2	2	134	3	166	93	6	263	91
19	2	2	143	3	171	93	6	280	89
20	2	2	152	3	176	93	6	297	87
21	2	2	161	3	181	93	6	314	85
22	2	2	170	3	186	93	6	331	83
23	2	2	179	3	191	93	6	348	81
24	2	2	188	3	196	93	6	365	79

Pipe sizes. Rayko Pipe Insulation is available to fit nominal pipe sizes from 1/2" to 36" in diameter, and nominal copper tubing sizes from 1/2" to 3" in diameter. It is manufactured to Dimensional Standards, Sizes to permit nesting in multiple-layer applications.

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

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

3 or 5. canvas jacket is available for all types, sizes and thicknesses of Kaylo Pipe and Tube insulation at an additional charge

smooth or embossed aluminum jacket .016" thick, or stainless steel .010". These weatherproof jackets provide greater resistance to mechanical damage and present a neat finished appearance to outdoor pipe lines. The longitudinal seam has a self-locking joint. Built-in sealing strips are furnished with optional weatherproof mesh for sealing end joints.

Integr. Res. Neurosci. 2014; 6(1): 1-10

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December, 1962

Pipe Insulation

Fiberglas 25 H-P Pipe Insulation System

**A noncombustible pipe insulation system
for hot service piping operating
at temperatures up to 450°F**

USES

Recommended for use on all heated piping operating at temperatures up to 450°F. where a complete noncombustible insulation system is desired, for commercial and institutional buildings, schools, hospitals and places of public assembly. Also recommended for processing lines where fire safety is a paramount criterion.

description

Fiberglas 25* H.P. Pipe Insulation System is composed of Fiberglas Heavy Density Sectional Pipe Insulation jacketed with a white pre-sized glass cloth jacket. Longitudinal jacket flaps are secured with flare door staples. End joints are closed with a glass cloth tape stapled firmly in place.

! benefits

fire safety: a complete insulation system with a UL rating including pipe fittings, and mastic when installed in accordance with recommended procedures.

ready for painting. factory pre-sized glass cloth jacket and matching tape and mastix system do not require field sizing. If desired, painting may be omitted. "See Application Recommendations."

damage resistant the extra heavy density pipe insulation and extra tough woven glass cloth jacket resists damage on exposed lines.

lower operating cost the exceptional thermal efficiency of Fiberglas Heavy Density pipe insulation contributes to lower operating cost of heating equipment and piping.

*Fiberglas (Reg. U.S. Pat. Off.) and "It's" are trademarks of Owens-Corning Fiberglas Corporation.

OWENS CORNING
FIBERGLAS

OWENS-CORNING FIBERGLAS CORPORATION

Industry: Construction Materials Division, 717 Fifth Avenue, New York, New York 10022
General: 43601

• **SEARCH:** 10 4500

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN

the registered copy of the Fiberglas 25 H.P. Insulation System Manual.

Send all orders to the "Fiberglas 25 H.P. Insulation System Manual" and get all the latest information. Also see that a "Change of Address" card is filled out and returned to the company.

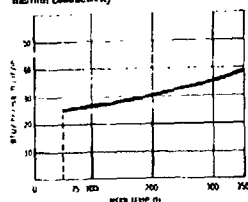
CHANGE OF ADDRESS" CA COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN

Name _____
Address _____
City _____ State _____
Phone (Area) _____

performance characteristics

Insulation
dimensional stability:
will not warp, shrink, rot or decompose
specific heat:
0.20 Btu/lb
vapor and rodent resistance:
provides no resistance
temperature limitation:
heated lines to 450°
alkalinity:
pH 9
stress corrosion:
will not cause stress corrosion cracking of stainless steel

Thermal conductivity



Jacket
performance:
mildew resistant. Will not rot or shrink.
Vapor and rodent proof.
tensile strength:
exceptional glass cloth strength exceeds that of canvas

Per sized Glass-Cloth 300 psi
5 or Canvas 211 psi

fire hazard classification

Maximum Fire Hazard Classification for building materials and insulations is noncombustible has been established as follows:

	Acceptable
Flame Spread	25
Fuel Contributed	50
Smoke Developed	50

Fiberglas 25 H.P. Insulation System, including fittings, is below the maximum allowable. This is your assurance that you can specify and use Fiberglas 25 H.P. Pipe Insulation System without the danger of contributing to the spread of fire or that combustion will liberate excessive smoke. The system has been designed to meet the stringent fire safety requirements of the GSA and Corps of Engineers.

Underwriters Laboratories
(Pipe & Equipment Coverings NS583 40 U 8 15)

	Fiberglas 25 H.P. Insulation System
Flame Spread	25**
Fuel Contributed	10
Smoke Developed	35

*Note: This rating is for the system of fittings in a pipe or in a wall.
**Note: This rating is for the system in contact with 2% of

finish

The factory pre-stored white finish eliminates the necessity of using the jacket before painting and the acid white surface may be left unpainted if desired. Fitting finish is also compatible with the insulation jacket. If painting is required, Glidden acrylic latex paint (No. 5370) is approved for use.

application recommendations

Fiberglas 25 H.P. Insulation System is installed on the pipe by stapling the longitudinal jacket flap securely with flange door staples on 2" centers. End joints are closed by wrapping with factory-furnished pre-stored glass cloth tape stapled in place.

Fittings are insulated with Fiberglas molded or segmental insulation and wrapped with O CF Joint Sealer, Type H. The wrapping is subsequently coated with O CF Fitting Mastic, Type H or Benjamin Foster 30 36.

federal specification compliance

Fiberglas 25 H.P. Insulation System is in compliance with the following specifications:
ASTM C 554-62

recommended thickness

selection of an insulation thickness for any specific application should take into consideration the following important criteria: 1. Cost of insulation applied. 2. Cost of heat energy. 3. Cost of capital. 4. Cost of depreciation plant and installation. 5. Capital investment in heat production equipment. 6. Temperature differential. 7. Size of the pipe surface.

8. Conductivity of insulation.

The thicknesses shown in the table, below, are based on the optimum balance of these considerations for selecting an insulation thickness for performance and economy.

recommended thickness heated piping to 450° (80° Ambient still air)

Pipe Temp. Temp. Diff.	200 120			300 220			400 320			450 370		
RPS	RT	HL	ST	RT	HL	ST	RT	HL	ST	RT	HL	ST
1/8	1/4	30	105	1/4	34	125	1/4	39	115	1/4	47	123
1/4	1/4	22	107	1/4	29	106	1/4	46	122	1/4	56	131
1/2	1/4	25	107	1/4	30	106	1/4	48	117	1/4	60	129
3/4	1/4	20	95	1/4	37	108	1/4	62	129	1/4	75	135
1 1/4	1/4	21	93	1/4	39	106	1/4	63	121	1/4	82	142
2	1/4	28	94	1/4	45	106	1/4	73	122	1/4	98	151
2 1/2	1/4	28	94	1/4	50	101	1/4	74	113	1/4	108	159
3	1/4	32	94	1/4	50	101	1/4	76	110	1/4	118	166
3 1/2	1/4	30	95	1/4	57	101	1/4	94	111	1/4	134	178
4	1/4	39	95	1/4	67	104	1/4	118	118	1/4	168	191
4 1/2	1/4	38	95	1/4	72	104	1/4	118	114	1/4	178	200
5	1/4	50	95	1/4	70	100	1/4	142	110	1/4	218	228
6	1/4	57	97	1/4	85	101	1/4	146	115	1/4	242	248
7	1/4	62	96	1/4	90	100	1/4	142	110	1/4	242	248
8	1/4	68	96	1/4	100	101	1/4	142	107	1/4	264	264
9	1/4	80	97	1/4	110	101	1/4	142	106	1/4	274	274
10	1/4	89	91	1/4	110	101	1/4	142	106	1/4	284	284
11	1/4	64	91	1/4	120	104	1/4	168	106	1/4	304	304
12	1/4	80	96	1/4	149	107	1/4	171	106	1/4	324	324
14	1/4	92	92	1/4	171	110	1/4	190	108	1/4	344	344
16	1/4	93	92	1/4	133	97	1/4	181	103	1/4	364	364
18	1/4	101	92	1/4	148	97	1/4	204	103	1/4	384	384
20	1/4	110	92	1/4	162	97	1/4	222	103	1/4	404	404
24	1/4	131	93	1/4	194	98	1/4	266	104	1/4	464	464
30	1/4	132	92	1/4	257	98	1/4	323	103	1/4	544	544

RT--recommended thickness HL--heat loss, Btu/hr/ft²/ft ST--surface temperature (°F) RD--total gain

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 and your staff with current information
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PUB NO 1-403853-C

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flexible piping system 1.8
 mechanical piping systems 2.7
 power and process piping systems 4.4
 December, 1968

Pipe Insulation

Fiberglas 25 C-P Pipe Insulation System

A U.L. rated noncombustible pipe insulation
 system for cold service piping operating
 at temperatures down to -100 F

uses

Recommend for use on all cold or dual-service piping
 operating from 35°F. to 450°F., where rated non-
 combustible fire safety is desired—such as, commer-
 cial and institutional buildings, schools, hospitals, and
 places of public assembly. Also recommended for pro-
 cessing lines where fire safety is a paramount criterion.
 Fiberglas 25°C-P Pipe Insulation System is composed

description

of Fiberglas Heavy Density Sectional Pipe Insulation
 jacketed with a vapor barrier laminate of aluminum
 foil and pre-sized glass cloth. The jacket has a pres-
 sure sensitive lap adhesive (on sizes up to 12" IPS x 2")
 to eliminate the use of staples, adhesives, or bands.
 The fittings are also non-combustible.

benefits

fire safety—a complete insulation system with a
 U.L. rating including pipe fittings, vapor barrier and
 mastic when installed in accordance with recom-
 mended procedures.

ready for painting—factory pre-sized glass cloth
 jacket and matching tape and mastic system do
 not require field sizing. If desired, painting may
 be omitted. If painting is required see "Applica-
 tion Recommendations."

damage resistant—the extra heavy density pipe
 insulation and extra tough woven glass cloth jacket
 resists damage on exposed lines.

lower operating cost—the exceptional thermal effi-
 ciency of Fiberglas Heavy Density pipe insulation
 contributes to lower operating cost of cooling
 equipment and piping.

no condensation drippage—the foil vapor barrier
 and pressure sensitive lap when applied as per
 instructions, assure a positive vapor seal. Fittings
 also provide a vapor seal.

installation savings—Fiberglas 25 C-P pipe insu-
 lation system meets all existing standards for fire
 safety and its uses may result in lower insurance
 costs.

*Fiberglas (Reg. U.S. Pat. Off.) and "25" are
 trademarks of Owens-Corning Fiberglas Corporation.

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN.

an registered copy of the Manual
is available to you

Under the "Registration" and
"Qualification" systems, you can
find out the "Class" of the
insulation system. This also tells you
the "Class" of the system as it is
classified in the Manual.

CHANGE OF ADDRESS? COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAN.

Name _____
Address _____
City _____ State _____ Zip _____
Phone _____

performance characteristics

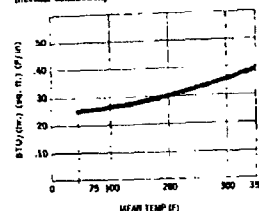
Insulation

moisture absorption: 0.2% by volume
96 hrs. at 120°F and 95% RH
specific heat: 0.20 Btu/lb. F
shrinkage: none
settling: 0.9
capillary: negligible after 24 hrs.
dimensional stability — will not warp,
shrink, rot or decompose.
venous and radiant resistance — provides
no resistance.
temperature limitation — recommended
for chilled or dual temperature piping
from 35°F. to 450°F.

Jacket

vapor transmission rate: .05 perms
burst strength: 300 psi

Thermal conductivity



Fire hazard classification

Maximum Fire Hazard Classifications for building materials
and insulation as noncombustible have been established
as follows:

	Acceptable
Flame Spread	25
Fuel Contributed	50
Smoke Developed	50

Fiberglas 25 C-P Pipe Insulation Systems, including 51
Ings., is considerably below the maximum allowable. This
is your assurance that you can specify and use Fiberglas
25 C-P Pipe Insulation System without the danger of con-
tributing to the spread of fire or that combustion will liber-
ate excessive smoke. The system has been designed to meet
the stringent fire safety requirements of the GSA and Corps
of Engineers.

Underwriters Laboratories
(Pipe & Equipment Coverings R55B3 40 U B 15)

** Fiberglas 25
C-P Pipe Insulation System

Flame Spread	20
Fuel Contributed	5
Smoke Developed	40

** Note: This rating is for the pipe insulation system
all fittings of a piping system must be of the same material
as the pipe insulation system.

application recommendations

The self-sealing lap feature on Fiberglas 25 C-P Pipe
Insulation Systems makes installation on straight runs of
pipe a simple procedure. The only precaution needed is to
keep all contact adhesive surfaces clean and to rub hard
all longitudinal and circumferential seams. The end joints
are sealed with a factory furnished joint sealing strip with
pressure sealing adhesive.

Fittings are fabricated from ordered segments of Fiberglas
Heavy Density pipe insulation or commercially available
molded insulation fitting covers.

Fitting insulation is coated with a slush coat of SC-30 insu-
lating cement to smooth out the insulation and, permitted to
dry, O-CF Fitting Mastic, Type C, is then applied over
Fiberglas Fitting Tape and coated with another coating of
O-CF Fitting Mastic, Type C.

If painting is required, no sanding is necessary, but to main-
tain the noncombustible rating of the system, only Glidden
acrylic latex paint (No. 5370) is approved for use.

specification compliance
H11 1 558a (Form 1) Type III, Class 12

Economic Thickness

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

for cold piping, proper thickness is required for
efficient operation and to prevent condensation on
the insulation surface.

Specifically:

1. Designed thickness should be specified to result
in a surface temperature above the Dew-Point tem-
perature of the surrounding air. Generally this is

equal to or greater than the "economical thickness"
despite the relatively higher cost of cold Btu's.

2. Insulation thickness should be based on ambient
air conditions and corresponding permissible tem-
perature differences.

Ambient Air Condition	Permissible Temp. drop (between Ambient air and insulation surface)
90 F at 90% R.H. 90 F at 80% R.H.	8°F 7°F

3. Piping operating down to freezing temperature
or cycling hot and cold temperatures should be in-
sulated for maximum performance during the cool-
est part of the cold cycle.

Economic Thickness—Ambient Still Air At 90F

Pipe Surface Temperature 90 F	PIPE SIZE																number having optimal size			
Condition Ice Water	1/2	3/4	1	1 1/4	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36	48
90% RELATIVE HUMIDITY	1 1/2	1 1/2	2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Recommended Thickness in.	1 1/2	1 1/2	2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Heat Loss (Btu/Hr/ft)	5	5	7	8	10	12	15	17	21	25	31	37	45	53	63	75	91	111	135	165
90% RELATIVE HUMIDITY																				
Recommended Thickness in.	1 1/2	1 1/2	1	1	1	1	1	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Heat Loss (Btu/Hr/ft)	8	8	9	10	12	14	17	20	25	31	37	45	53	63	75	91	111	135	165	200

* Minimum thickness available 1/2" (1" to 1 1/2", where 24" (1" to 1 1/2")



Fiberglas 25 C-P Pipe Insulation System is installed by the unique method shown
above. The pipe is wrapped with the insulation. The self-sealing lap joint
adhesive allows a pressure resistant seal at all joints and around apertures.
It is as easy as 1, 2, 3. (1) Start to peel the release paper off the

paper barrier. (2) Apply to pipe and peel off the barrier. (3) Press the
lap to place it in the correct line, pressing the paper out from under the
adhesive allows a pressure resistant seal at all joints and around apertures.
end. Rub with the blunt edge of a hard tool to place a square seal at
2" wide built strip of the same self-sealing vapor barrier material.

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FIBERGLAS

Mechanical Piping Systems 2.3.1

Date 1-10-66

Revised 10-21-67

**application specifications
REFRIGERANT SUCTION
CHILLED WATER (Primary & Secondary)
COOLING TOWER WATER**

Insulate all Refrigerant Suction piping minus 20F to 35F with _____ inch nominal
thick Fiberglas:

Heavy Density Sectional
One Piece

pipe insulation having a factory applied

Self Sealing Lap (SSL)
Fire Retardant (FRJ) Vapor Barrier Jacket.

NOTE: Insulation Thickness - Thickness to be selected from manufacturers literature
based upon Pipe Temp and Ambient conditions. When thickness required exceeds
2", or when specified, Multiple layer insulations may be furnished. All
Multiple Layer thicknesses are supplied with a Vapor Barrier Jacket on the
inner layer.

APPLICATION

Straight Run

Apply inner layer (if double layer is used) to pipe and seal vapor barrier laps
and Butt Strips with vapor barrier lap adhesive.* The butt ends of the inner
layer are to be sealed to the pipe with a thick coating of Vapor Seal Mastic* at
21 foot intervals and at each fitting. The outer layer is to be P/G P/C with
FRJ-SSL. FRJ-SSL Butt Strips are to be used to seal all butt joints. Press
hard on all SSL sealing surfaces. The butt ends of the insulation shall be
sealed off to the inner layer vapor barrier jacket or the pipe at 21 foot inter-
vals, and at every fitting.

NOTE: 1. In both cases mentioned above, contraction joints are to be constructed
at 21 foot intervals at staggered butt joints (not those that are vapor
sealed) by packing a 1" space with light density Aerocor compressed to
1/3 its original thickness.

Fittings

Fittings, valves, flanges, etc., shall be insulated with single or multiple
layer applications of insulation as described above for straight runs of piping.
On fittings mitered segments or pre-molded P/G fittings shall be wired in place.
The vapor barrier shall consist of 1 mil aluminum foil wrapped tightly over
insulation, with all laps sealed with Vapor Seal Mastic,* covered with 1/8 inch
wet coat of Vapor Seal Mastic* into which Glass Fabric* is embedded.

* Refer to Secondary Material List for suggested manufacturers of mastic, adhesives & other necessary materials.

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The above specification is general in nature. Application practices in all the descriptive and responsi-
bility of the Design Engineer to meet specific job requirements.

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(page 2 of 2, S.1)

A final 1/8 inch wet coat of Vapor Seal Mastic® shall then be applied. The entire Vapor Barrier at each flange, valve and fitting shall extend a minimum of 2" on to adjacent pipe.

FINISH

Straight Runs

- A. Indoor - For concealed piping, leave as is. For exposed piping, apply 6 oz. canvas with lagging adhesive.* Allow to dry and paint.
- Option - In areas where high abuse resistance is required, apply 16 mil embossed aluminum jacket banded in place with 3/4" x .015" aluminum bands. Jacket shall have at least a 2" overlap at both longitudinal and circumferential joints.
- B. Outdoor - Apply 35, 45, 55 lbs. roofing felt with a 2" overlap at longitudinal and circumferential joints. All joints to be positioned to shed water. Wire jacket in place with 16 gauge copper annealed wire on 9" centers.
- Option - In areas where appearance or abuse resistance are factors, apply a 16 mil embossed aluminum jacket with a 2" overlap at longitudinal and circumferential joints. Secure in place with 3/4" x .015" aluminum bands on 18 inch centers.

Fittings

- A. Indoors - For concealed piping, leave as is. For exposed piping apply 6 oz. canvas with lagging adhesive.* Allow to dry and paint.
- Option - In areas where high abuse resistance is required, apply a humped aluminum cl and band in place. Where flanges or valves are involved, fabricate 16 mil aluminum to fit.
- B. Outdoor - Coat with 1/8" thick wet coat of weatherproof mastic* extended over at least 2" on adjacent piping.
- Option - Where abuse resistance is a factor, apply humped aluminum cl or fabricated 16 mil aluminum and band in place.

NOTE: Where it is known that piping will be walked on or subject to continuous abuse care should be taken to provide the greatest protection possible to prevent damage to the vapor barrier jacket.

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Mechanical Piping Systems 25.2

application specifications

REFRIGERANT SUCTION
CHILLED WATER (Primary & Secondary)
COOLING TOWER WATER
Brass Soft Copper Connections

Date 1-10-66

Revised

Insulate all (Refrigerant Suction) Chilled Water - primary and secondary (Bent Soft Copper) piping OF to 70F with _____ inch thick O.C. Flexible Tubing.

CONCEALED

- Piping** - On pipe or tubing not yet installed, Unslit Flexible Tubing shall be slipped over the full length of the piping or tubing leaving a sufficient amount of exposed piping for connections. After connections are made and tested, apply insulation over fittings so as to cover all piping completely. Slit insulation shall be used on systems which are to be insulated after installation. Seal all butt joints and slit insulations with OC-500 Adhesive.
- Fittings** - Flexible tubing shall be slipped over copper tubing fittings. Iron pipe or cast bronze fittings are to be sleeved (insulated) with a larger diameter of flexible tubing insulation nested over the covering on adjacent piping and adhered with OC-500 Adhesive.

EXPOSED AND OUTDOORS

Exposed piping may be finished (by others) with an approved Non-Bleeding Paint.

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The above specification is issued in answer. Application procedures to or the description and responsibility of the Design Engineer to meet specific job requirements.
*Refer to Necessary Materials List for suggested measurements of materials, adhesives & other necessary materials.

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Mechanical Piping Systems 2.5.3

Date 1-10-66

Revised _____

application specifications

**DUAL-TEMPERATURE
MAKE-UP WATER**

Insulate (Dual Temperature) (Make-up Water) piping 50F to _____ with _____
inch nominal thick Fiberglass:

- a) Heavy Density Sectional
- b) One Piece

pipe insulation having a factory applied

- a) Self Sealing Lap (SSL)
- b) Fire Retardant (FRJ)
- c) Universal Fire Retardant (UFR)

Vapor Barrier Jacket.

CONCEALED

Piping - Apply insulation to pipe with all sides and end joints butted
tightly.

- a) Adhere SSL Jacket by removing release paper after the
insulation is installed on pipe, and sealing the lap
starting in the center of each section, working towards
ends. Lap must be pressurized by rubbing with hard tool
such as the back of a table knife blade. 3" Butt Strips
are installed in the same manner at the joint between
sections.
- b) Adhere the factory applied (FRJ) (UFR) Vapor Barrier
lap smoothly and securely at the longitudinal laps with
a White Vapor Barrier Adhesive. Adhere 3" wide butt
strips smoothly and securely over all end joints with
the Vapor Barrier Adhesive to insure a continuous
Vapor Barrier.

Fittings - Insulate all fittings, (flanges), (valves) and (strainers)
with mitered segments of pipe insulation, oversized pipe
insulation, or molded fittings. Coat each fitting with two
1/8" coats of an approved Vapor Barrier Mastic reinforced
with Glass Fabric extending 2" onto adjacent pipes.

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The above specifications are general in nature. Application procedures in all the drawings and requests
should be the basis for the final job specifications.

*Refer to Appendix B for suggested manufacturers of mastic, adhesives & other
covering materials.

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(page 2 of 2.5.3)

EXPOSED

All piping exposed in finished spaces and Mechanical Equipment Rooms shall be additionally finished with:

- 6 oz. canvas smoothly pasted in place on piping and fitting with Lagging Adhesive* and sized with one brush coat of Lagging Adhesive.*
- Pre-Sized Glass Cloth adhered to piping with Lagging Adhesive.* Fittings shall be covered with 6 oz. canvas saturated with Lagging Adhesive.*

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Mechanical Piping Systems 2.5.4

Date 1-10-66

Revised 6-15-67

application specifications

HEATING HOT WATER - STEAM & CONDENSATE
HIGH TEMPERATURE HOT WATER
FUEL OIL PIPING

Insulate all (Heating Hot Water-supply and return) (Steam and Condensate) (High Temperature Hot Water) (Fuel Oil Piping) with Owens-Corning Fiberglas.

- | | |
|----------------------------|-----------------|
| a) Heavy Density Sectional | (450F maximum) |
| b) One Piece | (400F maximum) |
| c) Kaylo | (1200F maximum) |

pipe insulation having a factory applied

- Standard canvas
- Pre-Sized Glass Cloth

jacket. Thickness of insulation shall be:

System

- Heating Hot Water
- L. P. Steam Condensate
- M. P. Steam Condensate
- High Temperature Hot Water
- Fuel Oil Piping

CONCEALED

Piping - Apply insulation to clean dry pipe with side and end joints butted tightly. Seal lap of jacket (and Butt joint strips) with an approved Lagging Adhesive.*

Fittings - Insulate fittings (flanges and valves of (M.P. Steam Condensate) (or High Temperature H. W.) piping) with mitered pipe insulation, or P/C Pre-Molded fitting made smooth with insulating cement and jacket with 4 oz. canvas, saturated with an approved Lagging Adhesive.*

EXPOSED

Piping - All pipe insulation exposed in finished spaces or Mechanical Equipment Rooms shall be jacketed with:

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The above specification is general in nature. Application procedures are at the discretion and responsibility of the Design Engineer in most specific job requirements.

*Refer to Accessory Materials List for suggested manufacturers of mastics, adhesives & other accessory materials.

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Figure 4

Apply a skim coat of SC-30 Insulating Cement to the insulated fitting, if needed, to produce a smooth surface. After cement is dry, apply a light coat of either OCF Fitting Mastic, Type H or Benjamin Foster Sealfast Mastic #30-36, U.I. labeled.



Figure 5

Wrap the fitting with Fiberglas Fitting Tape overlapping the preceding layer by 1 to 2". Also overlap mastic and Fiberglas Fitting Tape by 2" on adjoining sections of pipe insulation.



Figure 6

Apply a second coat of mastic over the Fiberglas Fitting Tape, working it into the mesh of the cloth — smooth the surface. Mastic shall be applied at a rate of not less than 40 sq. ft. per gallon (approximately 1/4" wet film thickness) for rated performance.



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Plumbing Systems	1.5.7
Mechanical Piping Systems	2.5.6
Power & Process Piping	5.5.4

Date 7-10-68

Revised

application specification
FIBERGLAS 25* : C-P
cold piping system down to 35F

Figure 1

Apply Fiberglas Molded or Segmental Insulation to fittings equal in thickness to that of the insulation to be applied to adjoining pipe and securely fasten in place, using wire.



Figure 2

Apply pipe insulation and remove release paper from factory applied pressure sensitive adhesive strip on the longitudinal lap.



Figure 3

Seal longitudinal lap to the adjacent surface starting at the center of the section and working toward each edge. Rub hard with the back of a knife or a nylon sealing tool for proper seal.



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Figure 4

Apply the pressure sensitive adhesive coated butt strips and rub down firmly using the back of a knife or a nylon sealing tool to obtain good bonding. Note: Minimum ambient application temperature for this adhesive is 35°F. Surfaces must be thoroughly dry and free from dust.



Figure 5

Apply a skim coat of SC-38 Insulating cement to the insulated fitting, if needed, to produce a smooth surface. After cement is dry, apply OCF Fitting Mastic, Type C, U.L. labeled.



Figure 6

Wrap the fitting with Fiberglas Fitting Tape overlapping the preceding layer by 1 to 2". Also overlap mastic and Fiberglas Fitting Tape by 2" on adjoining sections of pipe insulation.



Figure 7

Apply a second coat of OCF Fitting Mastic Type Cover the Fiberglas Fitting Tape, working it into the mesh of the cloth -- smooth the surface. Mastic shall be applied at a rate of not less than 40 sq. ft. per gallon (approximately 1/16" wet film thickness) for rated performance.



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selection guide

temperature	products	data page	spec. page
Cold Equipment - 20F to 70F	Type 785	3.2	3.S.1
	Fiberglas 25 C-E	3.8	3.S.4
Hot Equipment 70F to 1200F	Type 704 (to 450F)	3.2	3.S.2
	I-S Board (to 850F)	3.3	3.S.2
	Metal Mesh Blanket (to 1000F)	3.4	3.S.2
	Kaylo Block (to 1200F)	3.5	3.S.2
	Fiberglas 25 H-E (to 450F) (to 850F)	3.7	3.S.3

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Name the "Insulation" and "Fiberglas" Fiberglas will send you and the self-mailing literature. We also have a "Change of Address" card to send us if your address changes.

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OWENS CORNING FIBERGLAS

plumbing systems 1.8
mechanical equipment 3.3
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power & process equipment 6.1
crucibles & tanks 7.3
boilers & chimneys 8.8
January, 1969

Equipment Insulation

Industrial Insulation 700 Series

a highly versatile group of Fiberglas insulating boards designed to insulate ductwork and equipment operating at temperatures up to 450°F

uses

description

The 700 Series boards have been designed primarily to insulate heating and air conditioning ducts, ovens, tanks, boilers, hot water generators and other hot equipment.

type 700 — a low cost flexible material suitable for insulating factory-fabricated metal panels and for packing into irregular spaces

type 701 — A lightweight resilient insulation, in board form, used on vessels having irregular surfaces where the exterior finish is supported by welded studs, pins or other mechanical attachments

type 702 — More rigid than 701 and is recommended for use on equipment and ductwork subject to minimum maintenance and construction abuse

type 703 — A semi-rigid board recommended for use on equipment, vessels and air conditioning ductwork.

Fiberglas 700 Series Industrial Insulations are made of inorganic glass fibers pre-formed into semi-rigid to rigid rectangular boards of varying densities. The series consists of type 700, 701, 702, 703, 704 and 705. Each type has specific thermal and physical characteristics which makes it suitable for the uses described. Type 703, 704 and 705 are available with a variety of factory-applied vapor-barrier facings to prevent condensation on cold surfaces and to provide a neat finished appearance. Five Retardant Facings are available.

type 704 — A rigid board recommended for use on heating and air conditioning ductwork in exposed areas where sharp, true corners and smooth surfaces are desired.

type 705 — A rigid board with very high strength characteristics for use on chillers, hot and cold equipment, heating and air conditioning ductwork where greater abuse resistance and good appearance is required.

benefits

lower operating costs — the exceptional thermal efficiency of Fiberglas 700 Series insulations lowers operating costs.

end-use tailored — a variety of densities and facings offers a selection of products to meet specific performance and economic requirements.

continuous in-place performance — 700 Series resists

damage, maintains structural integrity and efficiency. Thickness stays uniform.

neat, finished appearance — the boardlike characteristics of the heavier density 703, 704 and 705 products provide neat square corners. The factory-applied facings present an attractive finished appearance.

fire safe — Fiberglas is inherently fire safe. The unfaced boards and the Aluminum Foil Faced 703, 704 and 705 have UL Flame Spread ratings of less than 25.

*T.M. Reg. O.C.F. Corp.

291383

COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAI

its registered copy of the Fiberglass Insulation Systems MAI

Under the "Supervision" and "Insulation" Fiberglass will keep you and your staff and revised information. Note also that a "Change of" is to be made at 4 your office.

CHANGE OF ADDRESS" COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAI

Name _____

Room _____

City _____

State _____

Zip _____

Please Print _____

performance characteristics

sound absorption coefficients (2" thick #6 mounting)

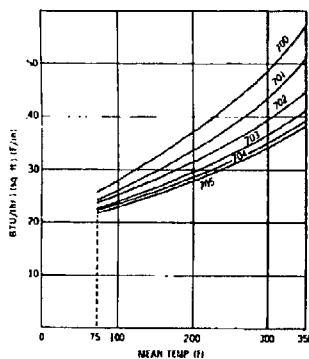
TYPE	125	250	500	1000	2000	4000	NRC
701	.34	.70	.96	.97	.86	.83	.87
702	.28	.77	.96	.98	.87	.87	.89
703	.32	.74	.97	.98	.87	.85	.89
704	.27	.79	.98	.99	.88	.86	.91
705	.48	.82	.97	.99	.90	.86	.92

size and density

Type	Density (pcf)	Thickness (in V ₂ increments)	Compressive Strength (psi at 10% deflection)	Stacked Size	Therm. Cond. ± 10° Mean Temp.
700	1.08	1"-4"	31		0.260
701	1.58	1"-4"	4.51	24" x 48"	0.242
702	2.25	1"-3"	9.51		0.235
703	3.00	1"-2"	100		0.230
704	4.20	1"-2"	200		0.230
705	6.00	1"-2"	350		0.220

*For special applications, thickness up to 48" x 96" also available. (After compression packaged.)

thermal conductivity



moisture absorption

bacteria and fungus resistance

odor

humidity and temperature effect

corrosion

Mass 100% 0.2% by volume

does not breed nor promote

odorless

cycling conditions will not cause spalling or crumbling

does not accelerate corrosion of copper, steel or aluminum.

facings

Type 701, 704 and 705 are also available with the following factory applied vapor barrier facings:

FF — 602 aluminum foil (AL Rated)

FR — Polyurethane foam

EP — DuPont Laminated heat

thickness to prevent condensation

cold ducts and equipment

The following chart indicates the recommended thickness of Type 701, 704, 705 faced duct insulation for installation on cold 2" ducts at various temperature differences (duct to air). Also shown are values for heat gain and approximate maximum relative humidity allowable.

fire hazard classification

Name spread fuel contribution smoke developed (compared to untreated Red Oak as 100)	retard		self faced	
	(701, 702, 703)	(704, 705)	(701, 704, 705)	(702, 703, 705)
	10-20	15	15-40	0
	10-25	18	20-30	0
	9-20	8	20-30	0

application recommendations

Type 701, 704, 705 — Lightweight unfaced flexible insulations in board form. Use on vessels having irregular surfaces where the surface is supported by welded studs or stiffeners and not by the insulation itself. The products are self supporting but are generally secured with mechanical fasteners and protected by sheet metal.

Type 701, 704, 705 — These board insulations are normally applied on welded plate on flat surfaces. They are cut in segments and bonded in place on irregular surfaces. Unfaced boards are normally finished with reinforced insulating cement or waterproof mastic. Faced boards, with joints taped to provide a continuous vapor barrier, may be left unfinished or may be covered (painted).

recommended thickness — heated equipment

(RT ambient air)

Surface	Type 701	Type 702	Type 704
Temp.	RT	RT	RT
100	14	11	16
200	21	16	25
300	28	21	32
400	35	28	40
500	42	35	48

RT — recommended economic thickness, inches.

SL — heat loss (Btu/hr ft²).

ST — surface temperature (°F).

specification compliance

ASH-1542, Type I	700
ASH-1542, Type II	701, 702, 703
ASH-1560b, Form A, Class 1	702, 703*, 704, 705
ASH-1560b, Form A, Class 2	703*, 704, 705
ASH-1560b, Form B, Type I, Class 7	700, 701, 702
ASH-1562, Type I, Class 2	703*, 704, 705
ASH-1563, Type II, Class D (XOF**)	701, 702, 703
ASH-1564, Form I & II, Class A	703*, 704, 705
Naval Bureau of Yards and Docks, 10YF	703*, 704, 705
Corps of Engineers, C.E.—303.08, 31 thru 33	703*, 704, 705

**Type 701 is currently produced by methods which are variations of conditions to the above listed specifications is required. Specify this or listed for use on hot or cold equipment and in an approved framework.

**values depend on vapor temperature.

limitations

Industrial insulation 700 series, plain, should not be used on surfaces operating at temperatures above 450°F. Types 701, 704, 705 faced products should not be used on surfaces operating at temperatures greater than 220°F except that 705 may be used at a maximum thickness of 2½ inches up to 450°F.

caution

Owens-Corning Fiberglass Insulations are to be applied only with approved adhesives, mastics and mechanical fastening devices as published in Accessory Materials Ltd. Pub. No. 6-1N-340. Owens-Corning Fiberglass accepts no responsibility or liability for the performance of materials other than those listed unless approved in writing by O-C Testing Laboratories.

COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAY

the enclosed copy of the Fiberglas Insulation Systems MAY

Under 10 of the "Superior" and "Fiberglas" Fiberglas will keep you and your roof and prevent intermediate and, note also that a "Change of" to order or if your choice changes.

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OWENS-CORNING
FIBERGLAS

OWENS-CORNING FIBERGLAS CORPORATION

Industrial and Commercial Construction Materials Division, 717 Fifth Avenue, New York, New York 10022
General Offices, Toledo, Ohio 43601

Pub. No. 3-10-2872-X

291386

Litho in U.S.A. Jan. 1969

OWENS-CORNING
FIBERGLAS



Intermediate Service Board

a lightweight, highly efficient, semi-rigid
insulation for service temperatures up to 850°F

uses

Fiberglas® I-S Board Insulation is designed for use on boilers, breechings, ducts, chimney liners and other heated equipment operating at temperatures up to 850°F. It is designed for use in applications where an outside facing of steel sheet or metal mesh (with or without finishing cement) is provided.

description

Intermediate Service Insulation (I-S) is a lightweight insulation composed of Fiberglas fibers bonded together in semi-rigid, boardlike form with a special high temperature binder.

benefits

lowers operating costs—Fiberglas Intermediate Service Board is an extremely efficient thermal insulation. A low k factor of .30 at 200°F mean temperature means lower fuel costs due to less heat loss—more comfortable working conditions in equipment rooms. This superior thermal efficiency is attained because of fiber fiber construction and the complete absence of shot or unfibrous materials. Heat flow tests on a 600°F power plant duct insulated partially with I-S insulation and with a 8 pci mineral wool insulation showed that I-S board had superior heat flow characteristics over an 18-month period of continuous service.

lowers cost installation—the lightweight feature of

I-S Board insulation means easier handling, and the larger size pieces, up to 4' x 4', speed installation and reduce the number of joints to seal heat. Larger sizes are possible because of unusual structural integrity. The insulation will not crumble or break; cuts cleanly; no good tight joints, conforms readily to irregularities and curved surfaces and requires no full thickness if compressed.

continuous in place performance—Fiberglas Intermediate Service Board will not slump or deteriorate in severe service conditions. The insulation easily passed the rugged Navy Test Method 154758, Paragraph 4.5.3 which requires vibration at 12 cps through an arc of .015" for 100 hours at 750°F, without setting.

*Trade with O-C Fiberglas Corp

mechanical equipment 2.2
power & process equipment 6.2
chemical & metals 7.4
boilers & chimneys 8.1
April, 1968

Equipment Insulation

291387

2913842

COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAINTENANCE

is required copy of the Fiberglas Insulation Systems Maintenance Manual.

name fill out the "Information" card with Owens-Corning Fiberglas will send you and your own and related information. Please also fill in "Change of Address" if you address change.

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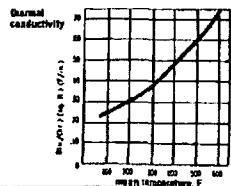
General Office, Toledo Ohio 43601

291390

291391

performance characteristics

moisture absorption less than 0.2% by volume
temperature resistance no sag, slump or loss of thickness at 1000 F
backdraft and flames resistance does not breed nor promote
odor essentially odorless
temperature limit 1000 F
specific heat 0.20 Btu/lb. F.



width — 12" (min.) 24" (max.)
length — 24" (min.) 96" (max.)
thickness — 1" — 6" (in increments of 1/4")
form — blanket

blanket
"D" — Fiberglas blanket fitted by the weaver to a metal facing on opposite sides. Recommended where a (closed) surface is needed to conform to irregularities on the equipment surface.
"R" — Rigid metal tank with a 1/4" rib. Used where maximum rigidity is required in a blanket. Metal rib turned to the outside (ATR) or toward insulation (RAT). Turned-out rib provides air space between insulation and hot surfaces, often advantageous when insulating steel (bearing) sheets to increase the overall insulating efficiency of the blanket.

"H" — Conventional 1" hexagonal poultry netting galvanized prior to weaving. The most flexible metal facing. Vacuum molded where a blanket must be shaped to irregular surfaces and where movement of the blanket in a panel is to be prevented. Not a vacuum case for non-laying current.

"L" — Expanded metal with 1/2" mesh. Metal facing for insulating of finishing covered. Recommended where a smooth finish is desired on large, flat or curved surfaces.

recommended thicknesses
Recommended thickness, heat loss, efficiency and surface temperature data are provided for the various Commercial, Power and Process Industries so that the design engineer can better select the thickness required for his specific job conditions. On addition work increase recommended thickness at least 1/2" inch to compensate for wind conditions.

Surf. Temp. Amb. Air 70 F	COMMERCIAL (Ambient Air 60 F)				POWER				PROCESS			
	RT	HL	ST	RT	HL	ST	RT	HL	ST	RT	HL	ST
200	25	25	100	15	21	51	19	26	53			
300	15	24	100	7.9	30	95	15	37	99			
400	7.5	24	100	7.5	29	100	2.6	47	104			
500				3.0	47	104	2.5	58	109			
600				3.5	56	108	3.8	64	114			
700				4.0	64	112	3.5	79	120			
800				5.0	74	117	4.0	90	125			
900				5.5	83	122	4.5	101	131			
1000				6.0	91	127	5.0	114	137			

RT — recommended thickness — inches
HL — heat loss — Btu/ft²/hr
ST — surface temperature — (F)

application recommendations
For steel equipment over 10" O.D.
Hold the Metal Mesh Blankets in place with 1/2" metal bands on 12" to 36" centers. Lay metal edges that butt together with No. 16 galvanized annealed wire.

For large flat or irregular surfaces
Temple Metal Mesh Blankets over suitable welded fastener on 12" to 36" centers. Lay metal edges that butt together place. Blankets shall be better evenly and laced with No. 16 galvanized annealed wire. On large vessels or ducts operating at temperatures over 600 F expansion joints are required on not greater than 36" foot centers. (Blankets are available with 1/2" metal rib (ATR) which provides an air space between the insulation and the hot surface for improved thermal performance.)

Finishing methods
Minimum interior finish (or base for further finishes). Apply 1/2" coat of O.C. Insulating Cement. Let dry.

Good interior finish (does not require painting). To minimum minor rough apply resin base taping adhesive, 5 or 8 oz. canvas and a final brush coat of the taping adhesive.

Weather resistant finish for outdoor work. Trowel two coats of suitable epoxide or vinyl ester weather resistant mastic with glass fabric reinforcement between coats. Each coat is to be at least 1/2" wet thickness.

Installation compliance
181-1562 Insulation, Blocks, Boards, Blankets, Felt, and Industrial Blank (for Heated Surfaces), Type I, Class A and B.

181-1562a Insulation, Blocks, Boards, Blankets, Felt, Sheeting (Pipe and Tube Covering) and Pipe Fitting Covering, Thermal (Mineral Fiber, Industrial Type), Form C, Class B.

OWENS-CORNING FIBERGLAS



uses

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

Kaylo 20® with its high temperature limit of 1800F extends its use to include refractory wall backing for furnaces and boilers and fireproofing of equipment and vessel skirts.

benefits

High thermal efficiency — both Kaylo and Kaylo 20 offer excellent thermal efficiency coupled with high strength. A low k of .40 for Kaylo and .52 for Kaylo 20 at 200F mean temperature proves that Kaylo will provide significant savings in operating costs over the life of the equipment.

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

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

will not cause stress corrosion cracking — Kaylo will not cause stress corrosion cracking of stainless steel because Kaylo contains less than 200 ppm soluble chlorides as well as an inhibitor which prevents trace quantities of chlorides from the

atmosphere or other sources from causing cracking and possible failure of piping and equipment.

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

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

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

*Kaylo is a registered trademark (Reg. U.S. Pat. Off.) of Owens-Corning Fiberglas Corp.

plumbing systems 1.6
mechanical equipment 3.6
power & process equipment 6.0
reactors & tanks 7.7
boilers & chimneys 8.3
January, 1989

Equipment Insulation

Kaylo & Kaylo 20 Block Insulation

rigid calcium silicate insulations for all types of heated equipment operating at temperatures up to 1800F.

description

Kaylo and Kaylo 20 Block Insulations are rigid hydrous calcium silicate heat insulations reinforced with asbestos fibers. They are strong, efficient and are highly resistant to abrasion and moisture damage. Kaylo 20 has a slightly pink color to distinguish it from Kaylo.

291391

COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MAY

is registered copy of the Fiberglas 25 H-E Equipment Insulation System.

larger fill out the "Registration" card and send it to the Fiberglas 25 H-E Equipment Insulation System. Note also that a "Change of Address" card is included in the registration card.

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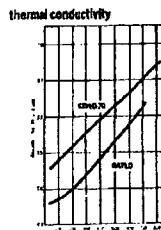
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performance characteristics

	KAYLO	KAYLO 20
density:	11 pcf approx.	12 pcf approx.
flexural strength (ASTM C-203)	over 50 lb/sq. in.	90 lb/sq. in.
compressive strength (ASTM C-144 at 0% deformation)	125 psi	130 psi
resistance to abrasion: (conventional temperature test - loss in weight before and after)	after 10 minutes 10% after 20 minutes 20%	
dimensional stability:	linear shrinkage after heating for 24 hours is null at 1200 F. -1.4%	
alkalinity:	ph 10	



economic thickness*

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

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

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

economic thickness—Kaylo Block to 1200 F.—ambient still air 80 F

WICK	200 F		300 F		400 F		500 F		600 F		700 F		800 F		900 F		1000 F		1100 F		1200 F	
	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.	HEAT LOSS	TEMP.
1000	18	101	22	124	109	141	109	141	109	141	109	141	109	141	109	141	109	141	109	141	109	141
1500	27	95	31	111	78	127	80	145	80	145	80	145	80	145	80	145	80	145	80	145	80	145
2000	21	93	40	104	60	117	83	130	80	145	80	145	80	145	80	145	80	145	80	145	80	145
2500	17	90	33	100	49	100	84	121	87	133	109	146	112	148	112	148	112	148	112	148	112	148
3000	14	88	28	97	42	105	57	115	74	125	80	145	80	145	80	145	80	145	80	145	80	145
3500	11	86	24	95	36	102	49	110	64	119	80	145	80	145	80	145	80	145	80	145	80	145
4000	11	87	21	92	37	99	44	107	56	114	74	123	85	132	102	142	120	153				
4500	10	85	19	91	28	97	39	104	50	111	63	118	76	127	91	136	107	145	125	156		
5000	9	85	17	90	26	96	35	101	46	108	57	115	69	122	82	130	97	139	111	149	130	159
5500	8	83	16	89	23	94	32	100	42	106	52	112	65	118	75	126	88	134	103	143	119	152
6000	7	83	14	89	22	93	30	98	38	105	48	109	62	115	69	122	82	130	94	138	109	146

economic thickness—Kaylo 20 Block to 1800 F.—ambient still air 80 F

Operating Temp. F	Power			Process		
	ET	ML	ST	ET	ML	ST
1300	7½	111	136	6	135	148
1400	8	117	139	6½	143	152
1500	8	123	142	7	151	155
1600	8½	129	145	7	158	159
1700	9	135	148	7½	165	163
1800	9½	141	151	7½	172	166

specification compliance

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

MIL-1-2819E Insulation Block, Thermal, Class 1, 2, and 3. ASTM C533-67.

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

DOWNS CORNING
FIBERGLAS

DOWNS-CORNING FIBERGLAS CORPORATION

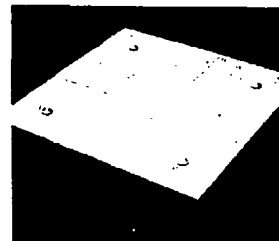
Commercial and Industrial Construction Materials Division

2211 Avenue, New York, New York 10022 • General Offices, Toledo, Ohio 43601

291393

(170) MC 125-144

FIBERGLAS



plumbing piping systems 1.9
mechanical equipment 3.2
air handling systems 4.28
December, 1968

Equipment Insulation

Fiberglas 25 H-E Equipment Insulation System

A noncombustible rigid board insulation system
for hot service ducts and equipment operating
at temperatures up to 1800° F.

uses

Recommended for use on all hot mechanical equipment and ductwork operating up to 450° F., where the ultimate in noncombustibility is desired.

description

A Fiberglas 25° H-E Equipment Insulation System for heated surface ducts consists of a rigid insulation board of glass fibers faced with a noncombustible pre-sized Fiberglas cloth. Other components of the system include a non-combustible pressure sealing joint tape and pre-finished metal fastener caps attached to welded pin anchors.

benefits

fire safety—a complete insulation system with UL rating on board, facing, joint tape, fastening device.

ready for painting—the pre-sized white glass cloth facing, matching tape and fastener caps do not require field sizing prior to painting. If painting is required, use recommended paint.

damage resistant—the tough finely woven glass cloth facing resists damage and the rigid insulation board absorbs most impact blows without damage.

lower operating cost—the uniform, factory controlled board thickness assures constant thermal efficiency performance.

Fiberglas (Reg. U.S. Pat. Off.) and "25" are trademarks of Owens-Corning Fiberglas Corporation.

291393

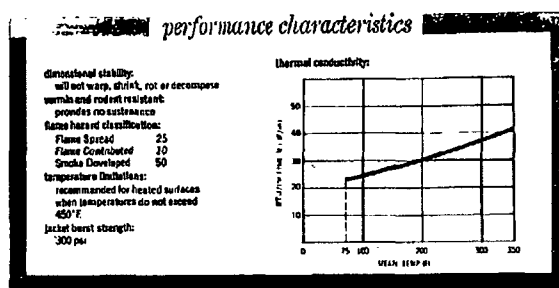
COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MA

is registered copy of the Fiberglas 25 H-E Equipment Insulation System.

Under 25 and the "Insulation" and "Equipment" Fiberglas will have you and your own and your own information. Here also that a "Change of Address" to advise us if your address changes.

**RANGE OF ADDRESS* CA
MMERCIAL & INDUSTRIAL
INSULATION SYSTEMS MA**

Name _____
 Title _____
 Company _____
 Address _____
 City _____ State _____ Zip _____



sizes
 Width 24", Length 48", Thickness 1", 1 1/4", 2".

fire hazard classification
 Maximum Fire Hazard classification for building materials and insulation as noncombustible has been established as follows:

	Acceptable
Flame Spread	25
Fuel Contributed	50
Smoke Developed	50

Fiberglas 25 H-E Insulation System, including fittings, performs better than the maximum allowable. This is your assurance that you can specify and use this system without the danger of contributing to the spread of fire or that combustion will liberate excessive smoke. The system has been designed to meet the stringent fire safety requirements of GSA and Corps of Engineers.

Underwriters Laboratories
 (Pipe & Equipment Coverings R5503 40 U&15)

*Fiberglas 25 H-E Insulation System

Flame Spread	25
Fuel Contributed	10
Smoke Developed	50

*Note: This rating is for the complete product and includes the use of D-17 Type H Joint Sealing Tape if materials and application conform to these recommendations.

specification compliance
 meets the stringent fire safety requirements of GSA and Corps of Engineers HH 1-55a, Form A, Class 1 & 2, ASTM C392-63.

Meets NFPA 90A fire hazard requirements.

application recommendations
 Fiberglas 25 H-E Equipment Insulation System is installed by impaling the insulation boards on welded pins spaced 3" in from each corner of the board with intermediate pins on no greater than 21" centers.

After boards are impaled, the welded pins are cut to extend 1/4" beyond the face of the board and a self-locking cap is pushed onto the pin.

All insulation raw edges and butt joints are to be sealed with O CF Joint Sealing Tape, Type H. Tape is a pressure-sealing type requiring no separate adhesive. Pressure tape by rubbing hard with a plastic sealing tool.

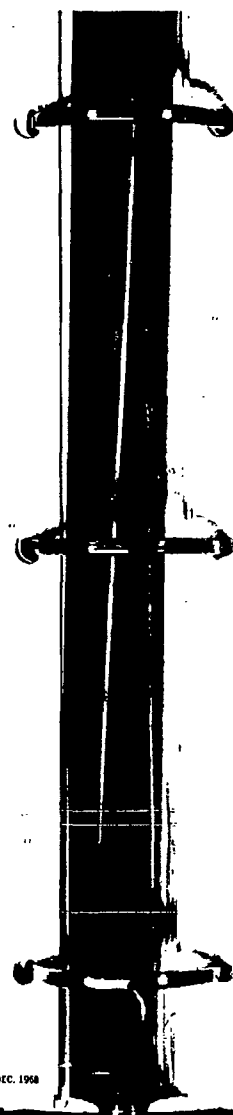
Ductwork elbows and other sharp radius bends require pre-cutting of the insulation board to conform to the curved surface.

If painting is required, no sizing is necessary, but to maintain the noncombustibility of the system, only Glidden acrylic latex paint (No. 6370) is approved for use.

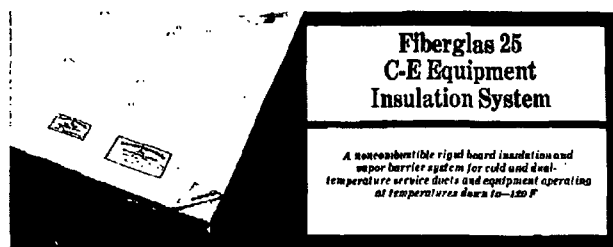
recommended thickness—heated equipment (per ambient air)

Operating Temp.	HT	HL	BT
150°	1	1 1/2	2
250°	1 1/2	2	2 1/2
350°	2	2 1/2	3
450°	2 1/2	3	3 1/2

BT — recommended minimum thickness, inches
 HL — heat loss (Btu/Hr-sq ft)
 HT — surface temperature (°F).



OWENS CORNING FIBERGLAS



mechanical equipment 3.8
 air handling systems 4.13
 December, 1968

Equipment Insulation

**Fiberglas 25
 C-E Equipment
 Insulation System**

A noncombustible rigid board insulation and vapor barrier system for cold and dual-temperature service ducts and equipment operating at temperatures down to -150°F.

USPS

description

Recommended for use on all cold or dual-temperature service rectangular ducts and cooling equipment where the ultimate in noncombustibility is desired. Boards are impaled over welded pins and held in place with white fastener caps vapor sealed with mastic.

A Fiberglas 25* C-E Equipment Insulation System for cold temperature service consists of a rigid board of glass fibers faced with a noncombustible vapor barrier facing. The facing is a laminate of vapor tight aluminum foil and pre-sized glass cloth. Joints are sealed with a noncombustible vapor barrier pressure sensitive adhesive tape to form a complete vapor tight system.

benefits

fire safety—the only complete insulation system with UL rating on board, vapor barrier, joint tape, mastic and fastening device.

ready for painting—the pre-sized glass cloth facing, matching tape and fastener caps, do not require field sizing. They may be left unpainted if desired.

damage resistant—the tough finely woven glass cloth facing resists damage and the semi-rigid in-

sulation board is resilient thereby absorbing impact and resisting damage.

lower operating cost—the uniform, factory controlled board thickness assures constant thermal efficiency performance.

no condensation drippage—the factory-applied glass cloth and foil vapor barrier and the taping system make the system vapor tight to resist vapor penetration.

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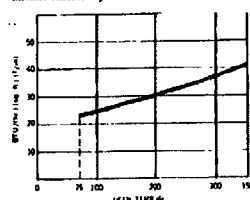
performance characteristics

dimensional stability:
will not warp, shrink, rot or decompose
vermin and rodent resistant
provides no sustenance

fire hazard classification:
Flame Spread 20
Smoke Contributed 10
Smoke Developed 35

temperature limitations:
recommended for heated surfaces
when temperatures do not exceed
450° F or fall below 25° F
vapor transmission rate
.05 perms

Thermal conductivity



sizes

Width 24", Length 48", Thickness 1", 1 1/2", 2".

fire hazard classification

Maximum Fire Hazard Classification for building materials and insulation as noncombustible has been established as follows:

	Acceptable
Flame Spread	25
Fuel Contributed	50
Smoke Developed	50

Fiberglas 25 C-E Insulation System, including joint sealing treatment, is considerably below the maximum allowable. This is your assurance that you can specify and use this system without the danger of contributing to the spread of fire or that combustion will liberate excessive quantities of smoke. The system has been designed to meet the stringent fire safety requirements of GSA and Corps of Engineers.

Underwriters Laboratories
(Pipe & Equipment Coverings R5983 40 U B.15)

**Fiberglas 25 C-E Insulation Systems	
Flame Spread	20
Fuel Contributed	10
Smoke Developed	35

NOTE: This rating is for the complete product and includes the use of O-C-F Type C Joint Sealing Tape for sealing joints.

specification compliance

Meets the stringent fire safety requirements of GSA and Corps of Engineers HH-1-558a Form A Class 1 & 2.
Meets NFPA 90A Fire Hazard Classification.

application recommendations

The Fiberglas 25 C-E Insulation System is installed by impaling the insulation boards on welded pins spaced 3" in from each corner of the board with intermediate pins of no greater than 21" centers.

After boards are impaled, the welded pins are cut to extend 1/4" beyond the face of the board. A self locking cap is pushed onto the pin after coating with OC Fitting Mastic (Type C) to provide a vapor seal.

All insulation edges and butt joints are to be sealed with O-C-F Type C Joint Sealing Tape. Tape is a pressure sealing type requiring no separate adhesive. Pressure tape by rubbing hard with a nylon sealing tool.

Ductwork and other sharp radius beads require pre-scoring of the insulation board to conform to the curved surface.

If painting is required, no sizing is necessary; but, to maintain the noncombustibility of the system, only Gorden acrylic latex paint (No. 6370) is to be used.

thickness to prevent condensation

cold ducts and equipment

The following chart indicates the recommended thickness for installation on cold or ducts at various temperature differences (duct to air). Also shown are values for heat gain and approximate maximum relative humidity allowable.

Temperature Difference	Recommended Thickness (inches)	Heat Gain Btu/Hr/Sq Ft	Permissible Relative Humidity
20	1/4	5.1	90%
25	1/2	6.4	84%
30	1	8.1	75%
35	1 1/2	10.1	68%
40	2	12.4	62%
45	2 1/2	15.1	57%
50	3	18.1	53%



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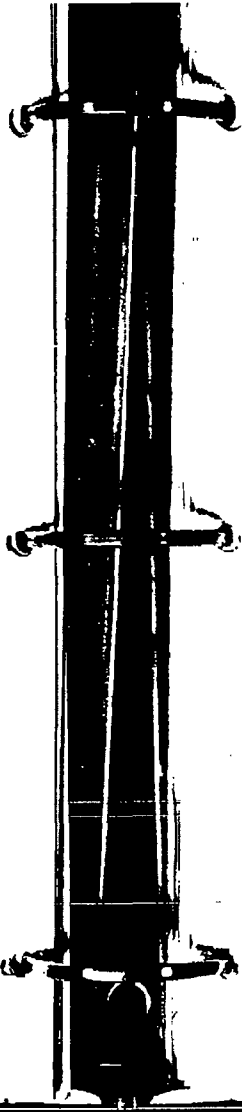
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FIBERGLAS

Mechanical Equipment 35.1

Date 1-10-66

Revised _____

application specifications

COLD EQUIPMENT

Insulate all cold equipment (Chillers)(Heat Exchangers) minus 20F to 70F
with _____ inch thick Fiberglass:

PF - 617
Type 705

Where insulation is specified in thickness greater than 2" it shall be
installed in multiple layer application and each layer shall be separately
vapor sealed.

Insulation of removable heads, manhole covers and other access points shall
be fabricated in such a manner that it is readily removable without damage
to the insulation. These removable units shall have a vapor proof cover
fabricated to allow it to be sealed to equipment Vapor Barrier.

ROUND EQUIPMENT

Insulation shall be cut or altered where necessary to fit the shape and
contour of the equipment, and banded in place with 3/4" x 0.015 inch
thick galvanized steel bands on 18" centers. Point up all joints with
OC-110 Insulating Cement.

FLAT OR IRREGULAR EQUIPMENT

Insulation shall be cut to fit the shape and contour of the equipment.
All voids between equipment surface and insulation shall be packed with
light density Fiberglass. Lapse insulation over welded pins on 12
inch centers and secure in place with speed washers.

HARD SURFACE

Cover insulation with 1" galvanized hexagonal wire mesh secured to bands
or welded pins. Lace edges of wire mesh. Apply 1/2" thickness of OC-110
insulating cement in two coats.

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The above specifications are general in nature. Application procedure is at the discretion and responsibility
of the Design Engineer to meet specific job requirements.

*Refer to necessary Materials list for suggested manufacturers of fasteners, adhesives & other
necessary materials.

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(page 2 of 3.5.1)

VAPOR BARRIER

Each layer of insulation shall be vapor sealed to provide a complete air tight envelope. Vapor Barrier shall consist of one layer of Ludlow Foil Barrier paper smoothly adhered to the insulation or cement surface with Vapor Barrier Lap Adhesive.* Lap all joints a minimum of 3" and seal with Vapor Barrier Lap Adhesive.*

FINISH

Over exterior Vapor Barrier apply:

- 6 oz. Canvas Jacket, adhered with Lagging Adhesive* and brushed with one coat of Lagging Adhesive.*
- Pre-Sized Glass Cloth adhered with Lagging Adhesive.*
- Sheet Aluminum, .016" thick, fabricated to the shape of the equipment, mechanically fastened in place. Fasteners shall not penetrate the Vapor Barrier.

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PUB NO. 341M-361

LITHO U.S.A., JAN 1960

FIBERGLAS

Mechanical Equipment 3.5.2
Date 1-10-66
Revised

application specifications
HOT EQUIPMENT

Insulate all (Boilers), (Breechings), (Hot Tanks), (and other Hot Equipment) not factory insulated with _____ inch thick Fiberglas.

- | | |
|---------------------------|-------------------|
| a) PF 615 | to 450° F |
| b) I-S Board | to 850° F Maximum |
| c) Metal Mesh Blankets | to 1000° F |
| d) High Temperature Block | to 1000° F |
| e) Kaylo Block | to 1200° F |

Breechings shall be covered with V-rib metal lath or rod mesh to provide an air space, or shall be insulated with Stylo ATRM-Metal Mesh Blanket. Expansion joints shall be fabricated at 16' intervals.

ROUND EQUIPMENT

Insulation shall be cut or altered where necessary to fit the shape and contour of the equipment, and lapped in place with 3/4" x 0.015 inch thick galvanized steel bands on 18" centers. Point up all joints with OC-110 Insulating Cement.

FLAT OR IRREGULAR EQUIPMENT

Insulation shall be cut to fit the shape and contour of the equipment. All voids between equipment surface and insulation shall be packed with light density Fiberglas. Install Fiberglas insulation over voided pins on 12 inch centers and secure in place with speed washers. Kaylo block shall be secured to equipment with 16 ga. galvanized wire or 1/2" galvanized strapping at not more than 18" oc.

FINISH

- Cover insulation with 1" galvanized hexagonal wire mesh secured to bands or welded pins. Lace edges of wire mesh. Apply 1/2" thickness of OC-110 insulating cement in two coats. Over cement, when dry apply:
 - 6 oz. canvas jacket, adhered with Lagging Adhesive* and brushed with one coat of Lagging Adhesive* or
 - Pre-Sized Glass Cloth adhered with Lagging Adhesive*.
- Sheet Aluminum, .016" thick, fabricated to the shape of the equipment, mechanically fastened in place with bands, sheet metal screws or pop rivets.

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The above specification is general in nature. Application procedure is at the discretion and responsibility of the Design Engineer in most specific job requirements.
*Refer to necessary Materials list for suggested manufacturers of mastics, adhesives & other necessary materials.

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application specifications
FIBERGLAS 25* : H-E
hot equipment up to 450F

Plumbing Systems	1.5.8
Mechanical Equipment	3.5.3
Air Handling Systems	4.5.10
Date	4-1-67
Revised	7-10-68

Figure 1—Tools and accessory items:

- A. Scissors
- B. Nylon sealing tool
- C. Stanley knife
- D. Screw driver
- E. End-cutting nippers
- F. Pre-finished fastener caps
- G. OCF Joint Sealing Tape, Type H (Pressure Sensitive, U.L. labeled)



Figure 2

Attach pins to surface. Locate pins three inches in from each corner of the board. On surfaces where cross breaking is used for stiffening, additional pins may be required to hold the insulation tightly against the surface. For a neat job, keep pins in straight lines. Pins are to be on maximum 21 inch centers.

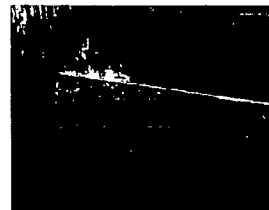


Figure 3

Cut Fiberglas 25 Insulation to dimension and impale on pins. Apply pressure on facing in the area of the pin penetration. For elbows, cut pie-shaped pieces for top and bottom. Make sure insulation fits tightly at the seams before impaling.



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Figure 4

Groove fiberglass 25 board for recessed surfaces and fabricate flanges. The board should be scored with a grooving tool, saw or knife to half the board thickness, and the material removed from the slot. Flanges should not overlap the top and bottom boards. All wool shall be scraped from the flanges before sealing.

The smaller the radius of the board, the smaller the space between cuts



Figure 5

Install side pieces making sure the edge of the insulation is flush with the top and bottom board surfaces.

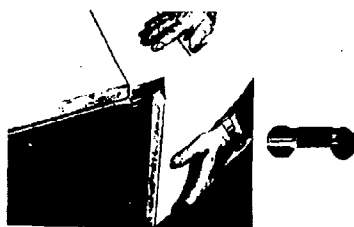


Figure 6

Cut pins to length as required and apply pre-finished fastener caps. Pins should protrude $\frac{1}{2}$ " to $\frac{3}{4}$ " above the surface of the insulation. If more than $\frac{1}{4}$ " shows, cut it off to the correct length before applying the cap. This will assure a tight fit of insulation to the surface.

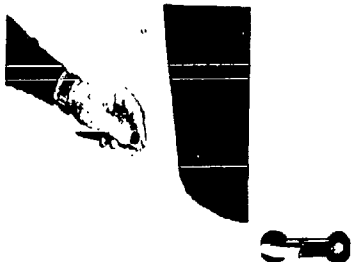


Figure 7

Apply OCF Joint Sealing Tape Type H to all transverse and longitudinal seams after insuring you have a dry dust-free surface. Use the nylon sealing tool to apply pressure to the joint and make a good bond. Do not remove all the release paper from the tape but rather gradually pull it back as required. This keeps dust, etc. from fouling the adhesive surface. Make sure the tape is properly aligned with the seam before it is sealed down.



Figure 8

Use nylon sealing tool on all taped joints. This will result in a good bond and reduce air pocket and "fish-mouths." For a superior bond, use a 300F iron on the tape.



Figure 9

Insulating the throat of an elbow: Prepare a Fiberglas 25 board of correct dimensions for the throat and fabricate the top and bottom flanges. Next, use a grooving tool, knife or saw and groove the board facing side up. Cut at least half way through the insulation.

Slit sections may also be used as an alternate to the one-piece method described above.



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Figure 10

Complete insulating the throat. Impale insulation, cut pins to correct length, install caps, and strip the top and bottom flaps.



Figure 11

Where curved surfaces are encountered and the joint sealing tape must be notched to conform to the curvature, cut an additional length of tape to half width and apply over the notched tape surface. This will yield a neater finished appearance and improve adhesion in these areas.



Figure 12

Completed insulation of rectangular duct.



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Air Handling Systems 4.S.11

Mechanical Equipment 3.S.4

Date 7-10-68

Revised

FIBERGLAS 25* : C-E

cold equipment system down to 35F

Figure 1 -- Tools and accessory items:

- A. Scissors
- B. Nylon sealing tool
- C. Stanley knife
- D. Screw driver
- E. End-cutting nippers
- F. Pre-finished fastener caps
- G. OCF Joint Sealing Tape, Type C (Pressure Sensitive, U.L. labeled)
- H. OCF Fitting Mastic, Type C (U.L. labeled)



Figure 2

Attach pins to surface. Locate pins three inches in from each corner of the board. On surfaces where cross breaking is used for stiffening, additional pins may be required to hold the insulation tightly against the surface. For a neat job, keep pins in straight lines. Pins are to be on maximum 21 inch centers.

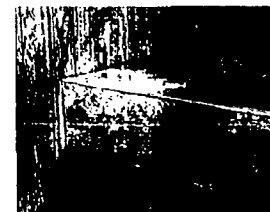


Figure 3

Cut Fiberglas 25 insulation to dimension and impale on pins. Apply pressure on facing in the area of the pin penetration. For elbows, cut pie-shaped pieces for top and bottom. Make sure insulation fits tightly at the seams before impaling.



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Figure 10
Complete in
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Figure 11
Where curve
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apply over it
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these areas.

Figure 12
Completed

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Figure 4
Groove fiberglass 25 board for curved surfaces and fabricate flanges. The board should be scored with a grooving tool, saw or knife to half the board thickness, and the material removed from the slot. Flanges should not overlap the top and bottom boards. All wool shall be scraped from the flanges before sealing.
The smaller the radius of the board, the smaller the space between cuts.

Figure 5
Install side pieces making sure the edge of the insulation is flush with the top and bottom board surfaces.

Figure 6
Cut pins to length as required and apply pre-finished fastener caps. Pins should protrude 1/8" to 1/4" above the surface of the insulation. If more than 1/4" shows, cut it off to the correct length before applying the cap. This will assure a tight fit of insulation to the surface. Apply OCF Fitting Master Tape C about the size of a pea to the inside of the fastener cap before installation to form a vapor seal.



Figure 7
Apply OCF Joint Sealing Tape, Type C, to all transverse and longitudinal seams after insuring you have a dry, dust free surface. Use the nylon sealing tool to apply pressure to the joint and make a good bond. Do not remove all the release paper from the tape but rather gradually pull it back as required. This keeps dust, etc. from fouling the adhesive surface. Make sure the tape is properly aligned with the seam before it is sealed down.

Figure 8
Use nylon sealing tool on all taped joints. This will result in a good bond and reduce air pocket and "fish-mouths." For a superior bond, use a 300F iron on the tape.

Figure 9
Insulating the throat of an elbow. Prepare a Fiberglass 25 board of correct dimensions for the throat and fabricate the top and bottom flanges. Next, use a grooving tool, knife or saw and groove the board facing side up. Cut at least half way through the insulation.
Silt sections may also be used as an alternate to the one-piece method described above.



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Figure 10

Complete insulating the throat. Impale insulation, cut
pins to correct length, install caps and slip the top and
bottom flaps.



Figure 11

Where curved surfaces are encountered and the Joint
Sealing Tape must be notched to conform to the curva-
ture, cut an additional length of tape to half width and
apply over the notched tape surface. This will yield a
neater finished appearance and improve adhesion in
these areas.



Figure 12

Completed insulation of rectangular duct.



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INSULATION OF AIR HANDLING SYSTEMS

Products shown in BOLD FACE type are recommended for use for the services shown
based on performance and widespread acceptance. Other products are listed be-
cause of local conditions or product preference.

selection guide

system	temp. range	products	data page	spec. page
Exposed Ducts				
Air conditioning				
Fresh Air Intakes		Industrial Duct System (HD)	4.1	4.5.1
Plenums and Casings	up to 250F	Type 704, Faced	4.4	4.5.2
(Rectangular)		Fiberglas 25 C-E	4.13	4.5.11
(Round)		Round Duct Systems	4.1	4.5.3
		Faced Duct Wrap, Type IV (FRK)	4.2	4.5.4
Heating and Ventilation				
Ducts	up to 250F	Type 704	4.4	4.5.5
Plenums and Casings		Fiberglas 25 H-E	4.12	4.5.10
(Rectangular)		Plate Duct Wrap, Type 75	4.2	4.5.6
(Round)		Plate Duct Wrap	4.15	4.5.6
Concealed Ducts				
Air Conditioning				
(Rectangular)	up to 250F	Industrial Duct System (HD)	4.1	4.5.1
(Round)	up to 250F	Faced 703	4.4	4.5.2
	up to 250F	Faced Duct Wrap Type IV (FRK)	4.2	4.5.4
	up to 250F	Round Duct System	4.10	4.5.3
	up to 250F	Faced Duct Wrap, Type IV (FRK)	4.2	4.5.4
Heating and Air Cond.				
(Round Flexible Sys.)	up to 250F	Flexible Duct System	4.9	4.5.9
Heating and Ventilation				
(Rectangular & Round)	up to 250F	Plate Duct Wrap, Type 75	4.2	4.5.6
	up to 250F	Plate Duct Wrap	4.15	4.5.6
Acoustical Lining				
Ducts and Plenums	up to 250F	Industrial Duct System (HD)	4.1	4.5.1
(Rectangular)		Aeroflex Duct Liner	4.6	4.5.7
(Round)		Duct Liner Board	4.7	4.5.7
		Black Aeroflex Duct Liner	4.14	4.5.7
		Round Duct System	4.1	4.5.3
Outdoor Ducts				
Air Conditioning	up to 250F	Type 705, Faced	4.4	4.5.8
Heating and Ventilating		Aeroflex Duct Liner	4.6	4.5.7
		Black Aeroflex Duct Liner	4.14	4.5.7

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air handling systems 4.1
March, 1968

Air Handling Systems

Duct System

an efficient air duct system with built-in thermal/acoustical insulation and integral vapor barrier attractive finished surface for velocities up to 2400 fpm and 2" static pressure.

uses

Fiberglass Duct System is used in heating, cooling or dual-temperature service in all types of Standard Duty (SD) and Heavy Duty (HD) high performance installations operating at velocities up to 2400 fpm and 2" static pressure. There are two specially engineered board products, from which rectangular ducts are fabricated, to meet size and static pressure requirements comparable to various gauges of sheet metal. The Heavy Duty Board (HD) is used for large main trunks and plenums where 20 or 22 gauge sheet metal would have been required. The Standard Duty (SD) board is recommended for complete small installations and as runouts for larger systems where 24, 26 and 28 gauge metal would have been required. This means two types of board will cover the requirements of 5 gauges of sheet metal. This simplifies design of a Fiberglass Duct System.

description

Fiberglass Duct System is manufactured from resin bonded fiberglass in rigid boards for fabrication of rectangular ducts, and in pre-molded round sections ready to be installed. The boards and round sections are furnished with an integral factory-applied vapor barrier which also serves as the surface finish. The vapor barrier on the boards is reinforced with strong Fiberglass fibers for strength at the joints and corners. A Fiberglass Duct System is an efficient air handling system with built-in thermal and acoustical insulation to assure maximum performance without noise.

Limitations—Fiberglass Duct System should not be used above recommended velocities, pressures, or air temperatures. It also should not be used in or under concrete slabs or ceilings without additional reinforcement and weatherproofing.

benefits

4 in one product—Fiberglass Duct System offers four performance features: 1) It delivers air efficiently without any air loss through the seams or joints. 2) The built-in thermal insulation with assured thickness protects against heat loss or gain for lower cost performance. 3) The tough flame-retardant vapor barrier eliminates sweating from condensation, assures fire safety and resists damage. 4) The built-in acoustical insulation absorbs all unwanted noise.

fast, one-step installation—saves 2 application steps. No separate application of metal insulation, and finish, installed by one craft which is off the job faster. This contributes to earlier occupancy.

installs quickly, operates quietly—no banging noise. Ideal where a system is being installed in offices or stores without disturbing occupants. No expansion and contraction noise, popping, drumming. No transmission of equipment or air rush noise. NRC of .80 absorbs most noise in a few feet of length. This means a quieter system. FIBERGLAS DUCT SYSTEM CONVEYS AIR, NOT NOISE.

no water-damaged ceilings from condensation dripping. Fiberglass Duct System is uniform in thickness. No sweating at the corners as with wrapped metal ducts. Vapor barrier is uniform. Joints are sealed to guard against faulty application of external vapor barriers. No condensation at section joints caused by gaps between duct flaps.

less installation time—inspect once. No need to check liner, then installation later. No question about liner density or attachment schedules and mechanical fasteners. No return trip to check exterior insulation jobs

to make sure they are installed in accordance with the specifications.

fire-safe—Fiberglass Duct System material has passed two fire tests to qualify as Class 1 Air Ducts by UL 181 as required by NFPA, No. 98A.

A research program was conducted by Factory Mutual Research Corporation to evaluate the possible fire hazard of Fiberglass Duct Systems. The program included inducing local and far fires from a severe exposure fire through an operating air duct system.

It was concluded that use of Fiberglass Duct System adds no appreciable fire hazard to buildings, that spread of fire through such ducts should not occur or is a remote possibility and is dependent on other features and details of the construction.

saves space—Fiberglass Duct System can be installed closer to walls and ceilings than metal ducts because there is no need to allow space for installing insulation or for driving joint locks.

efficient air delivery—The interior surface of Fiberglass Duct System has an air friction coefficient equal to 1/1000 sheet metal duct. The smooth surface offers very little resistance to air flow.

no air leakage—Fiberglass Duct System is tight. No loss of cooling or heating air. No over-designing to accommodate air loss.

performance proven—Fiberglass Duct Systems have been operating since 1956 in all types of service conditions. Over 100,000,000 sq. ft. have been installed and are performing satisfactorily.

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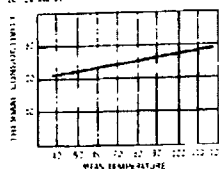
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performance characteristics

Moisture resistance:

The Fiberglass Duct System MA is made of glass fibers and resin. It is resistant to moisture, will not support or promote growth of mold or fungus, and will not absorb odors.

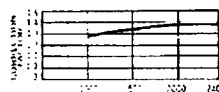


Maximum velocity:

1000 fpm. Adequate for most requirements. Tested to 2000 fpm with satisfactory results.

Air friction coefficient:

Friiction coefficient based on factor at 100 fpm is 1.5. Air friction is the same as lined metal duct. The curve below gives friction correction factors to be used as ASHRAE chart for friction of air in ducts of galvanized sheet metal.



Maximum size and static pressures:

The Fiberglass Duct System MA products Standard Duty and Heavy Duty are engineered to meet a variety of static pressure needs on ducts in air conditioning and ventilation systems. The Heavy Duty Board has a static pressure rating of 2.0 in. H₂O and the Standard Duty Board has a static pressure rating of 1.0 in. H₂O. Both are available in 18" and 24" diameters and 12, 18, and 24 ft lengths.

For more information on the Fiberglass Duct System MA, contact your nearest Underwriter's Laboratories branch office or write to Underwriter's Laboratories, Inc., 1000 East 17th Street, Chicago, IL 60616.

Maximum Allowable Inside Duct Dimensions—Unreinforced and Reinforced

Duct Material	Wall Thickness (in.)	Unreinforced Static Pressure (in. H ₂ O)	Reinforced Static Pressure (in. H ₂ O)	Reinforced Static Pressure (in. H ₂ O)	Reinforced Static Pressure (in. H ₂ O)
Standard Duty	1/2	1.0	1.0	1.0	1.0
Heavy Duty	3/4	2.0	2.0	2.0	2.0
Standard Duty	1/2	1.0	1.0	1.0	1.0
Heavy Duty	3/4	2.0	2.0	2.0	2.0
Standard Duty	1/2	1.0	1.0	1.0	1.0
Heavy Duty	3/4	2.0	2.0	2.0	2.0
Standard Duty	1/2	1.0	1.0	1.0	1.0
Heavy Duty	3/4	2.0	2.0	2.0	2.0
Standard Duty	1/2	1.0	1.0	1.0	1.0
Heavy Duty	3/4	2.0	2.0	2.0	2.0

Moisture resistance:

The Fiberglass Duct System MA is made of glass fibers and resin. It is resistant to moisture, will not support or promote growth of mold or fungus, and will not absorb odors.

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Temperature limits:

The Fiberglass Duct System MA is made of glass fibers and resin. It is resistant to moisture, will not support or promote growth of mold or fungus, and will not absorb odors.

The Fiberglass Duct System MA is made of glass fibers and resin. It is resistant to moisture, will not support or promote growth of mold or fungus, and will not absorb odors.

Noise absorption:

A highly efficient sound absorber. Fan and equipment noise are absorbed completely. No drumming or vibrating.

Type	Thickness (in.)	NAB*
Standard Duty	1/2	75-85
Heavy Duty	3/4	85-95

The Fiberglass Duct System MA is made of glass fibers and resin. It is resistant to moisture, will not support or promote growth of mold or fungus, and will not absorb odors.

Type	Thickness (in.)	NAB*
Standard Duty	1/2	75-85
Heavy Duty	3/4	85-95

fire safety

Underwriter's Laboratories Inc. Standards for Safety, Air Ducts UL 181

Underwriter's has set up standards for a Class I air duct listing to ensure safe performance of non-metallic air ducts for use in non-residential heating, ventilating and air conditioning duct systems. These tests (UL 181) subject duct sections to much more severe abuse than they will ever receive in a lifetime of service.

Tests are run by Underwriter's under carefully controlled conditions and require ducts to pass the extremely punishing requirements depicted and described below. All Fiberglass Duct System passed these tests proving that the systems are durable and fire safe.

Fire hazard classification test

This is the standard tunnel test used for all building material products which compares Flame Spread, Smoke Developed and Fuel Contribution with untreated red oak. The index number of 100 for the oak is used as a base of measurement. The Fiberglass Duct System Taping system is also subjected to the test. The joints of the duct are taped and the complete assembly tested.



Fire retardancy test

This test is designed to determine the ability of the duct to hold back fire. The test calls for the duct to retard flame for a period of at least 30 minutes with a flame of 1400°F impinging on the surface. The sample has to retain an 8 lb. static load during the test.



Temperature

Assembled duct sections are used for these tests. One section is exposed to a saturated water vapor atmosphere for 48 hrs. and then immediately placed in 0°F cold. All joint tapes, cements are not to open up or be affected in any way. Another duct system section is simultaneously exposed to 125°F air on the exterior face and 250°F on the interior for a period of 60 days to test all joint tapes and the ability of the duct to withstand these temperatures.



Puncture

This test shows the ability of Fiberglass to withstand sharp blows. The same duct system used in the Temperature test is subjected to an impact test by dropping a 2 lb. blunt tapered rod to simulate dropping of a wrench or other tool on the duct during or after installation. No puncture occurred in the vapor barrier of Fiberglass Duct System.



Static load test

Mechanical strength of joints and duct section is the purpose of this test. Sections of ducts are supported on 6 ft centers and a weight of 10 lbs. is concentrated over a point midway between the supports at the joint. Deflection of not more than 1% at the end of 24 hrs. is to be evident and not more than .8% 6 minutes after removal of the load. Joints should not be ruptured or cracked.



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impact test

The same Duct System test section used in the Static Load test is then subjected to a 20 lb. sand bag drop test. The vertical inside dimension should not decrease more than 15%. All joints and seams should not crack. Fiberglass Duct System showed no effect of damage from this test.

erosion resistance

This test is to determine the ability of the duct fibers to resist air erosion or delamination. The same duct sections used in the Static Load and Impact Tests is used in this test with the addition of an eroder fabricated from Duct System Materials. The whole assembly is subjected to 75 times the maximum velocity rating of the system. In the case of Fiberglass Duct System, this would be 2,400 x 2.5 = 6,000 fpm. A collection chamber is provided to collect any eroded material. The test is then run for 4 hrs. No sign of eroded fibers or delamination is to occur. Fiberglass Duct System showed no macroscopic particles (visible to the eye), no erosion or evidence of cracking, flaking, peeling or delamination.

rupture and leakage

This test subjects the duct to 4 times the rated air pressure for a period of one hour. Duct sections used in the Static Load and Impact Tests are subjected to this test. Fiberglass Duct System was tested at static pressure of 8" water gage without failure. The same samples used in the Rupture Test are subjected to static pressure of .50" water gage for 1 hour. The air loss at the end of the test cannot be more than 20 times the volume of the sample. This is an easy test for Fiberglass Duct System to pass because a Fiberglass Duct System does not leak air.

collapse

A collapse test is required to assure satisfactory service on the return side of the system. This test is the reverse of the previous test with a 2" water gage vacuum imposed for 1 hour. Deformation cannot exceed 20% at any time during the test.

corrosion, mold growth & humidity

Fiberglass shown no signs of mold growth or corrosion when exposed to a saturated atmosphere for a period of 10 days.

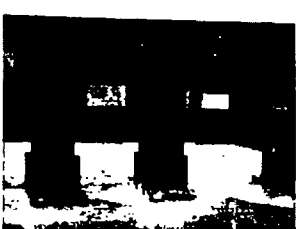
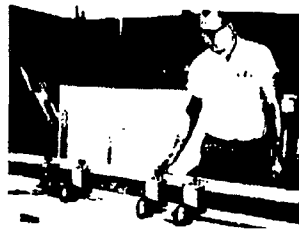


fabrication

automatic machine

Fiberglass Rectangular Duct Sections are fabricated by automatic flat-board grooving machines. The Fiberglass Duct Fabricating Machine cuts three accurate "Y" cuts and the end joint, male and female ship lap, in one operation. The result is uniform sections perfectly matched for even, straight, duct runs. Interiors are smooth and unbroken for minimum air flow resistance. Erection is faster since sections fit easily.

Ducts are fabricated quickly, ready for taping. The addition of power driven staplers make duct fabrication a highly automated process.



hand tools

Ducts and fittings are also fabricated using simple hand tools, bench and T square. The trade performs the job of cutting the "Y" feeding grooves and end joints. An ordinary knife, ten-

plates, and standard sheet metal parts are used to fabricate fittings. The hand tools allow greater flexibility at the job site because construction changes can be compensated for without time-consuming trips back to the shop.



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Patient

taping systems

At the same time, the system and one type for the system. They are per-
with a choice is of
tractors because of pre-
conditions. All have
accelerated acce-
to assure continuous per-

	Description	Benefits
	Standard Duty (30) only	Very strong Fiberglas reinforced joint. Vapor seal mastic chemistry bonds to vapor barrier surface. Tape conforms to severe bends or curvatures without cracking.
	Right Guard	Excellent for straight duct sections. The tape can be applied on the duct in 30 days after the duct adhesive is brushed on in the shop.
	Special Impregnated Cloth Tape with Pressure Sensitive Adhesive Agent	Tape is compatible with vapor barrier surface. Used to seal end joints and fittings.

sizes, forms and recommended use

Exerglas Duct System is manufactured in large flat boards, for fabrication of rectangular ducts and pre molded round sections ready for assembly. The boards and round sections are complete with factory applied vapor barriers, which also serve as a surface finish.

The Lockheed Martin System Group, a Lockheed Martin Company, is a leading provider of defense and aerospace systems. The company is currently seeking qualified individuals for the following position:

Rectangular	Thickness	Width	Length
Standard Duty (SD)	1"	48"	96" & 120"
	2"	36"	96" & 120"
	1"	36"	120"
Heavy Duty (HD)	1"	36"	96" & 120"
	1"	48"	120"

Round	Wall Thickness	Inside Diameter	Length
	1"	4, 5, 6, 7, 8, 9"	6 ft
Light Round	1"	10, 11, 12, 14, 16, 18"	6 ft

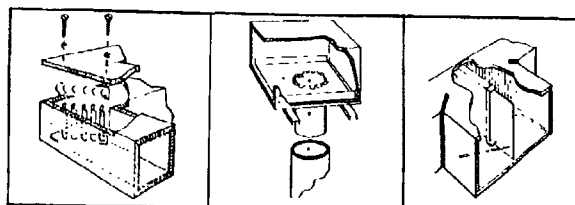
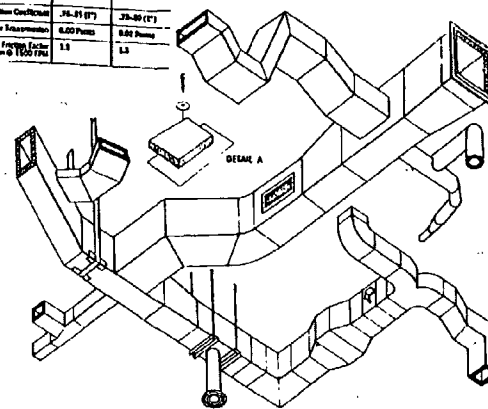
reinforcement

The Maximum Area shows size and shape of the Maximum Area in sheet metal. Reinforce 2" x 1" x 2" for all shown.

It is the company's belief that the System is a cost-effective, safe suspension system. The saddle type bike is just proof of the ability to represent individual line categories.

design and installation guide

DESIGN CRITERIA	H.D.	S.Q.
Velocity	2400 FPM	2400 FPM
Static Pressure	2.5" w.g.	2.5" w.g.
B. L. Approval	Class I AB Direct	Class I AB Direct
Thermal Conductivity @ 75° F	0.22	0.25
Notes Reduction Coefficient	.66-51 (F)	.73-80 (F)
Vapor Examination	0.00 PPM	0.00 PPM
Friction Factor Correction @ 1500 FPM	1.3	1.3



50 DUCT WITH TURNING VANE — A four foot section of duct is mislaid at a 45 degree angle and must be rotated 180°. A standard sheet metal turning vane is mislaid between the two sections. The sheet metal turning vane is attached to the duct as per detail "A". The two pieces of the duct are now placed together using detail "A". To adhere the other half of the duct to the sheet metal turning vane, plastic sheeting fabric is applied against the mislaid duct and the turning vanes as per standard instructions.

3 SPLITTER-DAMPER TEE SECTION—The "Tee" section is constructed with turning vanes. A standard splitter damper is inserted with the rod being attached to the same steel metal bearing surfaces. The steel metal bearing surfaces are attached to the duct as per detail "A". The adjusting ropes are through the duct and the handle of the splitter rod is attached to the handle of the duct by using a steel metal rod on surface in back of the handle. The metal is secured to

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is registered copy of the Fiberglas Duct as per detail "A".

Insert (B) end of the "Reinforcement" into the duct. The "Reinforcement" will keep the duct from collapsing. Be sure the "Reinforcement" is in the duct as per detail "A".

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4

Duct is cut into the side of the duct. The opening is cut into the side of the duct. A sheet metal damper is inserted into the opening. The damper is secured by means of two sheet metal screws. The damper is attached to the side of the duct as per detail "A".

5

SIDE GRILLE ATTACHMENT—An opening is cut into the side of the duct. The opening is cut into the side of the duct. A sheet metal damper is inserted into the opening. The damper is secured by means of two sheet metal screws. The damper is attached to the side of the duct as per detail "A".

6

DAMPER—A sheet metal duct, having dimensions equal to the inside dimensions of the Fiberglas Duct, will act as the housing for a standard sheet metal damper. The sheet metal damper is inserted in the sheet metal duct with the adjusting rod passing through the metal and the Fiberglas Duct. The damper control is attached to the side of the duct as per detail "A".

10

SIDE TAKE-OFF—A metal collar is fastened to the duct. The collar is inserted through a hole in the side of the duct. The collar is secured by means of two sheet metal screws. The collar is attached to the side of the duct as per detail "A".

11

ROUNDED SIDE TAKE-OFF—A round duct is inserted into the side of the duct. The round duct is secured by means of two sheet metal screws. The round duct is attached to the side of the duct as per detail "A".

12

ROUND DUCT CONNECTOR—Cut a slot into the sheet metal connector at 120° angle by means of "snips". Plastic tabs are used so that the connector can be screwed into the round duct.

7

REINFORCEMENTS—On extreme large sizes of ducts, metal reinforcements are used as stiffeners. The amount and placement of reinforcements are dependent upon static pressure (see table on page 2).

8

HANGERS—Because of Fiberglas Duct System's light weight, lighter hangers may be used. Perforated straps with a sheet metal toe inserted at the bottom corner, a channel section with threaded rods, or some other type of hanger that may be used. Standard saddle type duct hangers, as used with sheet metal are satisfactory.

9

90° ROUNDED ELBOW—This fitting is accomplished by four separate pieces. The head must be reinforced by four separate pieces. The throat is made by fitting partially through the insulation to permit bending. The throat should then receive a thin brush coat of mastic. Elbow is assembled by means of staples, mastic and reinforcing tape.

13

OFFSET—An offset can be constructed by an angular cut through a straight section of the duct. The angular cuts are equal to 45° at the angle required at each joint. The sections may be joined together with the aid of a metal collar. The duct is attached to the metal collar per detail "A". As an alternate method the sections may be joined utilizing sheet metal clasp, mastic and reinforcing tape.

14

FOUR-PIECE 90° ELBOW WITH TURNING VANE—The "cheek", "throat", and "heel" are all of separate pieces. The heel and throat can be accomplished by removing a 90° section and bending to a 180° angle. All four pieces are assembled by means of staples, mastic and reinforcing tape. The throat should then receive a thin brush coat of mastic. The elbow is made from the assembly.

15

HEATING COIL—A transformation duct is required if heating equipment (air temp. maximum 200°) is larger than duct size. The slope of the transformation piece at the up-stream side of the equipment must be limited to 90° and at the down-stream side, the slope should not be more than 45°. Each section is made from the assembly.

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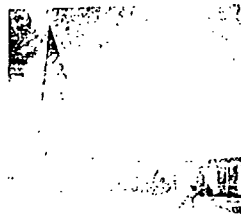
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over 100,000,000 sq. ft. in service



Exterior View



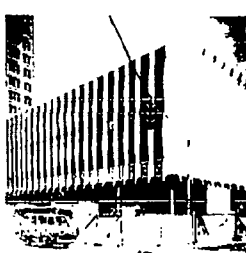
12" section is finished with 2400



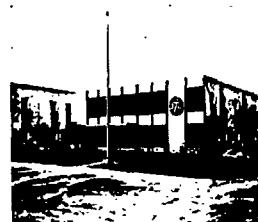
Interior View, Chicago



Exterior View



Jacksonville Public Library



Sperry Rand, Cape Canaveral



Flint City Hall



Fate College Remediation, New York City



Penn Power Co.



Omaha High School



Pre-assembled system for exterior

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291420



air handling systems 4.2
 March, 1968

Duct Insulation



Duct Wrap Insulations

a complete line of plain and faced
 duct insulation for concealed and exposed
 hot, cold, or dual-temperature
 air handling systems

uses

description

There is a Fiberglas Duct Wrap insulation for every duct insulation requirement — hot, cold or dual-temperature, exposed or concealed. The variety of facings permit selection of a product based on economic considerations, the degree of fire safety required, toughness and appearance desired. Refer to the selection Chart on the next page for products available and their recommended usage.

Fiberglas® Duct Wrap Insulations are highly efficient lightweight inorganic blankets of fine glass fiber available plain, or faced with a choice of factory-applied vapor barrier facings. Owens-Corning Fiberglas has developed a technique for combining the facings with the insulation as it is manufactured. This technological development assures uniform quality of the finished product. The facing is firmly bonded and inspected continuously during manufacture.

benefits

low operating costs — low R factor of 28 at 75° mean temperature and 1/4" thick resistance means less heat loss or gain. Systems operate more efficiently. Air is delivered at design temperatures.

no water-vapour ceilings — vapor barrier facings have low perme ratings to stop moisture vapor from condensing on the cold duct surface.

an insulation to fit every job — hot, cold, dual-temperature, exposed or concealed, tailored to economic and performance requirements.

damage resistant — Fiberglas Duct Wrap Insulations are tough and resilient. They resist damage in shipment and after they are installed. Most of the vapor barrier facings are reinforced with strong glass fibers to resist puncture and tearing during installation.

*T.M. Reg. OCF Corp.

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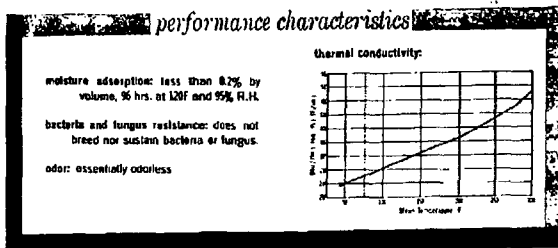
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selection chart

The following chart lists the service requirements and recommended product for each requirement. Note: in some instances there are more than one product shown. The one in "Good Face" Type is the Recommended Product. The alternative product is shown because of existing specifications calling for specific insulations by name and number. These alternative products are also listed because of local "preference" or an established "use" pattern. Note that in areas of high abuse, such as exposed ducts in high traffic areas or equipment rooms, it is recommended that the ducts be lined with Owens-Corning Fiberglas Aeroflex Duct Liner or the ducts may be insulated with Fiberglas Rigid Board Insulation.

recommended thickness

Owens-Corning Fiberglas recommends a full 2" thickness for protection against excessive heat loss or gain. The thickness is based on the fact that flexible blanket insulations are compressed during installation which affects their thermal per-

formance characteristics. In some cases, this can cause sweating on the vapor barrier or cooling ducts if the insulation is compressed too tightly. The products shown in bold faced type are designed to protect the maximum performance with the smallest duct cost. When they are installed on round ducts (the applied thickness is normally a full 1 1/2" and 1 1/2" thick on rectangular ducts. Other thicknesses are available as shown, however, the 2" thick insulation is recommended. This is sufficient to prevent condensation on the vapor barrier of insulated cooler ducts operating at service conditions of 50% RH at ambient temperatures of 110F.

sizes, thicknesses, widths

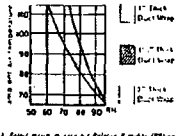
Fiberglas Duct Insulations are available in a variety of widths and thicknesses to meet the requirements for the temperature and humidity conditions normally encountered in air handling systems. All faced insulations have a 2" overlapping flange on one edge of the roll to seal the conventional joints of the insulation.

SCIENCE	PRODUCT	DESCRIPTION	TYPE NUMBER	THICKNESS	ROLL WIDTH	LENGTH
Exposed duct in ducts and equipment	Fiberglass Type 701	Insulated ductwork in low pressure areas	701	1" - 2"	48" - 60"	100'
Exposed duct in ducts and equipment	Fiberglass Type 702	Insulated ductwork in high pressure areas	702	1" - 2"	48" - 60"	100'
Exposed duct in ducts and equipment	Fiberglass Type 703	Insulated ductwork in high pressure areas	703	1" - 2"	48" - 60"	100'
Exposed duct in ducts and equipment	Fiberglass Type 704	Insulated ductwork in high pressure areas	704	1" - 2"	48" - 60"	100'
Exposed duct in ducts and equipment	Fiberglass Type 705	Insulated ductwork in high pressure areas	705	1" - 2"	48" - 60"	100'

*Similar to 701/2

condensation control

To determine thickness to prevent condensation of steam, hot air, or other vapors, use the following chart. (Based on compressed thickness of insulating material at 150 F in duct moving at 1700 FPM.)



specification compliance

Fiberglas Duct Insulation meets the requirements of the following Federal Specification:

- NSI 1201-101-01
- NSI 1201-101-02
- NSI 1201-101-03
- NSI 1201-101-04
- NSI 1201-101-05
- NSI 1201-101-06
- NSI 1201-101-07
- NSI 1201-101-08
- NSI 1201-101-09
- NSI 1201-101-10
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- NSI 1201-101-71
- NSI 1201-101-72
- NSI 1201-101-73
- NSI 1201-101-74
- NSI 1201-101-75
- NSI 1201-101-76
- NSI 1201-101-77
- NSI 1201-101-78
- NSI 1201-101-79
- NSI 1201-101-80
- NSI 1201-101-81
- NSI 1201-101-82
- NSI 1201-101-83
- NSI 1201-101-84
- NSI 1201-101-85
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- NSI 1201-101-87
- NSI 1201-101-88
- NSI 1201-101-89
- NSI 1201-101-90
- NSI 1201-101-91
- NSI 1201-101-92
- NSI 1201-101-93
- NSI 1201-101-94
- NSI 1201-101-95
- NSI 1201-101-96
- NSI 1201-101-97
- NSI 1201-101-98
- NSI 1201-101-99
- NSI 1201-101-100

application recommendations

For all ducts — Fiberglas Duct Insulation is normally applied with the following thicknesses: 1" for ducts up to 12" diameter, 1 1/2" for ducts 12" to 24" diameter, and 2" for ducts 24" to 48" diameter. For ducts 48" to 72" diameter, 2 1/2" thickness is recommended. For ducts 72" to 96" diameter, 3" thickness is recommended. For ducts 96" to 120" diameter, 3 1/2" thickness is recommended. For ducts 120" to 144" diameter, 4" thickness is recommended. For ducts 144" to 168" diameter, 4 1/2" thickness is recommended. For ducts 168" to 192" diameter, 5" thickness is recommended. For ducts 192" to 216" diameter, 5 1/2" thickness is recommended. For ducts 216" to 240" diameter, 6" thickness is recommended. For ducts 240" to 264" diameter, 6 1/2" thickness is recommended. For ducts 264" to 288" diameter, 7" thickness is recommended. For ducts 288" to 312" diameter, 7 1/2" thickness is recommended. For ducts 312" to 336" diameter, 8" thickness is recommended. For ducts 336" to 360" diameter, 8 1/2" thickness is recommended. For ducts 360" to 384" diameter, 9" thickness is recommended. For ducts 384" to 408" diameter, 9 1/2" thickness is recommended. For ducts 408" to 432" diameter, 10" thickness is recommended. For ducts 432" to 456" diameter, 10 1/2" thickness is recommended. For ducts 456" to 480" diameter, 11" thickness is recommended. For ducts 480" to 504" diameter, 11 1/2" thickness is recommended. For ducts 504" to 528" diameter, 12" thickness is recommended. For ducts 528" to 552" diameter, 12 1/2" thickness is recommended. For ducts 552" to 576" diameter, 13" thickness is recommended. For ducts 576" to 600" diameter, 13 1/2" thickness is recommended. For ducts 600" to 624" diameter, 14" thickness is recommended. For ducts 624" to 648" diameter, 14 1/2" thickness is recommended. For ducts 648" to 672" diameter, 15" thickness is recommended. For ducts 672" to 696" diameter, 15 1/2" thickness is recommended. For ducts 696" to 720" diameter, 16" thickness is recommended. For ducts 720" to 744" diameter, 16 1/2" thickness is recommended. For ducts 744" to 768" diameter, 17" thickness is recommended. For ducts 768" to 792" diameter, 17 1/2" thickness is recommended. For ducts 792" to 816" diameter, 18" thickness is recommended. For ducts 816" to 840" diameter, 18 1/2" thickness is recommended. For ducts 840" to 864" diameter, 19" thickness is recommended. For ducts 864" to 888" diameter, 19 1/2" thickness is recommended. For ducts 888" to 912" diameter, 20" thickness is recommended. For ducts 912" to 936" diameter, 20 1/2" thickness is recommended. For ducts 936" to 960" diameter, 21" thickness is recommended. For ducts 960" to 984" diameter, 21 1/2" thickness is recommended. For ducts 984" to 1008" diameter, 22" thickness is recommended. For ducts 1008" to 1032" diameter, 22 1/2" thickness is recommended. For ducts 1032" to 1056" diameter, 23" thickness is recommended. For ducts 1056" to 1080" diameter, 23 1/2" thickness is recommended. For ducts 1080" to 1104" diameter, 24" thickness is recommended. For ducts 1104" to 1128" diameter, 24 1/2" thickness is recommended. For ducts 1128" to 1152" diameter, 25" thickness is recommended. For ducts 1152" to 1176" diameter, 25 1/2" thickness is recommended. For ducts 1176" to 1200" diameter, 26" thickness is recommended. For ducts 1200" to 1224" diameter, 26 1/2" thickness is recommended. For ducts 1224" to 1248" diameter, 27" thickness is recommended. For ducts 1248" to 1272" diameter, 27 1/2" thickness is recommended. For ducts 1272" to 1296" diameter, 28" thickness is recommended. For ducts 1296" to 1320" diameter, 28 1/2" thickness is recommended. For ducts 1320" to 1344" diameter, 29" thickness is recommended. For ducts 1344" to 1368" diameter, 29 1/2" thickness is recommended. For ducts 1368" to 1392" diameter, 30" thickness is recommended. For ducts 1392" to 1416" diameter, 30 1/2" thickness is recommended. For ducts 1416" to 1440" diameter, 31" thickness is recommended. For ducts 1440" to 1464" diameter, 31 1/2" thickness is recommended. For ducts 1464" to 1488" diameter, 32" thickness is recommended. For ducts 1488" to 1512" diameter, 32 1/2" thickness is recommended. For ducts 1512" to 1536" diameter, 33" thickness is recommended. For ducts 1536" to 1560" diameter, 33 1/2" thickness is recommended. For ducts 1560" to 1584" diameter, 34" thickness is recommended. For ducts 1584" to 1608" diameter, 34 1/2" thickness is recommended. For ducts 1608" to 1632" diameter, 35" thickness is recommended. For ducts 1632" to 1656" diameter, 35 1/2" thickness is recommended. For ducts 1656" to 1680" diameter, 36" thickness is recommended. For ducts 1680" to 1704" diameter, 36 1/2" thickness is recommended. For ducts 1704" to 1728" diameter, 37" thickness is recommended. For ducts 1728" to 1752" diameter, 37 1/2" thickness is recommended. For ducts 1752" to 1776" diameter, 38" thickness is recommended. For ducts 1776" to 1800" diameter, 38 1/2" thickness is recommended. For ducts 1800" to 1824" diameter, 39" thickness is recommended. For ducts 1824" to 1848" diameter, 39 1/2" thickness is recommended. For ducts 1848" to 1872" diameter, 40" thickness is recommended. For ducts 1872" to 1896" diameter, 40 1/2" thickness is recommended. For ducts 1896" to 1920" diameter, 41" thickness is recommended. For ducts 1920" to 1944" diameter, 41 1/2" thickness is recommended. For ducts 1944" to 1968" diameter, 42" thickness is recommended. For ducts 1968" to 1992" diameter, 42 1/2" thickness is recommended. For ducts 1992" to 2016" diameter, 43" thickness is recommended. For ducts 2016" to 2040" diameter, 43 1/2" thickness is recommended. For ducts 2040" to 2064" diameter, 44" thickness is recommended. For ducts 2064" to 2088" diameter, 44 1/2" thickness is recommended. For ducts 2088" to 2112" diameter, 45" thickness is recommended. For ducts 2112" to 2136" diameter, 45 1/2" thickness is recommended. For ducts 2136" to 2160" diameter, 46" thickness is recommended. For ducts 2160" to 2184" diameter, 46 1/2" thickness is recommended. For ducts 2184" to 2208" diameter, 47" thickness is recommended. For ducts 2208" to 2232" diameter, 47 1/2" thickness is recommended. For ducts 2232" to 2256" diameter, 48" thickness is recommended. For ducts 2256" to 2280" diameter, 48 1/2" thickness is recommended. For ducts 2280" to 2304" diameter, 49" thickness is recommended. For ducts 2304" to 2328" diameter, 49 1/2" thickness is recommended. For ducts 2328" to 2352" diameter, 50" thickness is recommended. For ducts 2352" to 2376" diameter, 50 1/2" thickness is recommended. For ducts 2376" to 2400" diameter, 51" thickness is recommended. For ducts 2400" to 2424" diameter, 51 1/2" thickness is recommended. For ducts 2424" to 2448" diameter, 52" thickness is recommended. For ducts 2448" to 2472" diameter, 52 1/2" thickness is recommended. For ducts 2472" to 2496" diameter, 53" thickness is recommended. For ducts 2496" to 2520" diameter, 53 1/2" thickness is recommended. For ducts 2520" to 2544" diameter, 54" thickness is recommended. For ducts 2544" to 2568" diameter, 54 1/2" thickness is recommended. For ducts 2568" to 2592" diameter, 55" thickness is recommended. For ducts 2592" to 2616" diameter, 55 1/2" thickness is recommended. For ducts 2616" to 2640" diameter, 56" thickness is recommended. For ducts 2640" to 2664" diameter, 56 1/2" thickness is recommended. For ducts 2664" to 2688" diameter, 57" thickness is recommended. For ducts 2688" to 2712" diameter, 57 1/2" thickness is recommended. For ducts 2712" to 2736" diameter, 58" thickness is recommended. For ducts 2736" to 2760" diameter, 58 1/2" thickness is recommended. For ducts 2760" to 2784" diameter, 59" thickness is recommended. For ducts 2784" to 2808" diameter, 59 1/2" thickness is recommended. For ducts 2808" to 2832" diameter, 60" thickness is recommended. For ducts 2832" to 2856" diameter, 60 1/2" thickness is recommended. For ducts 2856" to 2880" diameter, 61" thickness is recommended. For ducts 2880" to 2904" diameter, 61 1/2" thickness is recommended. For ducts 2904" to 2928" diameter, 62" thickness is recommended. For ducts 2928" to 2952" diameter, 62 1/2" thickness is recommended. For ducts 2952" to 2976" diameter, 63" thickness is recommended. For ducts 2976" to 3000" diameter, 63 1/2" thickness is recommended. For ducts 3000" to 3024" diameter, 64" thickness is recommended. For ducts 3024" to 3048" diameter, 64 1/2" thickness is recommended. For ducts 3048" to 3072" diameter, 65" thickness is recommended. For ducts 3072" to 3096" diameter, 65 1/2" thickness is recommended. For ducts 3096" to 3120" diameter, 66" thickness is recommended. For ducts 3120" to 3144" diameter, 66 1/2" thickness is recommended. For ducts 3144" to 3168" diameter, 67" thickness is recommended. For ducts 3168" to 3192" diameter, 67 1/2" thickness is recommended. For ducts 3192" to 3216" diameter, 68" thickness is recommended. For ducts 3216" to 3240" diameter, 68 1/2" thickness is recommended. For ducts 3240" to 3264" diameter, 69" thickness is recommended. For ducts 3264" to 3288" diameter, 69 1/2" thickness is recommended. For ducts 3288" to 3312" diameter, 70" thickness is recommended. For ducts 3312" to 3336" diameter, 70 1/2" thickness is recommended. For ducts 3336" to 3360" diameter, 71" thickness is recommended. For ducts 3360" to 3384" diameter, 71 1/2" thickness is recommended. For ducts 3384" to 3408" diameter, 72" thickness is recommended. For ducts 3408" to 3432" diameter, 72 1/2" thickness is recommended. For ducts 3432" to 3456" diameter, 73" thickness is recommended. For ducts 3456" to 3480" diameter, 73 1/2" thickness is recommended. For ducts 3480" to 3504" diameter, 74" thickness is recommended. For ducts 3504" to 3528" diameter, 74 1/2" thickness is recommended. For ducts 3528" to 3552" diameter, 75" thickness is recommended. For ducts 3552" to 3576" diameter, 75 1/2" thickness is recommended. For ducts 3576" to 3600" diameter, 76" thickness is recommended. For ducts 3600" to 3624" diameter, 76 1/2" thickness is recommended. For ducts 3624" to 3648" diameter, 77" thickness is recommended. For ducts 3648" to 3672" diameter, 77 1/2" thickness is recommended. For ducts 3672" to 3696" diameter, 78" thickness is recommended. For ducts 3696" to 3720" diameter, 78 1/2" thickness is recommended. For ducts 3720" to 3744" diameter, 79" thickness is recommended. For ducts 3744" to 3768" diameter, 79 1/2" thickness is recommended. For ducts 3768" to 3792" diameter, 80" thickness is recommended. For ducts 3792" to 3816" diameter, 80 1/2" thickness is recommended. For ducts 3816" to 3840" diameter, 81" thickness is recommended. For ducts 3840" to 3864" diameter, 81 1/2" thickness is recommended. For ducts 3864" to 3888" diameter, 82" thickness is recommended. For ducts 3888" to 3912" diameter, 82 1/2" thickness is recommended. For ducts 3912" to 3936" diameter, 83" thickness is recommended. For ducts 3936" to 3960" diameter, 83 1/2" thickness is recommended. For ducts 3960" to 3984" diameter, 84" thickness is recommended. For ducts 3984" to 4008" diameter, 84 1/2" thickness is recommended. For ducts 4008" to 4032" diameter, 85" thickness is recommended. For ducts 4032" to 4056" diameter, 85 1/2" thickness is recommended. For ducts 4056" to 4080" diameter, 86" thickness is recommended. For ducts 4080" to 4104" diameter, 86 1/2" thickness is recommended. For ducts 4104" to 4128" diameter, 87" thickness is recommended. For ducts 4128" to 4152" diameter, 87 1/2" thickness is recommended. For ducts 4152" to 4176" diameter, 88" thickness is recommended. For ducts 4176" to 4200" diameter, 88 1/2" thickness is recommended. For ducts 4200" to 4224" diameter, 89" thickness is recommended. For ducts 4224" to 4248" diameter, 89 1/2" thickness is recommended. For ducts 4248" to 4272" diameter, 90" thickness is recommended. For ducts 4272" to 4296" diameter, 90 1/2" thickness is recommended. For ducts 4296" to 4320" diameter, 91" thickness is recommended. For ducts 4320" to 4344" diameter, 91 1/2" thickness is recommended. For ducts 4344" to 4368" diameter, 92" thickness is recommended. For ducts 4368" to 4392" diameter, 92 1/2" thickness is recommended. For ducts 4392" to 4416" diameter, 93" thickness is recommended. For ducts 4416" to 4440" diameter, 93 1/2" thickness is recommended. For ducts 4440" to 4464" diameter, 94" thickness is recommended. For ducts 4464" to 4488" diameter, 94 1/2" thickness is recommended. For ducts 4488" to 4512" diameter, 95" thickness is recommended. For ducts 4512" to 4536" diameter, 95 1/2" thickness is recommended. For ducts 4536" to 4560" diameter, 96" thickness is recommended. For ducts 4560" to 4584" diameter, 96 1/2" thickness is recommended. For ducts 4584" to 4608" diameter, 97" thickness is recommended. For ducts 4608" to 4632" diameter, 97 1/2" thickness is recommended. For ducts 4632" to 4656" diameter, 98" thickness is recommended. For ducts 4656" to 4680" diameter, 98 1/2" thickness is recommended. For ducts 4680" to 4704" diameter, 99" thickness is recommended. For ducts 4704" to 4728" diameter, 99 1/2" thickness is recommended. For ducts 4728" to 4752" diameter, 100" thickness is recommended. For ducts 4752" to 4776" diameter, 100 1/2" thickness is recommended. For ducts 4776" to 4800" diameter, 101" thickness is recommended. For ducts 4800" to 4824" diameter, 101 1/2" thickness is recommended. For ducts 4824" to 4848" diameter, 102" thickness is recommended. For ducts 4848" to 4872" diameter, 102 1/2" thickness is recommended. For ducts 4872" to 4896" diameter, 103" thickness is recommended. For ducts 4896" to 4920" diameter, 103 1/2" thickness is recommended. For ducts 4920" to 4944" diameter, 104" thickness is recommended. For ducts 4944" to 4968" diameter, 104 1/2" thickness is recommended. For ducts 4968" to 4992" diameter, 105" thickness is recommended. For ducts 4992" to 5016" diameter, 105 1/2" thickness is recommended. For ducts 5016" to 5040" diameter, 106" thickness is recommended. For ducts 5040" to 5064" diameter, 106 1/2" thickness is recommended. For ducts 5064" to 5088" diameter, 107" thickness is recommended. For ducts 5088" to 5112" diameter, 107 1/2" thickness is recommended. For ducts 5112" to 5136" diameter, 108" thickness is recommended. For ducts 5136" to 5160" diameter, 108 1/2" thickness is recommended. For ducts 5160" to 5184" diameter, 109" thickness is recommended. For ducts 5184" to 5208" diameter, 109 1/2" thickness is recommended. For ducts 5208" to 5232" diameter, 110" thickness is recommended. For ducts 5232" to 5256" diameter, 110 1/2" thickness is recommended. For ducts 5256" to 5280" diameter, 111" thickness is recommended. For ducts 5280" to 5304" diameter, 111 1/2" thickness is recommended. For ducts 5304" to 5328" diameter, 112" thickness is recommended. For ducts 5328" to 5352" diameter, 112 1/2" thickness is recommended. For ducts 5352" to 5376" diameter, 113" thickness is recommended. For ducts 5376" to 5400" diameter, 113 1/2" thickness is recommended. For ducts 5400" to 5424" diameter, 114" thickness is recommended. For ducts 5424" to 5448" diameter, 114 1/2" thickness is recommended. For ducts 5448" to 5472" diameter, 115" thickness is recommended. For ducts 5472" to 5496" diameter, 115 1/2" thickness is recommended. For ducts 5496" to 5520" diameter, 116" thickness is recommended. For ducts 5520" to 5544" diameter, 116 1/2" thickness is recommended. For ducts 5544" to 5568" diameter, 117" thickness is recommended. For ducts 5568" to 5592" diameter, 117 1/2" thickness is recommended. For ducts 5592" to 5616" diameter, 118" thickness is recommended. For ducts 5616" to 5640" diameter, 118 1/2" thickness is recommended. For ducts 5640" to 5664" diameter, 119" thickness is recommended. For ducts 5664" to 5688" diameter, 119 1/2" thickness is recommended. For ducts 5688" to 5712" diameter, 120" thickness is recommended. For ducts 5712" to 5736" diameter, 120 1/2" thickness is recommended. For ducts 5736" to 5760" diameter, 121" thickness is recommended. For ducts 5760" to 5784" diameter, 121 1/2" thickness is recommended. For ducts 5784" to 5808" diameter, 122" thickness is recommended. For ducts 5808" to 5832" diameter, 122 1/2" thickness is recommended. For ducts 5832" to 5856" diameter, 123" thickness is recommended. For ducts 5856" to 5880" diameter, 123 1/2" thickness is recommended. For ducts 5880" to 5904" diameter, 124" thickness is recommended. For ducts 5904" to 5928" diameter, 124 1/2" thickness is recommended. For ducts 5928" to 5952" diameter, 125" thickness is recommended. For ducts 5952" to 5976" diameter, 125 1/2" thickness is recommended. For ducts 5976" to 6000" diameter, 126" thickness is recommended. For ducts 6000" to 6024" diameter, 126 1/2" thickness is recommended. For ducts 6024" to 6048" diameter, 127" thickness is recommended. For ducts 6048" to 6072" diameter, 127 1/2" thickness is recommended. For ducts 6072" to 6096" diameter, 128" thickness is recommended. For ducts 6096" to 6120" diameter, 128 1/2" thickness is recommended. For ducts 6120" to 6144" diameter, 129" thickness is recommended. For ducts 6144" to 6168" diameter, 129 1/2" thickness is recommended. For ducts 6168" to 6192" diameter, 130" thickness is recommended. For ducts 6192" to 6216" diameter, 130 1/2" thickness is recommended. For ducts 6216" to 6240" diameter, 131" thickness is recommended. For ducts 6240" to 6264" diameter, 131 1/2" thickness is recommended. For ducts 6264" to 6288" diameter, 132" thickness is recommended. For ducts 6288" to 6312" diameter, 132 1/2" thickness is recommended. For ducts 6312" to 6336" diameter, 133" thickness is recommended. For ducts 6336" to 6360" diameter, 133 1/2" thickness is recommended. For ducts 6360" to 6384" diameter, 134" thickness is recommended. For ducts 6384" to 6408" diameter, 134 1/2" thickness is recommended. For ducts 6408" to 6432" diameter, 135" thickness is recommended. For ducts 6432" to 6456" diameter, 135 1/2" thickness is recommended. For ducts 6456" to 6480" diameter, 136" thickness is recommended. For ducts 6480" to 6504" diameter, 136 1/2" thickness is recommended. For ducts 6504" to 6528" diameter, 137" thickness is recommended. For ducts 6528" to 6552" diameter, 137 1/2" thickness is recommended. For ducts 6552" to 6576" diameter, 138" thickness is recommended. For ducts 6576" to 6600" diameter, 138 1/2" thickness is recommended. For ducts 6600" to 6624" diameter, 139" thickness is recommended. For ducts 6624" to 6648" diameter, 139 1/2" thickness is recommended. For ducts 6648" to 6672" diameter, 140" thickness is recommended. For ducts 6672" to 6696" diameter, 140 1/2" thickness is recommended. For ducts 6696" to 6720" diameter, 141" thickness is recommended. For ducts 6720" to 6744" diameter, 141 1/2" thickness is recommended. For ducts 6744" to 6768" diameter, 142" thickness is recommended. For ducts 6768" to 6792" diameter, 142 1/2" thickness is recommended. For ducts 6792" to 6816" diameter, 143" thickness is recommended. For ducts 6816" to 6840" diameter, 143 1/2" thickness is recommended. For ducts 6840" to 6864" diameter, 144" thickness is recommended. For ducts 6864" to 6888" diameter, 144 1/2" thickness is recommended. For ducts 6888" to 6912" diameter, 145" thickness is recommended. For ducts 6912" to 6936" diameter, 145 1/2" thickness is recommended. For ducts 6936" to 6960" diameter, 146" thickness is recommended. For ducts 6960" to 6984" diameter, 146 1/2" thickness is recommended. For ducts 6984" to 7008" diameter, 147" thickness is recommended. For ducts 7008" to 7032" diameter, 147 1/2" thickness is recommended. For ducts 7032" to 7056" diameter, 148" thickness is recommended. For ducts 7056" to 7080" diameter, 148 1/2" thickness is recommended. For ducts 7080

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performance characteristics

sound absorption coefficients (2" thick #6 mounding)

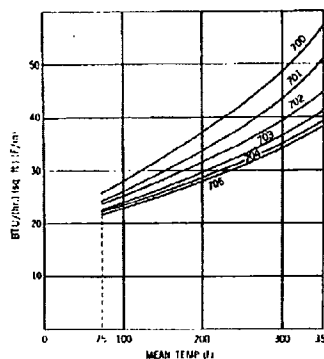
TYPE	125	250	500	1000	2000	4000	NRC
701	.34	.70	.96	.97	.86	.83	.87
702	.28	.77	.96	.98	.87	.87	.89
703	.32	.74	.97	.98	.87	.85	.89
704	.27	.79	.98	.99	.88	.86	.91
705	.48	.82	.97	.99	.90	.86	.92

size and density

TYPE	Density (pcf)	Thickness (in 1/2" increments)	Compressive Strength (psi at 10% deformation)	Standard Size	Therm. Cond. @ 75° F Mean Temp.
700	1.08	1"-4"	3.1		0.260
701	1.58	1"-4"	4.5		0.242
702	2.25	1"-3"	9.5	24" x 48"	0.235
703	3.00	1"-2"	100		0.230
704	4.20	1"-2"	200		0.230
705	6.00	1"-2"	350		0.220

*For special applications, boards up to 48" x 96" are available. (After compression packaged.)

thermal conductivity



moisture absorption

bacteria and fungus resistance

odorless

humidity and temperature effect

corrosion

less than 0.2% by volume

does not breed nor promote

odorless

cyclic conditions will not cause swelling or crumbling

does not accelerate corrosion of copper, steel or aluminum.

facings

Type 701, 702 and 705 are also available with the following facings applied vapor barrier facings.

FF — .0025 aluminum foil (UL Rated)

FHR — Felt-reinforced felt

SV — Duplex Laminated felt

fire hazard classification

	unfaced (700, 701, 702)	unfaced (703, 704, 705)	self-faced (701, 704, 705)
flame spread	10-20	25	15-20
fuel contributed	10-15	15	20-25
smoke developed	8-20	0	0
(compared to untreated Red Oak as 100)			

application recommendations

Type 700, 701, 702 — Lightweight unfaced flexible insulations in board form for use on vertically hanging irregular surfaces where the exterior is supported by welded studs or fasteners, and not by the insulation itself. The products are self-supporting but are generally secured with mechanical fasteners and protected by sheet metal.

Type 703, 704, 705 — These board insulations are normally installed on vertical planes on flat surfaces. They are cut in segments and installed in place on regular surfaces. Unfaced boards are normally finished with reinforced insulating cement or weatherproof mastic. Faced boards, with joints taped to provide a continuous vapor barrier, may be left unfinished or may be canvas jacketed.

recommended thickness — heated equipment

(100° ambient air)

Surface	Type 701	Type 703	Type 704
Temp.	RT	RT	RT
100	1 1/2	1 1/2	1 1/2
250	2	2	2
350	3	3	3
450	4	4	4

RT — recommended economic thickness, inches.

HL — heat loss (Btu/hr.-ft.²).

ST — surface temperature (°F).

Usefulness to prevent condensation

cold ducts and equipment

The following chart indicates the recommended thickness of Type 701, 704, 705 Faced Duct Insulation for installation on cold air ducts at various temperature differences (duct to air). Also shown are values for heat gain and approximate maximum relative humidity allowable.

Temperature Difference (°F)	Recommended Thickness (inches)	Heat Loss (Btu/hr.-ft.²)	Permissible Relative Humidity
70	1 1/2	5.1	90%
75	1 1/2	6.4	81%
80	1 1/2	8.1	73%
85	1 1/2	10.1	66%
90	1 1/2	12.4	60%
95	1 1/2	15.1	55%
100	1 1/2	18.1	51%

specification compliance

HM-1-542, Type I	700
HM-1-542, Type II	701, 702, 703
HM-1-558a, Form A, Class 1	701, 704, 705
HM-1-558a, Form A, Class 2	701, 704, 705
HM-1-558a, Form B, Type 1, Class 1	701, 704, 705
HM-1-562, Type 1, Class 2	701, 704, 705
HM-1-562, Type II, Class D, (200° F)	701, 704, 705
HM-1-562, Form I & II, Class A	701, 704, 705
Many Bureau of Yards and Docks, 15W	701, 704, 705
Corps of Engineers, C.E. - 361.02, 11 thru 17	701, 704, 705

**Type 701 is a specialty product for use on cold ducts of composite or on some metal surfaces. It is not suitable for use on hot ducts or on cold ducts with air velocity over 100 ft./min.

***Values reported on basis of 100° ambient air.

limitations

Industrial insulation 701 series, plain, should not be used on surfaces operating at temperatures above 450°. Types 701, 704, 705 faced products should not be used on surfaces operating at temperatures greater than 260° except that FF may be used at a maximum thickness of 2 1/2 inches up to 450°.

caution

Owens Corning Fiberglas Insulations are to be applied only with approved adhesives, mastics and mechanical fastening devices as published in Accessory Materials List, Pub. No. 4 (10-11-70). Owens Corning Fiberglas accepts no responsibility or liability for the performance of materials other than those listed unless approved in writing by O-CI Testing Laboratories.

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FIBERGLAS

air handling systems 1.6
August, 1967

Duct Liner

Aeroflex Duct Liner



a long glass fiber thermal
and acoustical insulation with unusual toughness
and high sound absorption

uses

Fiberglas "Aeroflex" Duct Liner is designed for use as an Acoustical and/or thermal insulation for heating and cooling ducts operating at velocities up to 6000 fpm. It has been tested at velocities up to 3000 fpm without surface erosion. Temperature limit is 180°.

description

Aeroflex is manufactured specifically to be a duct liner. The strongly bonded long glass fibers make this product extremely tough to resist damage during fabrication and after it is in service. Aeroflex is steam rigid and resistant. The surface, facing the airstream, is coated with a black fire-resistant coating to bind the surface fibers tightly to avoid any loose fibers, and provide a smoother air flow surface.

benefits

absorbs unwanted sound—Fiberglas Aeroflex is an extremely efficient acoustical insulator having a high NRC of .75 to .85 (1" duct). The fiber is especially efficient in absorbing low and middle frequency sounds which are the most irritating and difficult to eliminate.

resists damage—Aeroflex is tough yet resilient. It resists damage during and after installation because of the long glass fiber construction.

fire safe—Meets the stringent Fire Hazard Classification NFPA 50A standards.

easy inspection—the black surface coating on Aeroflex shows any damage immediately.

protects against sweating—the high sound efficiency of Aeroflex protects against condensation on the metal surface of cooling ducts and reduces heat loss or gain to a minimum.

minimum joints—Aeroflex is normally applied by brake forming with the metal. This eliminates three corner joints.

OWENS-CORNING
FIBERGLAS

OWENS-CORNING FIBERGLAS CORPORATION

Industrial and Commercial Construction Materials Division, 717 Park Avenue, New York, New York 10022,
General Offices, Tel. 1-212-512-1000

Pub No. 1-IN-2913-K

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14th in U.S.A. Jan 1967

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MA

See registered copy of the Plans presented for

Under all the "lightweight" and "quick-setting" Fiberglas will save you and yet still and tested insulating them. Here the first is "Change of this to show us if you address change

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Title _____
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City _____
State _____
Phone _____

performance characteristics

fire hazard classification: Meets the requirements of NFPA 50A standards as determined by Underwriters' Laboratory method, NFPA No. 225—ASTM E-84-50T. Flame spread—under 25; smoke developed—under 50.

surface air friction: air friction coefficient of 0.025 as tested by Ohio State University.

odor: Essentially odorless.

inorganic: Will not rot, corrode metals or support vermin.

thermal conductivity: k of .25 at 75F mean temperature (1.5 pct).

sound absorption coefficients:

Type	Density pcf	Thickness	NRC*
150	1½	¼"	.55-.65
		1"	.70-.80
200	2	¼"	.55-.65
		1"	.70-.80
300	3	¼"	.60-.70
		1"	.75-.85

*Noise Reduction Coefficient—No 6 Mounting

specification compliance

Meets the requirements of HM-1-0045, Type I, Class A and Mil 1-22016, Class 4, 5, 6

application recommendations

For Air Velocities up to 1500 fpm the liner is adhered to the duct using a 50% coverage of fire-resistant adhesive. When the duct width exceeds 12" or the height 24", the liner is additionally secured with mechanical fastenings on maximum 15" centers on the top and on the sides.

For velocities from 1500 to 4000 fpm the above recommendations apply, but before installing the liner, coat and point the edges with a fire resistant coating where the insulation meets together.

For high velocities from 4000 to 6000 fpm, attach the liner with welded pins on 12" centers and 50% coverage of fire resistant adhesive. Coat all edges with a heavy coat of fire resistant mastic.

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Industrial and Commercial Construction Materials Division, 717 Fifth Avenue, New York, New York 10022
General Offices: Toledo, Ohio 43601

OWENS-CORNING
FIBERGLAS

air handling systems 4.7
July, 1968

Duct Insulation

Duct Liner Board

a highly efficient
acoustical and thermal insulation board
for lining sheet metal ducts.

uses

description

Fiberglas Duct Liner Board is designed primarily as an acoustical insulation to absorb air conditioning equipment and blower noises in metal ducts and plenums operating velocities up to 4000 fpm. It is also an excellent thermal insulation which eliminates the necessity of insulating ducts on the exterior to conserve heat or prevent condensation.

Fiberglas Duct Liner Board is manufactured in semi-rigid board form from fine glass fibers firmly bonded with a thermosetting resin. It is coated one side with a fire resistant black coating to resist any tendency of surface fiber to blow off in the air stream.

benefits

provides a quiet operating system...exceptional acoustical efficiency absorbs air-conditioning equipment and blower noises in the plenum and in the duct run.

lower operating costs...high thermal efficiency reduces heat loss or gain which increases operating efficiency and lowers costs.

no water-vapor condensation...metal ducts lined with a sufficient thickness of Fiberglas Duct Liner Boards do not sweat. The metal acts as a vapor barrier and the insulation keeps the surface of the metal below the dew point.

low air friction loss...the smooth coated surface of the board does not impede the flow of air. The system operates with a minimum of air loss due to roughness.

no drumming...the semi-rigid boards add stiffness to the sheet metal duct sections, reducing drumming and transmission of noise.

uniform thickness...the factory controlled uniform thickness of Fiberglas Duct Liner Board means the insulation value remains constant. No compression at the corners. No irregular joints to impede air flow.

*T.M. Reg. DCF Corp

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Title _____

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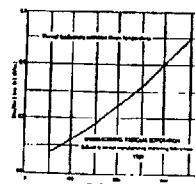
City _____ State _____

Phone _____

physical properties

density: 3 lbs. per cu. ft.
odor: essentially odorless
friction coefficient: 0.023 (average)
size: width: 24", 36", 48"
length: 48", 72" (lengths to 96" on made-to-order basis)
thickness: 1", 1½", 2"
fire hazard classification:
Flame Spread 25 max
Smoke Developed 50 max
maximum velocity: 4000 fpm

Thermal conductivity:

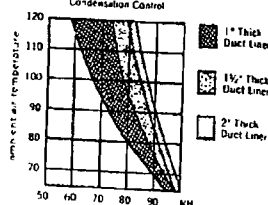


federal specification compliance

164 1 00545 Type II, Class A

thickness to prevent condensation

Condensation Control



Example: If the 1½" R1 is 70 and ambient air temperature is 100 F Dry bulb, the thickness recommended is 1".

noise reduction coefficient (NRC Spec. range)

1" 70-80
1½" 75-85
2" 80-90

surface air friction

air friction factor of 0.023 (average)
absolute roughness of 0.0013

application recommendations

for velocities up to 1500 fpm the liner is adhered to all four faces of the duct (cold side faces are stream) with a 50% coverage of two resistant insulation bonding adhesive. The adhesive is to completely cover the metal at the upstream end of each section. Top and bottom pieces are to lap side pieces. If the duct width exceeds 12" or height 24" further secure the liner with mechanical fasteners on 18" centers.

for velocities from 1500 to 4000 fpm the insulation liner is installed as above but it is necessary to point all joints and butter the ends of the liner where the duct sections fit together with a two resistant breather mastic.

FIBERGLAS

air handling systems 4,9

September, 1967

Duct Systems

UL Class I Air Duct Rated Flexible Duct

a flexible insulated duct for use in
low velocity heating or
air conditioning

uses

description

Owens-Corning Fiberglas Flexible Duct is recommended for use as a complete air duct or connector on supply and return air lines in residential, industrial and commercial heating, air conditioning and ventilating systems. In addition, it can be used on runouts to registers, diffusers and mixing boxes. The flexible feature allows it to conform to gradual bends necessary when connecting air ducts to diffusers or when routing air ducts through spaces with many obstructions.

Fiberglas Flexible Duct is a light weight duct formed with a resilient core insulated with Fiberglas Flexible Insulation, and jacketed with a tough noncombustible (product qualifies as Class I Air Duct by UL 781 as required by NFPA No. 90A as an air duct or connector) vapor barrier jacket. Each section is furnished with locking male and female sheet metal end rings. It has an interior surface of glass fiber soft cloth.

benefits

ease of installation—Flexibility of product permits weaving around obstructions and bending for elbows. Eliminates expense of purchasing or fabricating fittings. Allows relocation of movable diffusers with minimum of effort. Metal end rings solve alignment problems.

quiet installation and operation—Nature of duct allows quiet installation without noisy interruptions to occupants. When installed, Flexible Duct System absorbs noise generated by mechanical equipment and air movement.

faster return on owners investment—Earlier building occupancy due to faster installation.

economical operation—Insulated system reduces heat loss or gain and helps maintain air temperature.

durable—Both ends of product have sheet metal fittings for positive metal to metal connections. The male end has locking tabs to facilitate installation. Both vapor barrier and insulation are continuous.

odorless—Will not cause odor.

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OWENS-CORNING FIBERGLAS CORPORATION
Industrial and Commercial Construction Division
217 Fifth Avenue, New York, New York 10022 General Offices, Toledo, Ohio 43601

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PUB. NO. 1-183-0117

PUB. NO. 1-183-146 C

11/19/68 JULY 1968

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MIA

My enclosed copy of the Fiberglas Flexible Duct is for your information and use. Please use this "Change of Address" card to advise us of any address change.

"CHANGE OF ADDRESS" CARD
COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MIA

Name _____
 Firm _____
 Address _____
 City _____ State _____
 Please Print

performance characteristics

thermal conductance (C) @ 75°F mean temperature _____ 25	maximum static air pressure _____ 1½ inch water gauge
maximum interior air temperature _____ 250°F	maximum negative air pressure _____ ½ inch water gauge
minimum interior air temperature _____ 0°F	vapor transmission rating _____ 1.0 perm
maximum air velocity _____ 2400 FPM	

UL rating (qualifies and is labeled Class I Air Duct as required by NFPA No. 90A as an air duct or connector)

	Outside Surface	Inside Surface
Flame Spread	25	15
Fuel Contributed	0	0
Smoke Developed	45	20

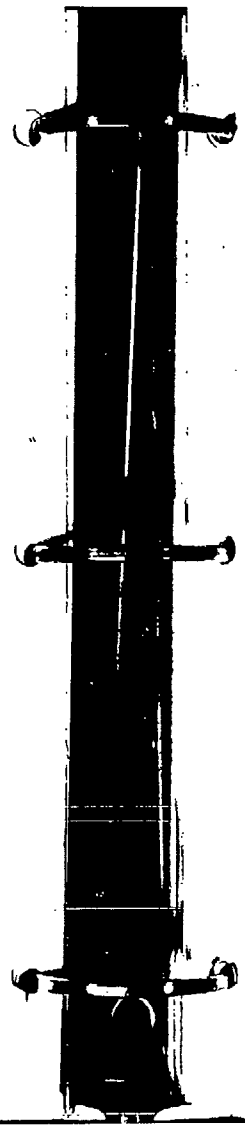
duct dimensions

DIAMETERS	LENGTH	WALL THICKNESS
4" - 18" in 1" increments	Nominal 6' - all diameters	Nominal 1" - all diameters
12" - 18" in 2" increments		

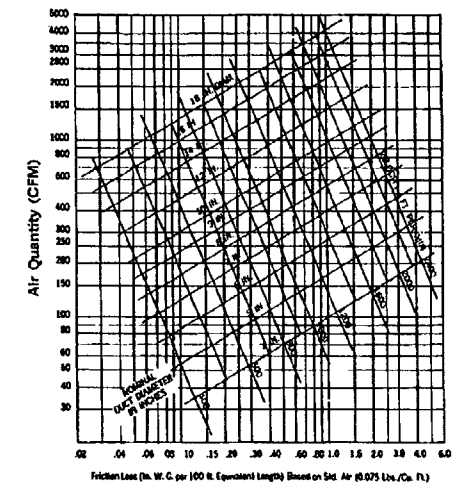
connectors—The male and female ends of a Fiberglas Flexible Duct have galvanized sheet metal sleeves attached. Male end has locking tabs which firmly attach the two section together. Connectors are sized to fit standard metal fittings.

bending radii—Maximum installed radius of O.C.F. Flexible Duct—
 4" - 12" diameter a uniform 180° bend in a 6' length of duct
 12" - 18" diameter a uniform 90° bend in a 6' length of duct

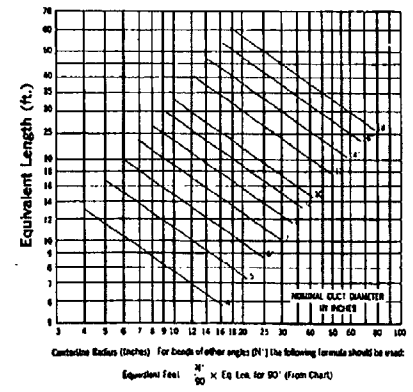
Installation methods—Refer to current Owens-Corning Fiberglas Installation and cutting instructions. Most recent issue of Publication Number 3-MS-3765.



Friction Loss of Air in Straight Duct



Friction Loss of 90° Turns in Equivalent Ft. of Straight Duct



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name fill out the "Registration" and send to Owens-Corning Fiberglas with name and address and any other information. Note also that if "Change of Address" is to be made, it must be made.

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State _____

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Phone _____

Normal Octave Band Attenuation of Straight Sections of Fiberglas Flexible Duct (Data smoothed from 1/2 octave insertion loss measurements)

Frequency (Hz)	125	250	500	1000	2000	4000
Duct Diameter (in)	Length (ft)	Attenuation (dB)	Attenuation (dB)	Attenuation (dB)	Attenuation (dB)	Attenuation (dB)
4	3	23	26	29	31	41
	6	26	30	33	35	45
	9	28	32	35	37	47
	12	30	34	37	39	49
6	3	21	24	26	28	33
	6	24	27	29	31	36
	9	26	29	31	33	38
	12	28	31	33	35	40
8	3	19	22	23	25	29
	6	22	25	26	28	32
	9	24	27	28	30	34
	12	26	29	30	32	36
10	3	17	20	20	22	26
	6	20	23	23	25	29
	9	22	25	25	27	31
	12	24	27	27	29	33
12	3	15	18	17	19	23
	6	18	21	20	22	26
	9	20	23	22	24	28
	12	22	25	24	26	30
14	3	13	16	15	17	21
	6	16	19	18	20	24
	9	18	21	20	22	26
	12	20	23	22	24	28
16	3	11	14	13	15	19
	6	14	17	16	18	22
	9	16	19	18	20	24
	12	18	21	20	22	26
18	3	9	12	11	13	17
	6	12	15	14	16	20
	9	14	17	16	18	22
	12	16	19	18	20	24

Note: Due to the lightness of Fiberglas Flexible Duct it should not be used in excessively noisy air systems unless the main supply ducts are constructed of Rigid Round or Rectangular Fiberglas Duct System or steel metal ducts are lined with Acoustical Insulation. In this situation fan noises are substantially reduced before reaching the flexible connector.

SUGGESTED SPECIFICATION

Fiberglas Flexible Duct as manufactured by Owens-Corning Fiberglas Corporation shall be installed in sizes and locations where indicated on drawings. It shall be installed on all connections to: (air diffusing troffers lights), (cooling pan type outlets), (single ceiling diffusers), (perimeter under-window units), (air outlets from crating boxes on low pressure side of high pressure systems).

Fiberglas Flexible Duct is a light weight duct formed with a resilient core insulated with Fiberglas Flexible Insulation, and jacketed with a tough noncombustible (product shall bear UL Class 1 Air Duct label as tested under UL 181 and required by NFPA 90A as an air duct or connector) vapor barrier jacket. Each section is furnished with locking male and female sheet metal and rings. It has an interior surface of glass fiber scrim cloth. Fiberglas Flexible Duct shall be installed in accordance with the installation instructions of the manufacturer as shown in the most recent issue of Publication Number 3-MS-3164.

FIBERGLAS



uses

Owens-Corning Fiberglas® Rigid Round Duct System is used as an air duct for heating, ventilating and air conditioning systems operating at temperatures up to 250° and static pressures up to 1". It is usually used in conjunction with Fiberglas Rectangular Duct System for runouts and dropouts of diffuser openings.

air handling systems CJD
October, 1968

Air handling systems

Rigid Round Duct System

self insulating, fire safe,
air duct for
heating & cooling systems

description

Fiberglas Rigid Round Duct is manufactured from extremely fine glass fibers tightly bonded together into precision molded 6' long sections. The exterior surface is a tough, smooth, noncombustible vapor barrier jacket. Ends are factory molded, male and female, to assure tight, strong joints and faster assembly.

benefits

4 in 1 Performance—performs four basic requirements of an air handling system: (1) Conceals air efficiently, (2) Built-in thermal insulation to deliver air at design temperatures (3) absorbs air and bant noise (4) Integral vapor barrier and finished surface finish.

Lower Operating Costs—exceptional thermal efficiency and uniform wall thickness is 15 to 20% more efficient than metal ducts wrapped with flexible insulation. All joints are completely sealed to eliminate air loss.

Quiet Operation—absorbs unwanted equipment noise in only a few feet. No transmitted noise. No humming, popping or cracking.

Fire Safe—meets all requirements of regional NFPA 90 A and 90 B (UL 181) Class 1 Air Duct tests for resistance to fire and mechanical damage.

No Water-Stained Ceilings—integral vapor barrier and taped joints eliminates moisture condensation and drippage which can occur with insulated metal ducts.

Quiet Installation—no hanging, ideal for remodeling work where noise is objectionable.

Efficient Air Delivery—smooth interior surface is a true airway to duct, no restriction due to friction.

OWENS-CORNING
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OWENS-CORNING FIBERGLAS CORPORATION
INDUSTRIAL & COMMERCIAL CONSTRUCTION DIVISION 717 FIFTH AVENUE NEW YORK, N.Y. 10022
GENERAL OFFICES TOLEDO, OHIO 43601

Pub. No. 1-MS-1112 E

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Like in U.S.A., Sept. 1967

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MA

See registered copy of the Fiberglas 25 H-E Equipment Insulation System MA

When we put the "Fiberglas 25 H-E Equipment Insulation System" on your wall and you call our technical information line, you also get a "Change of Address" card to advise us if your address changes.

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City _____ State _____

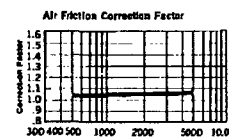
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performance characteristics

Thickness (nominal) 1 inch
Density (nominal) 3.35 to 4.5 pcf
Air Velocity (maximum) 1000 fpm
Service Temperature (maximum) 250°F
Insulation Pressure (maximum) 2" water
Fiberglass performed duct has been tested at 25 times the recommended velocities and at 4 times the recommended internal pressure

Thermal Conductivity

Mean Temperature, F	50	75	100
k	0.022	0.023	0.024
Conductivity, Btu-in. per sq. ft. per hr			



Velocity-FPM
Resistance (ft): 0.0005
Air Friction Correction Factor to be applied to ASHRAE Guide Section loss for straight galvanized metal ducts. Applies to duct sizes from 6" to 48" hydraulic diameter with an accuracy of plus (-) or minus (+) 5%.

Sound Attenuation
Table shows duct sound attenuation in decibels per foot based on actual laboratory tests.

Round Duct	125	250	500	1000	2000	4000
18 in. dia (in.)	0	8.3	1.3	0.2	7.8	14.1
10	0.2	1.1	0.5	0.9	12.2	19.0
14	0.1	0.9	1.5	3.2	4.3	8.6

Underwriters' Laboratories Fire Hazard Classification
This duct meets the Fire Hazard Classification requirements of NFPA 90 A and 90 B Standards when tested in accordance with U.L. 181 procedures, and is rated as Class 1.

	Exterior Surface	Interior Surface
Flame Spread	15	15
Heat Conducted	20	25
Smoke Developed	0	0

Standard Sizes and Packaging

6' lengths. Factory matched male and female joints.

Duct Size (I.D. inches)	Sections per Ctn.	Approx. Wt. lbs. per Ctn.
6	9	43
7	9	47
8	9	53
9	9	58
10	4	31
12	4	35
14	4	40
16	2	25

Field Fabrication of End Joints

This simple, fool-proof cutting tool makes most accurate "slip-joint" ends on shortened lengths of duct and fittings.



Installation and Fabrication Recommendations

All 6 foot sections of preformed Fiberglas 25 H-E Equipment Insulation System have a factory matched, integral male fitting on one end and a female fitting on the other. The ends of two strong sections are simply slipped together to form a strong, snug joint. The connection is smooth, inside and outside, and full insulation thickness at the joint is maintained. No sheet metal connectors, fasteners or adhesives are required.

End joints are reinforced and sealed with a single wrap of 2 inch wide Fiberglas Duct Tape, Type H-SJ. This is a special, self-adhering tape that matches the duct jacket.

FIBERGLAS OWENS-CORNING FIBERGLAS CORPORATION
Industrial and Commercial Construction Materials Division 717 Fifth Avenue, New York, New York 10022
General Offices, Toledo, Ohio 43601

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OWENS-CORNING FIBERGLAS

plumbing piping systems 1.0
mechanical equipment 3.7
air handling systems 4.18
December, 1968

Equipment Insulation

Fiberglas 25 H-E Equipment Insulation System

A noncombustible rigid board insulation system for hot service ducts and equipment operating at temperatures up to 450°F.

uses

Recommended for use on all hot mechanical equipment and ductwork operating up to 450°F, where the ultimate in noncombustibility is desired.

description

A Fiberglas 25 H-E Equipment Insulation System for heated surface service consists of a rigid insulation board of glass fibers faced with a noncombustible pre-sized Fiberglas cloth. Other components of the system include a non-combustible pressure sealing joint tape and pre-finished metal fastener caps attached to welded pin anchors.

benefits

fire safety—a complete insulation system with UL rating on board, facing, joint tape, fastening device.

ready for painting—the pre-sized white glass cloth facing, matching tape and fastener caps do not require field painting prior to painting. If painting is required, use recommended paint.

damage resistant—the tough finely woven glass cloth facing resists damage and the rigid insulation board absorbs most impact blows without damage.

lower operating cost—the uniform, factory controlled board thickness assures constant thermal efficiency performance.

*Fiberglas (Reg. U.S. Pat. & TM) and "25" are trademarks of Owens-Corning Fiberglas Corporation.

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MA

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name the "Fiberglas" and "Aeroflex" and your company name. Note also that a "Change of Address" card is included in this system.

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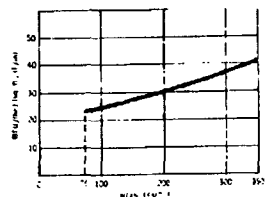
performance characteristics

dimensional stability:
will not warp, shrink, rot or decompose
vermin and rodent resistant
provides no sustenance

flame hazard classification:
Flame Spread 20
Flame Contributed 10
Smoke Developed 35

temperature limitations:
recommended for heated surfaces
when temperatures do not exceed 450°F or fall below 35°F
vapor transmission rate:
0.5 perms

thermal conductivity



sizes
Width 24", Length 48", Thickness 1", 1½", 2"

fire hazard classification

Maximum Fire Hazard Classification for building materials and insulation as noncombustible has been established as follows:

Flame Spread	25
Fuel Contributed	50
Smoke Developed	50

Fiberglas 25 C-E Insulation System, including joint sealing treatment, is considerably below the maximum allowable. This is your assurance that you can specify and use this system without the danger of contributing to the spread of fire or that combustion will liberate excessive quantities of smoke. The system has been designed to meet the stringent fire safety requirements of GSA and Corps of Engineers.

Underwriters Laboratories
(Pipe & Equipment Coverings R5583 40 U B 15)

**Fiberglas 25 C-E Insulation Systems	
Flame Spread	20
Fuel Contributed	10
Smoke Developed	35

NOTE: This rating is for the composite product and includes the use of O-C Type C Joint Sealing Tape for seal.

specification compliance

Meets the stringent fire safety requirements of GSA and Corps of Engineers WH-1558a Form 4, Class 1 & 2
Meets NFPA 90 A Fire Hazard Classification

application recommendations

The Fiberglas 25 C-E Insulation System is installed by installing the insulation boards on welded pins spaced 3" in from each corner of the board with intermediate pins of no greater than 21" centers.

After boards are unspaced, the welded pins are cut to extend ¼" beyond the face of the board. A self locking cap is pushed onto the pin after coating with O-C Fitting Mastic (Type C) to provide a vapor seal.

All insulation edges and butt joints are to be sealed with O-C Type C Joint Sealing Tape. Tape is a pressure sealing tape requiring no separate adhesive. Pressure tape by rubbing hard with a nylon sealing tool.

Ductwork etc. and other sharp radius bends require pre-scoring of the insulation board to conform to the curved surface.

If painting is required, no sizing is necessary; but, to maintain the noncombustibility of the system, only Giddeon acrylic latex paint (No. 5370) is to be used.

thickness to prevent condensation

cold ducts and equipment
The following chart indicates the recommended thickness for installation on cold air ducts at various temperature differences (duct to air). Also shown are values for heat gain and approximate maximum relative humidity allowable.

Temperature Difference	Recommended Thickness (Inches)	Heat Gain Btu/Hr-Sq-Ft	Permissible Relative Humidity
25	1	1.1	90%
25	1	1.1	87%
30	1	1.3	84%
35	1	1.5	81%
40	1½	1.7	78%
45	1½	1.9	75%
50	2	2.1	72%

FIBERGLAS

air handling systems 4, 14 October, 1968

Duct Liner

Black Aeroflex Duct Liner

a long glass fiber thermal and acoustical insulation with unusual toughness and high sound absorption

uses

Fiberglas "Aeroflex" Duct Liner is designed for use as an Acoustical and/or thermal insulation for heating and cooling ducts operating at velocities up to 5000 fpm. It has been tested at velocities up to 8000 fpm without surface erosion. Temperature limit is 180°F.

description

All black Aeroflex is manufactured specifically to be a duct liner. The strongly bonded long glass fibers make this product extremely tough to resist damage during fabrication and after it is in service. Aeroflex is semi-rigid and resilient. The surface, facing the air stream, is coated with a black fire-resistant coating to bind the surface fibers tightly to avoid any loose fibers, and provide a smoother air flow surface.

benefits

absorbs unwanted sound—Fiberglas Aeroflex is an extremely efficient acoustical insulation having a high NRC of .45 to .71 (1" J pc). The liner is especially effective in absorbing low and middle frequency sounds which are the most irritating and difficult to eliminate.

resists damage—Aeroflex is tough yet resilient. It resists damage during and after installation because of the long glass fiber construction and black surface coating.

fire safe—Meets the stringent Fire Hazard Classification NFPA 90A standards.

protects against sweating—the high thermal efficiency of Aeroflex protects against condensation on the metal surface of cooling ducts and reduces heat loss or gain to a minimum.

seamless joints—Aeroflex is normally applied by brake forming with the metal. This eliminates three corner joints.

OWENS-CORNING FIBERGLAS

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Industrial and Commercial Division, Materials Division
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Name _____
 Title _____
 Address _____
 City _____
 State _____
 Zip _____

Please Print

performance characteristics

Fire hazard classification: Meets the requirements of NFPA 284 standards as determined by Underwriters' Laboratory method, NFPA No. 225-ASTM E-84-50T. Flame spread—under 25; smoke developed—under 50.

surface air friction: air friction coefficient of 0.025 as tested by Ohio State University.

odor: Essentially odorless.

Inorganic: Will not rot, corrode metals or support vermin.

thermal conductivity: k of .25 at 75F mean temperature (1.5 pcf).

sound absorption coefficients

Type	Density pcf	Thickness	NRC*
150	1½	½"	.55-.65
		1"	.70-.80
200	2	½"	.55-.65
		1"	.70-.80
300	3	½"	.60-.70
		1"	.75-.85

*Noise Reduction Coefficient—No 6 Measuring

specification compliance

Meets the requirements of MH-4-00545, Type I, Class A and the 1-200719, Class 4, 5, 6

application recommendations

For Air Velocities up to 1500 fpm the liner is adhered to the duct using a 50% coverage of fire resistant adhesive. When the duct width exceeds 12" or the height 24", the liner is additionally secured with mechanical fasteners on walls.

seam 36" centers on the top and on the sides.

For velocities from 1500 to 4000 fpm the above recommendations apply, but before installing the liner, coat and point the edges with a fire resistant caulk where the insulation meets together.

For high velocities from 4000 to 6000 fpm, attach the liner with welded pins on 12" centers and 50% coverage of fire resistant adhesive. Coat all edges with a heavy coat of fire resistant mastic.

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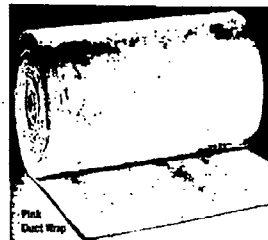
OWENS-CORNING FIBERGLAS CORPORATION

Industrial and Commercial Construction Materials Division, 717 Fifth Avenue, New York, New York 10022
 General Offices, Toledo, Ohio 43601

OWENS-CORNING
FIBERGLAS

air handling systems 4.18
 October, 1988

Duct Insulation



Pink Duct Wrap Insulation (unfaced)

for external application on all hot air ducts not requiring a facing for appearance or painting.

uses

Fiberglas Pink Duct Wrap is especially designed to insulate exteriors of both concealed and exposed round hot air ducts. Fiberglas unfaced Duct Insulation also can be effectively used to insulate concealed, rectangular hot air ducts.

Its unique combination of flexibility, light weight, high insulation efficiency and moisture resistance makes it a highly desirable all-purpose duct insulation.

description

Fiberglas "Pink Duct Wrap", a highly thermal efficient insulating blanket of fine inorganic glass fibers, offers versatility, economy and flexibility as an exterior insulation for a variety of ducts operating up to 250F. The average low "k" at 75F varies with density ranging from 0.22 to 0.29. Its light weight, flexibility and toughness make this insulation an easy and time-saving material for workmen to apply even in limited space. Densities range from ½ lb. to 3 lb./cu. ft.

benefits

low operating cost — low k factor of .26 at 75F mean temperature (Type 75 P). Full-thickness resistance means less heat loss. Systems operate more efficiently. Air is delivered at design temperature.

all purpose insulation—ideally suited for all hot ducts not requiring a facing for appearance or surface finish. Tailored primarily for economical insulation of concealed hot air ducts; rectangular or round.

tough and resilient—Fiberglas Duct Wrap Insulation is tough and resilient. It resists damage to shipment, installation and after it is installed.

*2.6 Reg. OCT Corp.

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L1200 M 10 S 4 1984

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COMMERCIAL & INDUSTRIAL INSULATION SYSTEMS MA

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performance characteristics

moisture adsorption: less than 0.2% by volume, 96 hrs. at 120F and 95% R.H.

bacteria and fungus resistance: does not breed nor sustain bacteria or fungus.

odor: essentially odorless.

Underwriters rating:

flame spread 25

fuel contributed 50

Smoke developed 50

(compared with untreated Red Oak as 100)

thermal conductivity (@ 75°F mean)

type	density	Btu/hr sq. ft. (Deg. F/in)
50P	1/4 Pcf	.29
75P	3/4 Pcf	.26
100P	1 Pcf	.25
150P	1 1/4 Pcf	.23
200P	2 Pcf	.22
250P	2 1/2 Pcf	.22
300P	3 Pcf	.22

recommended thickness:

Owens-Corning Fiberglas recommends a full 2" thickness for protection against excessive heat loss or gain. This is because flexible blanket insulations may be compressed during installation. This affects the thermal performance.

sizes:

widths—24", 36", 48", 72"

lengths—50'-100', depending upon thickness and type

thickness—1/2"-4"—depending on density

form—roll

limitations:

Fiberglas Flexible Duct Insulation should not be used on duct systems subject to temperatures in excess of 250F. It should not be exposed to weathering or mechanical abuse without proper protection. It should not be used on the inside of ducts. All values given are subject to normal manufacturing and testing tolerances.

specification compliance:

HH-1 558a Form B Class 6

MH-1 22023B type II

HH-1 542 type I

application recommendations:

Hot Air Ducts—pink Fiberglas Duct Wrap insulation is normally applied with fire resistant adhesives in 3" wide strips on roughly 12" centers. End joints are butted and the longitudinal joint overlapped and stapled with a flare-door staple.

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FIBERGLAS

Air Handling Systems 4.3.1

application specifications

**RECTANGULAR
HEATING & COOLING
DUCT SYSTEMS**

Date 1-19-66

Revised 10-12-67

INDUSTRIAL RECTANGULAR DUCT SYSTEM TO 250 F.

EXPOSED AND CONCEALED RECTANGULAR DUCT

The contractor shall furnish and install Owens-Corning Fiberglas Industrial Rectangular Duct System Type RD in (1), (1-1/2), inch thicknesses. The Duct System (Type 90A) shall have Underwriters' Laboratories Inc. Class I Air Duct listing and shall be so labeled. The product shall be made of glass fibers with a glass strand reinforced flame retardant vapor barrier on the exterior surface.

The Duct System shall have a thermal conductivity of 0.23 at 75° mean temperature with a noise reduction coefficient of 0.70 for mounting No. 6.

All Duct System joints shall be stapled with flare door staples 2" O.C. and a final layer of Owens-Corning Fiberglas Duct System Class I Rated mastic and glass reinforcing tape. A layer of this tape system is required on all longitudinal and transverse joints.

Duct work shall be supported at all turns and transitions, and at not more than 6 foot centers on straight runs as necessary to maintain true alignment. Hangers shall be 3/4" x No. 24 gauge straps with 90° metal corner pads, 1" x 1" x 4" at bottom corners, or trapeze type with a 1" x 2" x No. 24 gauge angle cross support under duct. Transformation and bonds to avoid obstructions must be approved by the engineer. Protect duct work from damage during and after erection until final inspection.

All fabrication and installation shall conform to Owens-Corning FIBERGLAS Pub. No. 1-KS-5417 or latest revision. Reinforcement of Duct System with 22 ga. tees shall be in accordance with duct size and static pressure as shown on page two of 1-KS-5417 dated August 1966 (or later publication).

*Refer to Appendix Materials List for suggested manufacturers of mastic, adhesives & other accessory materials.

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OWENS-CORNING FIBERGLAS CORPORATION

This sheet is effective as printed unless otherwise specified. Application procedures are at the discretion and responsibility of the Design Engineer for each specific job requirements.

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LITHO U.S.A. OCT. 1967

PUB. NO. 1-KS-5421-A

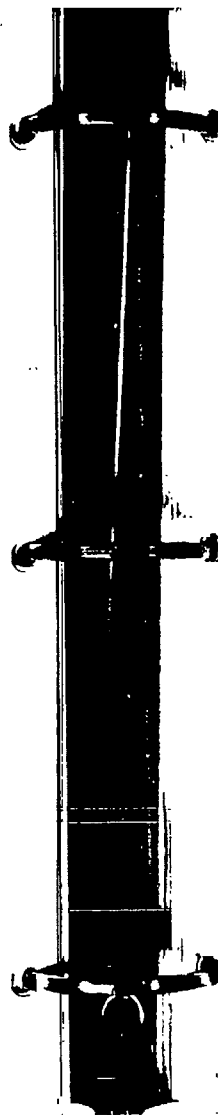
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Air Handling Systems 4.5.2

Date 1-10-44

Revised

application specifications

RECTANGULAR COOLING DUCT INSULATION

Insulate all exposed (Air Conditioning Ducts, supply and return) Fresh Air Intake(s) (Sheet Metal Plenums and Casings) in finished rooms and Mechanical Equipment rooms (and all concealed rectangular Air Conditioning ducts) with _____ inch thick Fiberglas.

- a) Vapor Seal Duct, Type FF
- b) Type 704 (FF)
- c) Type 703 (FF) --- (concealed locations only)

having a minimum compressive strength of _____ psf. at 10% deformation. Insulation with .0025" Aluminum Foil Facing shall have been tested in accordance with ASTM E-84 and shall have flame spread rating of 25 maximum and smoke developed rating of 50 maximum.

Insulation shall be cut to fit between standing seams and stiffeners and shall be secured to duct work by impaling over Mechanical Fasteners* at the rate of one per 2 sq. ft. All joints shall be tightly butted. Tape all joints and cover all pin penetrations with 4" wide x .0025" Foil Tape adhered with Lap Seal Adhesive*, to provide a complete vapor barrier envelope.

FINISH

In exposed locations secure metal corner beads to all exterior edges of insulated duct and cover with:

- a) 6 oz. Canvas adhered with Lagging Adhesive* and brushed with one coat of Lagging Adhesive*.
- b) Pre-Sized Glass Cloth adhered with Lagging Adhesive*

Refer to the following table for the selection of the correct type of Fiberglas insulation and the correct type of accessory materials.

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1-10-44 U.S.A. JAN 1944

PUB. NO 2-10-44

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Air Handling Systems 4.5.3

application specifications

**ROUND
HEATING & COOLING
DUCT SYSTEMS**

Date 1-10-66

Revised 5-18-67

EXPOSED AND CONCEALED RIGID ROUND DUCT SYSTEM

The contractor shall furnish and install Owens-Corning Fiberglas Rigid Round Duct in 1 inch thick (sizes 4, 5, 6, 7, 8, 9 and 10, 12, 14, 16, 18, 20, 22, 24, 26, 28 or 30 inches). The round duct shall have Underwriter Laboratories, Inc. Class I Air Duct listing and shall be so labeled. The product shall be made of glass fiber with a flame retardant vapor barrier on the exterior surface.

The Round Duct System shall have a thermal conductivity of .23 at 75° mean temperature with a noise reduction coefficient of 0.75 for mounting No. 6.

All Round Ducts shall be assembled with standard sheet metal accessories as recommended by the manufacturer and all joints shall be taped with a 2" wide pressure sensitive tape supplied by the duct manufacturer. The tape shall be centered over the joint and end lapped at least 3".

Round Duct work shall be supported at all turns and transitions and straight runs at a maximum of 6 feet on center where building framing does not provide such support. Support shall be a 3/4 inch metal strap suspended from the roof or framing.

All fabrication and installation shall be in accordance with the Owens-Corning Fiberglas Application Manual.

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*Refer to Accessory Materials List for suggested manufacturers of mastics, adhesives & other accessory materials.

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Air Handling Systems 4.5.4

application specifications

ROUND COOLING DUCT INSULATION

Date 1-10-66

Revised 6-1-67

Insulate all (indoor) (outdoor) (circular Air Conditioning ducts exposed in finished rooms and mechanical equipment rooms) (circular Air Conditioning Ducts in concealed locations) with inch thick Fiberglas Faced Duct Wrap Type IV with factory applied flame retardant Foil-Reinforced Kraft Facing (FRK).

Insulation shall be wrapped tightly on the duct work with all joints butted. Secure insulation with flare type staples. Vapor seal joints with glasfabric and brush coat of indoor vapor barrier finish mastic* or vapor barrier lap adhesive* and pressure sensitive tape.

FINISH

Concealed Ducts: No further treatment required.

Exposed Ducts:

1. Indoor

A. Wrap Insulation with rosin sized paper or asbestos Paper and cover with six ounce canvas adhered with lagging adhesive. Finish with one coat of the same Lagging Adhesive.

2. Outdoor

Cover Insulation with 35 or 45 pound roofing felt or corrugated aluminum jacket. A minimum density of insulation of one pound per cubic foot is required. Jacket shall be lapped and weather sealed and banded on 12" centers with 1/2" x .015 aluminum bands.

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Pub. No. 2-67-1000-2

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Air Handling Systems 4.5.5

Application specifications

**RECTANGULAR
HEATING DUCT
INSULATION**

Date 1-10-66

Revised _____

Insulate all exposed rectangular (Heating and Ventilating Ducts) (Hot Plenums and Casings) in finished rooms and Mechanical Equipment rooms with _____ inch thick Fiberglas

- a) PF 615
- b) Type 704

having a minimum compressive strength of 100 psf at 10% deformation. Insulation shall be cut to fit tightly between all stiffeners and standing seams, with all joints butted tightly together. Secure insulation to surface to be insulated by insulating over Mechanical Fasteners* spaced at rate of one for each two square feet.

FINISH

Secure metal corner beads to all exterior edges of insulation. Cover all insulation with

- a) 6 oz. canvas adhered with Lagging Adhesive* and brushed with one coat of Lagging Adhesive*.
- b) Pre-Stressed Glass Cloth adhered with Lagging Adhesive*.

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Air Handling Systems 4.5.6

**application specifications
HEATING & COOLING
DUCT WRAP
INSULATION**

Date 1-10-66

Revised

Insulate all (concealed Heating ducts, supply and return), (concealed Air Conditioning return air ducts), (exposed circular Heating ducts) with _____ inch thick Fiberglas Plain Duct Wrap Type 75.

Insulation shall be adhered to ducts with non-combustible Insulation Bonding Adhesive*, applied in 4" strips at 8" o.c. Insulation shall be additionally secured to bottom of rectangular ducts over 24" wide with Mechanical Fasteners* spaced at 18" o.c.

CONCEALED

Apply insulation with all joints lapped a minimum of 2". Secure insulation with

- a) 16 gauge galvanized wire ties at 18" o.c.
- b) Flare-door staples on 3" centers through all laps.

EXPOSED

Apply insulation with all joints tightly butted. Finish insulation with

- a) 6 oz. Canvas, saturated with lagging Adhesive*.
- b) Pre-Sized Glass Cloth adhered with Lagging Adhesive*.

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*Refer to Accessory Materials list for suggested manufacturers of mastic, adhesives & other accessory materials.

1-10-66, 4.5.6, 4.5.7, 4.5.8

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**OWENS-CORNING
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Air Handling Systems 45.7

Date 1-10-66

Revised 11-1-67

application specifications

**ACOUSTICAL
LINING**

Where indicated on the drawings, acoustically line all ducts plenums and casings
with _____ inch thick Fiberglas

- a) Acroflex Duct Liner
- b) Duct Liner Board
- c) Coated Duct

Adhere liner, with coated side toward air stream, to all interior sides of duct
with a minimum 50% coverage of fire-resistant Insulation Bonding Adhesive*.
Adhesive shall completely cover the sheet metal at each end of each section of
duct work.

When duct width exceeds 12", or height exceeds 24" further secure the liner to
these surfaces with mechanical fasteners (Oripinails*, welded pins, or stick clips)
at 16" o.c.

VELOCITIES - 1500 TO 4000 FPM

Install as above but additionally, point all joints in liner and butter the edges
of the liner where sections of duct work will be joined with fire-resistant
Indoor Breather Mastic*.

VELOCITIES - 4000 TO 6000 FPM

Insulation shall be installed as above except that mechanical fasteners shall
be spaced at 12" o.c. on all surfaces. Coat cap of fasteners with a brush coat
of fire-resistant Lagging Adhesive*.

*Refer to Necessary Materials List for suggested manufacturers of mastic, adhesives & other accessory materials

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Air Handling Systems 438

Date 1-10-66

Revised _____

application specifications

OUTDOOR DUCT INSULATION

Insulate all Heating, Ventilating, and Air Conditioning sheet metal duct work, out doors exposed to the weather with _____ inch thick Fiberglas

- a) PF 617, Standard Faced (S.F.)
- b) Type 705, Standard Faced (S.F.)

Insulation shall be cut and fit tightly between standing seams. Secure insulation with Mechanical Fasteners* on the sides and bottom, spaced at the rate of one fastener per 2 square feet. Secure insulation to top of duct with Insulation Bonding Adhesive.

FINISH

Air Condition Ducts - Cover all joints and fastener penetrations with two 1/8" wet coats of Vapor Barrier Mastic* reinforced with Glass Fabric*.

Over entire surface apply two 1/8" thick wet coats of Breather Mastic* reinforced with Glass Fabric*, lapping all joints a minimum of 2".

Heating and Ventilating Ducts - Cover entire surface of insulation with a 1/8" thick wet coat of Breather Mastic*. While wet embed a layer of Glass Fabric* with all joints lapped 2" minimum. Cover with a second 1/8" wet coat of Breather Mastic*.

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Air Handling Systems 4.5.9

Date 1-20-67

Revised 8-8-67

application specifications CONCEALED HEATING & AIR CONDITIONING FOR ROUND FLEXIBLE DUCT SYSTEMS

Installation Instructions For Fiberglas Flexible Duct

uses

Owens-Corning Fiberglass Flexible Duct is recommended for use as a complete air duct or connector on supply and return air lines in Residential, Industrial and Commercial heating, air conditioning and ventilating systems. In addition it can be used as runouts to registers, diffusers and mixing boxes. The flexible feature allows it to conform to gradual bends necessary when connecting air ducts to diffusers or when routing air ducts through spaces with many obstructions.

description

Fiberglass Flexible Duct is a light weight duct formed with a resilient core insulated with Fiberglass Flexible Insulation and jacketed with a tough non combustible (as defined by NFPA No. 101-1966) vapor barrier jacket. Each section is furnished with locking male and female sheet metal end rings. It has an interior surface of glass fiber scrim cloth.

Duct Sizes

DIAMETER	LENGTH	WALL THICKNESS
4-10" in 1" increments	nominal 6'	1" nominal
12-18" in 2" increments		

Tools and Accessory Materials Required:

1. Wire cutters
2. Knife or scissors
3. Tape (OCF Type III Fiberglass Duct Tape)
4. Sheet Metal Strap hangers (1/2")
5. Sheet Metal Strapping 1 1/2" or greater in width for saddles
6. Screw Drivers
7. #8 Sheet Metal Screws 3/4" long
8. Fiberglass Duct Wrap
9. 1/4" Drill



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LISTED U.S.A. AUGUST 1, 1967

OWENS-CORNING
FIBERGLAS

application specifications
FIBERGLAS 25* : H-E
hot equipment up to 450F

Plumbing Systems	1.5.8
Mechanical Equipment	3.5.3
Air Handling Systems	4.5.10
Date	4-1-67
Revised	7-10-68

Figure 1 — Tools and accessory items:

- A. Scissors
- B. Nylon sealing tool
- C. Stanley knife
- D. Screw driver
- E. End-cutting nippers
- F. Pre-finished fastener caps
- G. OCF Joint Sealing Tape, Type H (Pressure Sensitive, U.L. labeled)



Figure 2

Attach pins to surface. Locate pins three inches in from each corner of the board. On surfaces where cross breaking is used for stiffening, additional pins may be required to hold the insulation tightly against the surface. For a neat job, keep pins in straight lines. Pins are to be on maximum 21 inch centers.

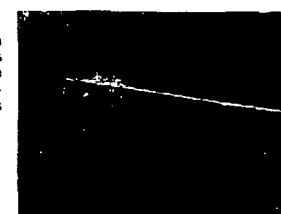
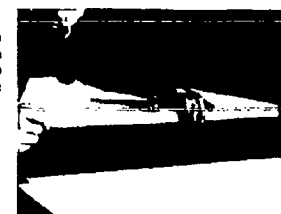


Figure 3

Cut Fiberglas 25 Insulation to dimension and impale on pins. Apply pressure on facing in the area of the pin penetration. For elbows, cut pie-shaped pieces for top and bottom. Make sure insulation fits tightly at the seams before impaling.



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Figure 4

Groove Fiberglas 25 board for curved surfaces and laminate flanges. The board should be scored with a grooving tool, saw or knife to half the board thickness, and the material removed from the slot. Flanges should not overlap the top and bottom boards. All wool shall be scraped from the flanges before sealing.

The smaller the radius of the board, the smaller the space between cuts.



Figure 5

Install side pieces making sure the edge of the insulation is flush with the top and bottom board surfaces.

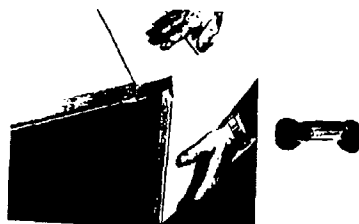


Figure 6

Cut pins to length as required and apply pre-finished fastener caps. Pins should protrude 1/4" to 3/8" above the surface of the insulation. If more than 3/8" shows, cut it off to the correct length before applying the cap. This will assure a tight fit of insulation to the surface.

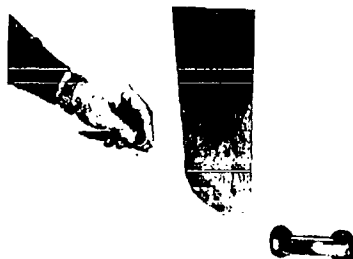


Figure 7

Apply OCF Joint Sealing Tape Type H to all transverse and longitudinal seams after insuring you have a dry dust-free surface. Use the nylon sealing tool to apply pressure to the joint and make a good bond. Do not remove all the release paper from the tape but rather gradually pull it back as required. This keeps dust, etc. from fouling the adhesive surface. Make sure the tape is properly aligned with the seam before it is sealed down.



Figure 8

Use nylon sealing tool on all taped joints. This will result in a good bond and reduce air pocket and "fish-mouths." For a superior bond, use a 300F iron on the tape.



Figure 9

Insulating the throat of an elbow. Prepare a Fiberglas 25 board of correct dimensions for the throat and fabricate the top and bottom flanges. Next, use a grooving tool, knife or saw and groove the board facing side up. Cut at least half way through the insulation.

Slit sections may also be used as an alternate to the one piece method described above.



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Figure 10

Complete insulating the throat. Impale insulation, cut pins to correct length, install caps, and strip the top and bottom flaps.



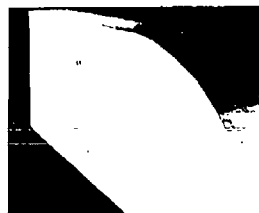
Figure 11

Where curved surfaces are encountered and the joint sealing tape must be notched to conform to the curvature, cut an additional length of tape to half width and apply over the notched tape surface. This will yield a neater finished appearance and improve adhesion in these areas.



Figure 12

Completed insulation of rectangular duct.



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Air Handling Systems 4.5.11

Mechanical Equipment 3.5.4

Date 7-10-68

Revised

FIBERGLAS 25* : C-E

cold equipment system down to 35F

Figure 1—Tools and accessory items:

- A. Scissors
- B. Nylon sealing tool
- C. Stanley knife
- D. Screw driver
- E. End-cutting nippers
- F. Pre-finished fastener caps
- G. OCF Joint Sealing Tape, Type C (Pressure Sensitive, U.L. labeled)
- H. OCF Fitting Mastic, Type C (U.L. labeled)



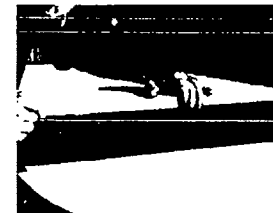
Figure 2

Attach pins to surface. Locate pins three inches in from each corner of the board. On surfaces where cross bracing is used for stiffening, additional pins may be required to hold the insulation tightly against the surface. For a neat job, keep pins in straight lines. Pins are to be on maximum 21 inch centers.



Figure 3

Cut Fiberglas 25 insulation to dimension and impale on pins. Apply pressure on facing in the area of the pin penetration. For elbows, cut pre-shaped pieces for top and bottom. Make sure insulation fits tightly at the seams before impaling.



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Figure 4

Figure 4

Groove Fiberglas 25 board for curved surfaces and fabricate flanges. The board should be scored with a grooving tool, saw or knife to half the board thickness, and the material removed from the slot. Flanges should not overlap the top and bottom boards. All wood shall be scraped from the flanges before sealing. The smaller the radius of the board, the smaller the space between cuts.



Figure 5

Figure 5

Install side pieces making sure the edge of the insulation is flush with the top and bottom board surfaces.



Figure 6

Figure 6

Cut pins to length as required and apply pre-finished fastener caps. Pins should protrude 1/2" to 3/4" above the surface of the insulation. If more than 1/4" shows, cut it off to the correct length before applying the cap. This will assure a tight fit of insulation to the surface. Apply OCF Fitting Mastic, Type C, about the size of a pea to the inside of the fastener cap before installation to form a vapor seal.

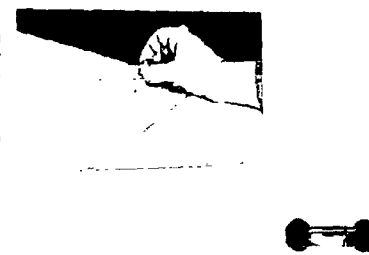


Figure 7

Apply OCF Joint Sealing Tape, Type C, to all transverse and longitudinal seams after insuring you have a dry, dust free surface. Use the nylon sealing tool to apply pressure to the joint and make a good bond. Do not remove all the release paper from the tape but rather gradually pull it back as required. This keeps dust, etc. from fouling the adhesive surface. Make sure the tape is properly aligned with the seam before it is sealed down.



Figure 8

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Figure 9

Insulating the throat of an elbow. Prepare a Fiberglas 25 board of correct dimensions for the throat and fabricate the top and bottom flanges. Next, use a grooving tool, knife or saw and groove the board facing side up. Cut at least half way through the insulation.

Slit sections may also be used as an alternate to the one-piece method described above.



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Figure 10

Complete insulating the throat. Impole insulation, cut pins to correct length, install caps and strip the top and bottom flaps.



Figure 11

Where curved surfaces are encountered and the Joint Sealing Tape must be notched to conform to the curvature, cut an additional length of tape to half width and apply over the notched tape surface. This will yield a neater finished appearance and improve adhesion in these areas.



Figure 12

Completed insulation of rectangular duct.



Commercial & Industrial Insulation Systems Manual

OWENS CORNING FIBERGLAS

Organized To Help Solve
This manual has been organized rather than by product or other specifying factors proper insulation for a given

In general, the greatest benefit if the book is used as follows:

- Identify type of application
Commercial
Plumbing
Mechanical Piping
Equipment
Air Handling
Industrial
Piping
Equipment
Vessels and tanks
Boilers and chimneys
- Determine Temperature
- Choose products from the Guide Indexes
- Refer to PRODUCT DATA technical data.
- Refer to SPECIFICATION products and application appropriate sections

Each section is with product data specifications

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