

AcandS



Armstrong

FR/Armaflex and Standard Armaflex Pipe Insulations

Armstrong FR/ARMAFLEX®



DESCRIPTION

Armstrong Armaflex is a flexible, elastomeric thermal insulation in pipe insulation form widely used on liquid cooling and heating lines. This insulation is used to prevent heat gain, condensation, and frost formation on cold lines. It also prevents heat flow for liquid heating and dual-temperature piping.

Armaflex Pipe Insulation is available in both Fire-Retardant (FR) and Standard types. Physical characteristics of both materials are similar and are listed on the table of average properties on page 3. FR/Armaflex Pipe Insulation can be identified by blue trademarking; Standard Armaflex Pipe Insulation is trademarked in yellow.

Armaflex Pipe Insulation is made in three engineered wall thicknesses, each calculated to prevent condensation on cold lines within their individual recommended usage ranges at temperatures down to zero. For temperatures below zero, Armaflex may need to be applied in multiple thicknesses.

Armaflex Pipe Insulation can be used on heated lines, where it will withstand temperatures up to 220 F.

Standard Armaflex Pipe Insulation is chemically acceptable to USDA Consumer and Marketing Service.

ADVANTAGES

Fire-Retardant Characteristics

FR/Armaflex, when tested by the ASTM E84 method, in nominal thicknesses of 3/8", 1/2", and 3/4", has a flame spread rating of 25. For smoke developed, FR/Armaflex Pipe Insulation rates at 110 for 3/8", 150 for 1/2", and 225 for 3/4" nominal thicknesses.

Standard Armaflex, when tested according to ASTM D1692 procedures, is rated SE 1.0 in., 53 sec by this test.



Armaflex is flexible for fast, easy application. It can be slipped on in tubular form before piping is in place or slit and snapped over piping already installed as shown.

Armaflex is not a thermoplastic. It is a vulcanized synthetic elastomer and will not melt or drip during exposure to heat.

Wide Temperature Range

Armaflex has a wide usage range from -40 F to +220 F.

High Insulating Efficiency

The closed cellular structure of Armaflex gives it a low average "k" value. Armaflex resists moisture and deterioration, so thermal efficiency remains high in service.

Resistant to Moisture Vapor

The uniformly sized, closed cells of Armaflex seal out moisture vapor.

Excellent Dimensional Stability

When Armaflex Pipe Insulation is tested at a soaking heat of 220 F for 7 days, shrinkage is about 6%. (See table, page 3.) In application, only the inner surface is exposed to 220 F, so shrinkage is considerably less than the test figure.

Ozone Resistant

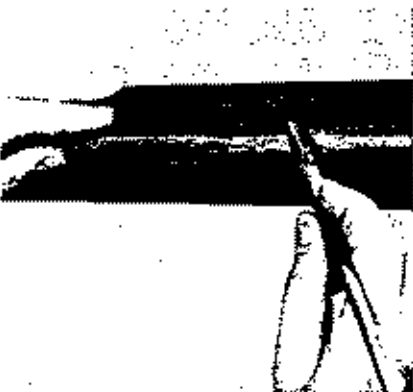
Armaflex is ozone resistant. It can be applied to pipe bends without danger of fissuring or cracking at the area under strain.

Smooth Surface

Armaflex has an exceptionally smooth, uniform outer surface finish. This results in a neat-looking installation, whether the surface is left unfinished or given a protective coating.

Fast and Easy to Apply

The flexibility of Armaflex makes application rapid. It can be applied easily, even in close and crowded quarters. Fittings can be insulated with miter-cut pieces of covering, assembled on



All joints are sealed permanently with Armstrong 520 Adhesive to form a positive vapor seal.

the job using Armstrong 520 Adhesive. On outdoor installations, excellent protection is provided by Armstrong Armaflex[®] Finish, a vinyl-lacquer-type coating. Indoors, Armaflex requires no finish, but for a protective coating, Armaflex Finish is recommended.

APPLICATION

Pipe Insulation

Wherever possible, slip Armaflex Pipe Insulation onto the piping before it is in place. Seal butt joints with Armstrong 520 Adhesive.

Where insulation cannot be slipped on, slit Armaflex Pipe Insulation lengthwise and apply to the piping. Seal longitudinal seams and butt joints with Armstrong 520 Adhesive.

For piping larger than 5" IPS, Armaflex Pre-Cut Pipe Insulation is supplied in widths of sheet material that closely fit the pipe's outside dimensions. Wrap sheets around the piping with longitudinal seams and butt joints sealed with Armstrong 520 Adhesive.

At pipe hangers, install Rigid Armaflex protected with galvanized sheet-metal shields. Gauge of sheet metal and hanger spacings are recommended in Armstrong Specifications. Seal all joints and seams of Rigid Armaflex with two coats of Armstrong 520 Adhesive.

Fitting Insulation

Insulate sweat fittings with miter-cut pieces of Armaflex Pipe Insulation of the same size as applied to adjacent piping. To make fitting covers, join miter-cut pieces with Armstrong 520 Adhesive, then slit covers, snap them over fittings, and seal joints with Armstrong 520 Adhesive.

Insulate screwed fittings with sleeve-type fitting covers made from miter-cut pieces of Armstrong Pipe Insulation. Inside diameter of the insulation must overlap the Armaflex Pipe Insulation on the adjacent piping. (See table on back cover for sleeving sizes.) To make fitting covers, join the miter-cut pieces with Armstrong 520 Adhesive, then slit covers, snap them over fittings, and seal joints with Armstrong 520 Adhesive.

For fittings too large to cover with pieces of tubular Armaflex Pipe Insulation, apply Armaflex Sheets. Use special template patterns to guide cutting of fitting covers for screwed and long-radius weld iron pipe fittings 2" IPS to 10" IPS. Templates are furnished by

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Armstrong and are available through your Armaflex supplier.

Finishes*

No finish is required on Armaflex Insulation indoors. If a protective finish is desired, apply any of the following: two coats of Armstrong Armaflex Finish; two coats of Armstrong Insulcolor®; or two coats of good-quality commercial interior enamel or latex enamel paint.

On outdoor applications of Armstrong Armaflex, apply any of the following: two coats of Armaflex Finish; two coats of Armstrong Insulcolor with glass mesh; or two coats of Armstrong Weatherproof Plastic, reinforced with glass mesh.

Prior to applying finishes, the Armaflex surface should be wiped with a damp cloth, preferably dampened with a non-oily solvent, to remove any traces of powdered lubricant.

*CAUTION: Only Armaflex Finish will withstand excessive flexing after drying.

The commercial finishes are to be tested by the user for compatibility with Armaflex. Adhesive-bonded seams and joints of Armaflex Pipe Insulation must cure before solvent-base finishes are applied. Where the insulation is installed by adhering seams and butt joints, the adhesive must cure 24 to 36 hours.



Fitting covers are easily assembled from miter-cut pieces of pipe insulation. For larger sizes, special template patterns are available for cutting covers from Armaflex Sheet.

Thickness recommendations for FR/Armaflex and Standard Armaflex (Based upon available manufactured thicknesses)

Pipe size	Line temperatures		
	50 F	35 F	0 F
BASED ON NORMAL DESIGN CONDITIONS*			
3" ID thru 3" IPS	Nom 1/2"	Nom 1/2"	Nom 1/2"
Over 3" IPS thru 10" IPS	Nom 1/2"	Nom 1/2"	Nom 1/2"
Over 10" IPS	1/2" Sheet	1/2" Sheet	1/2" Sheet
BASED ON MILD DESIGN CONDITIONS**			
3" ID thru 3" IPS	Nom 1/2"	Nom 3/4"	Nom 1/2"
Over 3" IPS thru 10" IPS	Nom 1/2"	Nom 1/2"	Nom 1/2"
Over 10" IPS	1/2" Sheet	1/2" Sheet	1/2" Sheet
BASED ON SEVERE DESIGN CONDITIONS***			
3" ID thru 10" IPS	Nom 1/2"	Nom 1/2"	---
Over 10" IPS	1/2" Sheet	1 1/2" Sheet	---

*Armaflex in the thicknesses noted and within the specified temperature ranges will prevent condensation on indoor piping under normal design conditions, a maximum severity of 85 F and 70% RH. Adhering to these and field experience indicate that indoor conditions anywhere in the United States seldom exceed this degree of severity.

**Armaflex in the thicknesses noted and within the specified temperature ranges will prevent condensation on indoor piping under mild design conditions, a maximum severity of 60 F and 50% RH. Typical of these conditions are most air-conditioned spaces and arid climates.

***Armaflex in the thicknesses noted and within the specified temperature ranges will prevent condensation on indoor piping under severe design conditions, a maximum severity of 95 F and 80% RH. Typical of these conditions are indoor areas in which excessive moisture is introduced or in poorly ventilated confined areas where the temperature may be depressed below ambient.

NOTE: Thicknesses for zero F temps available on request.

† Pipe sizes 6" IPS thru 10" IPS refer to Pre-Cut Pipe Insulation.

Armaflex Pipe Insulations—average physical properties*

	FR/Armaflex	Standard Armaflex	Test Method (See note 4)
Density, lb/cu ft	6.0	5.4	ASTM D1622
Thermal conductivity, Btu/hr sq ft (F deg/in.)			
75 F mean temp	0.27	0.253	ASTM C177
90 F mean temp	0.276	0.258	or C518
Upper use limit, deg F (See note 1)	220	220	---
Lower use limit, deg F (See note 2)	-40	-40	---
Thermal stability, % shrinkage			
7 days, 200 F	5.0	5.8	ASTM C548
7 days, 220 F	5.6	6.6	
Water vapor permeability, wet cup, perm-in	0.28	0.1	ASTM C955
Water absorption, % by weight	4.6	3.0	ASTM D1056
Ozone resistance	GOOD	GOOD	---
Odor	NEGLECTABLE	NEGLECTABLE	---
Flammability (self-extinguishing)	---	SELF-EXTINGUISHING SE 1.0 in., 53 sec BY THIS TEST	ASTM D1692
Flame spread (available thicknesses 1" or less)	25	---	ASTM E84
Smoke developed (available thicknesses)	---	---	ASTM E84
Size			
Wall thickness, inches (nominal)	1/2, 3/4, 1	1/2, 3/4, 1	---
Inside diameter	3/4" ID to 5" IPS	3/4" ID to 4" IPS	---
Length of sections, feet (See note 3)	8	8	---

*On the heating cycle, Armaflex Pipe Insulations will withstand temperatures as high as 220 F, where the pipe size is greater than 5" IPS and Armaflex Pre-Cut Pipe Insulation and Armaflex Sheet are installed by adhering butt joints and seams only, the upper temperature limit is 220 F. 523 Adhesive may be used with pipe insulation applications up to 220 F.

† At -20 F, flexible Armaflex Insulations become hard and, as temperatures drop below -20 F, will be increasingly brittle. However, this hardening characteristic does not affect thermal efficiency or water vapor permeability. Application below -40 F is at user's discretion.

‡ Armaflex in selected wall thickness and inside diameters available in 50-ft continuous lengths.

§ ASTM method, in some cases, may be modified slightly to make results more meaningful for end-use application. If details are required, contact Armstrong Cork Company.

*Average values are not to be used for writing material specifications. Contact Armstrong for specification ranges.

AVAILABLE ARMATLEX PIPE INSULATION SIZES

Armatlex Insulation Sizes	Copper Tubing		Nominal Iron Pipe Size (In.)	Packaging Data					
	Nominal Size (In.)	OD Size (In.)		Nominal 1/2" Wall		Nominal 3/4" Wall		Nominal 1" Wall	
				Lin Ft per Ctn	Wt./Ctn Lb	Lin Ft per Ctn	Wt./Ctn Lb	Lin Ft per Ctn	Wt./Ctn Lb
1/2" ID*	1/2	3/4	1/2	420	19	270	23	150	23
1/2" ID*	1/2	1 1/4	1/2	360	19	240	16	150	18
3/4" ID*	1/2	1 1/4	3/4	270	13	210	15	120	18
1" ID*	1/2	1 1/4	1	240	15	180	19	120	20
1 1/4" ID*	1/2	1 1/4	1 1/4	210	16	150	13	96	18
1 1/2" IPS*	1	1 1/2	1 1/2	180	14	240	29	150	33
1 3/4" ID*	1	1 3/4	1 3/4	150	15	240	31	150	35
1 3/4" IPS*	1	1 3/4	1 3/4	240	25	180	27	135	32
1 3/4" ID*	1 1/2	1 3/4	1 3/4	240	27	180	28	132	35
1 3/4" IPS	1 1/2	1 3/4	1 3/4	180	27	150	26	114	36
1 3/4" ID	2	2 1/4	2	150	30	150	31	84	32
2" ID	2	2 1/4	2	150	45	120	40	54	41
2" IPS	2 1/2	2 1/2	2 1/2	96	33	96	37	72	40
2 1/2" ID	2 1/2	2 1/2	2 1/2	96	35	96	39	60	38
2 1/2" IPS	3	3 1/4	3	90	39	72	34	54	39
3 1/4" ID	3	3 1/4	3	72	31	72	37	48	37
3" IPS	3 1/2	3 1/2	3 1/2	54	28	54	31	36	29
3 1/2" ID	3 1/2	3 1/2	3 1/2	—	—	54	34	36	36
3 1/2" IPS	4	4 1/4	4	—	—	48	33	30	29
4 1/4" ID	4	4 1/4	4	—	—	42	32	30	29
4" IPS	—	—	4	—	—	36	28	24	27
5" IPS	—	—	5	—	—	24	28	24	40

*Available in 50-foot coils, nom. 1/2" and nom. 1" wall series, carbon contents available upon request.

Armatlex Insulation Sizes	Actual Minimum* Wall Thickness (Inches)			Sleeving Sizes†		
	Nom 1/2"	Nom 3/4"	Nom 1"	Nom 1/2" Wall	Nom 3/4" Wall	Nom 1" Wall
1/2" ID	0.30	0.36	0.59	1 1/4" ID	1" IPS	1 1/2" IPS
1/2" ID	0.30	0.38	0.62	1" IPS	1 1/4" ID	1 1/4" IPS
3/4" ID	0.30	0.40	0.66	1 1/4" ID	1 1/2" ID	2 1/4" ID
3/4" ID	0.30	0.42	0.68	1 1/2" ID	1 3/4" IPS	2" IPS
1" ID	0.30	0.43	0.70	1 3/4" ID	1 3/4" IPS	2" IPS
1 1/4" IPS	0.30	0.44	0.73	1 3/4" IPS	2 1/4" ID	2 1/4" IPS
1 1/4" ID	0.30	0.45	0.74	1 3/4" IPS	2 1/4" ID	2 3/4" IPS
1 1/2" IPS	0.30	0.46	0.76	2 1/4" ID	2" IPS	3 1/4" ID
1 3/4" ID	0.30	0.46	0.77	2 1/4" ID	2" IPS	3 1/4" ID
1 3/4" ID	0.35	0.47	0.79	2" IPS	2 1/4" IPS	3" IPS
1 3/4" IPS	0.35	0.48	0.82	2 1/4" IPS	3 1/4" ID	3 1/4" IPS
2 1/4" ID	0.35	0.49	0.83	2 1/4" IPS	3" IPS	3 1/4" IPS
2" IPS	0.35	0.50	0.85	3" IPS	3" IPS	4" IPS
2 1/4" ID	0.35	0.50	0.86	3" IPS	3 1/4" IPS	4" IPS
2 1/4" IPS	0.35	0.51	0.87	3 1/4" IPS	4 1/4" ID	5" IPS
3 1/4" ID	0.35	0.51	0.88	3 1/4" IPS	4" IPS	5" IPS
3" IPS	0.35	0.52	0.89	4" IPS	5" IPS	5" IPS
3 1/4" ID	—	0.52	0.90	—	5" IPS	5" IPS
3 1/4" IPS	—	0.53	0.91	—	5" IPS	Sheet
4 1/4" ID	—	0.53	0.92	—	5" IPS	Sheet
4" IPS	—	0.53	0.93	—	Sheet	Sheet
5" IPS	—	0.54	0.95	—	Sheet	Sheet

*Wall thickness tolerances ± 0.01 except nom. 1" thickness 1 1/4" IPS thru 3" IPS is ± 0.01 ± 0.01 .

†Available nom. 1 1/2" or nom. 1" thickness only.

*Based on average wall thicknesses developed from factory tolerances. Not applicable to rigid Armatlex.

†May require cutting.

Pipe Insulation Size Iron Pipe	Nominal Wall Thickness	Actual Minimum Wall Thickness (Inches)	Packaging Data	
			Lin Ft per Ctn	Wt./Ctn Lb
6"	1/2"	0.62	28	29
6"	3/4"	0.95	20	26
8"	1 1/2"	0.62	28	35
8"	1 1/4"	0.95	20	32
10"	1 1/2"	0.62	28	42
10"	1 1/4"	0.95	20	38

— In lengths, sheet formwork require some on-site cutting to actual pipe circumference.

Armstrong

206222 LANCASTER, PA.

Printed in the United States of Am



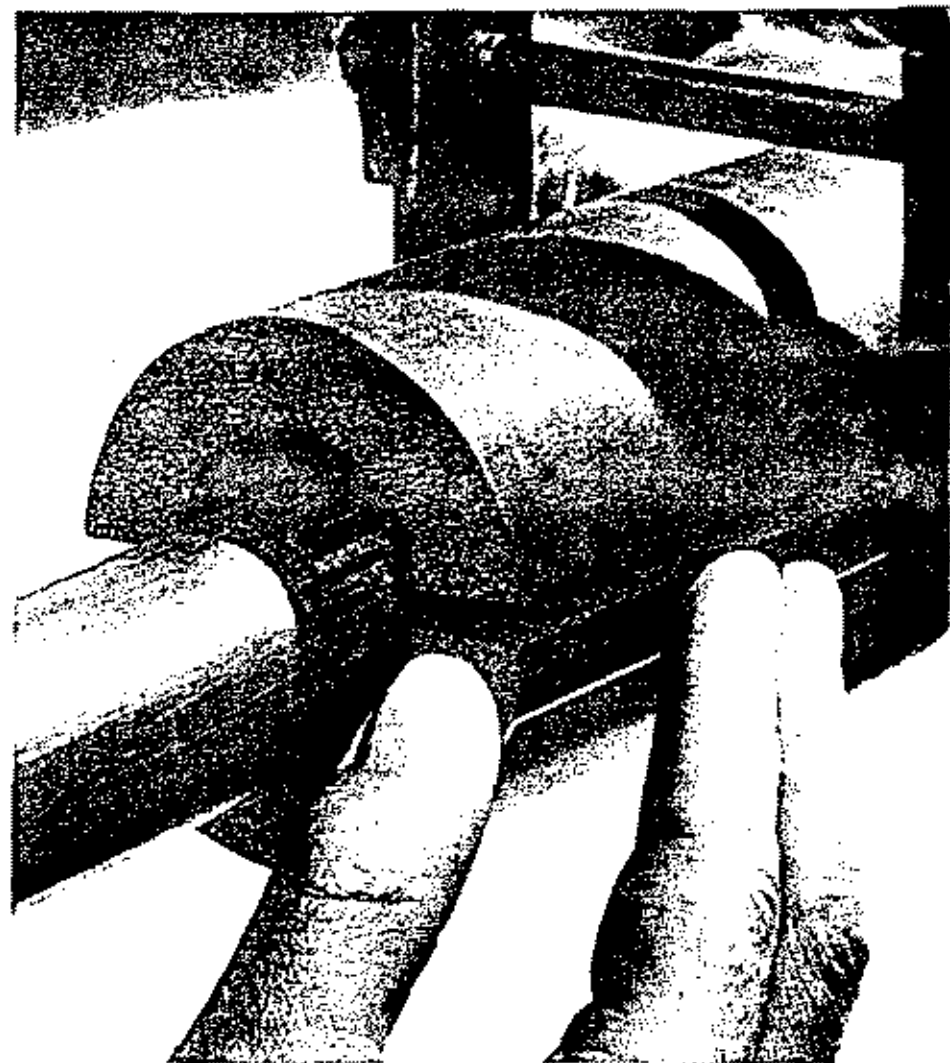
ARMSTRONG RIGID ARMAFLEX PIPE INSULATION

DESCRIPTION

Armstrong Rigid Armaflex is a foam plastic-type pipe insulation developed for use at pipe hanger locations, on deeply buried underground lines, and at other locations where pipe insulation may be subjected to compression deformation.

Rigid Armaflex is made in nominal $\frac{1}{2}$ " and $\frac{3}{4}$ " engineered wall thicknesses. Except for its rigidity, Rigid Armaflex is similar in average physical properties to Armaflex 22. In application of Rigid Armaflex, the thickness recommendation for use of Armaflex 22 under various service conditions should be followed. (See current Armaflex Literature No. II-143.) Rigid Armaflex is installed in single layer only. Sleeving for double layer is not suitable.

In underground applications, lowest recommended line temperature for Rigid Armaflex is 35 F. Avoid using in areas where the water table rises at any time above the pipe level. (See complete detailed specification.)



Armstrong Rigid Armaflex is manufactured in 3'-long sections. Each section is split lengthwise at the factory, and the matching half sections are held together in shipment, assuring accurate fit at joints in application.

The material is available in sizes from $\frac{3}{4}$ " ID to 5" IPS.

ADVANTAGES

Solves Compression Problem—Where Armaflex installations are subjected to compression loads, as at pipe hanger locations, this rigid material in conjunction with metal shields can be used to support the load. It will resist compression, and thus maintain its full insulating efficiency in service.

Wide Temperature Range—Rigid Armaflex may be used at temperatures from -40 F to +220 F.

High Insulating Efficiency—The closed cellular structure of Rigid

Armaflex gives it a low average k value of 0.28 at 75 F mean temperature.

Impervious to Moisture Vapor—The uniformly sized, closed cells seal out air and moisture vapor. Average water vapor permeability is 0.02 perm-in.

Self-Extinguishing—When tested according to ASTM D1692-68 procedures, Rigid Armaflex is rated self-extinguishing by this test as SE 0.5 in., 61 sec.

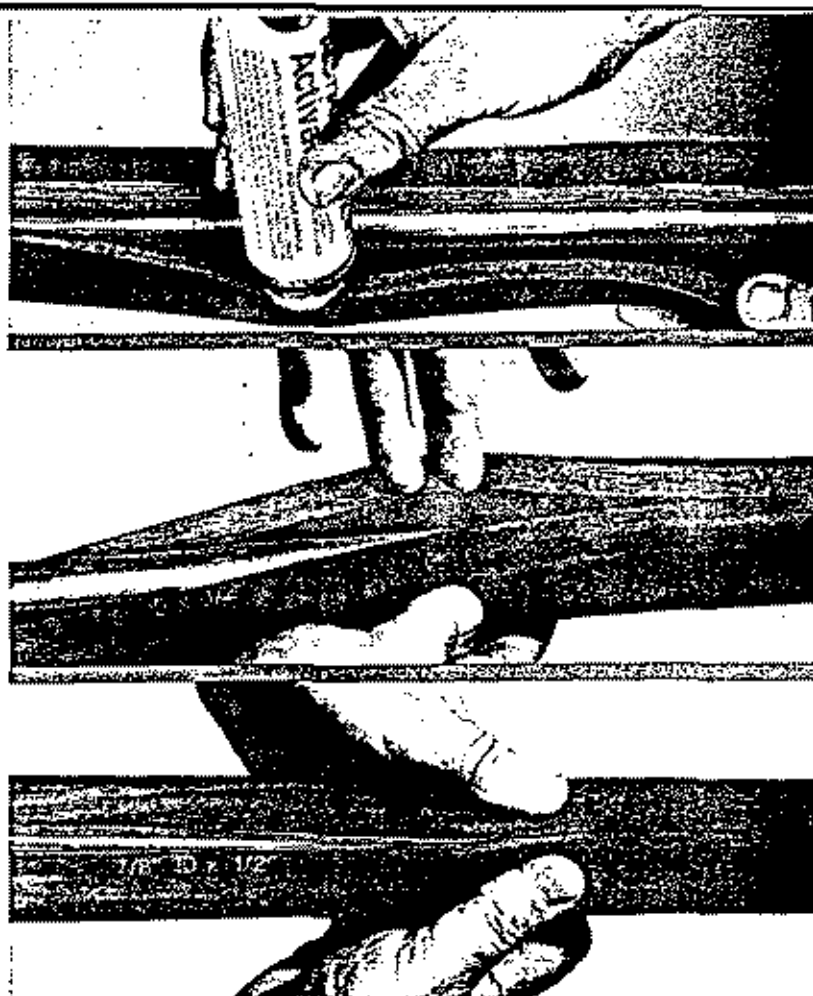
Excellent Dimensional Stability—When Rigid Armaflex is tested at a soaking heat of 220 F for 7 days, average linear shrinkage is less than 3%. In actual application to heated lines, the inner surface only is exposed to elevated temperatures, so shrinkage would be considerably less than the test result.

Smooth Surface—Rigid Armaflex has a smooth, uniform outer surface finish. This results in a neat-looking installation, whether the material is left unfinished or is coated with Armaflex[®] Finish.

206223



ARMSTRONG AC/ARMAFLEX PIPE INSULATION



DESCRIPTION

AC/Armaflex Pipe Insulation is a pre-slit flexible elastomeric thermal insulation material with a factory-applied dry adhesive on the longitudinal seams and butt end surfaces. It will substantially reduce installation time because it eliminates the need for separate application of adhesive. After the insulation is applied to pipes, the dry adhesive is activated and provides a tight, vapor-resistant, heat-resistant seal for seams and joints.

AC/Armaflex is recommended for plumbing, heating, dual-temperature, air-conditioning, and refrigeration systems. It is made in three engineered wall thicknesses, each calculated to prevent condensation on cold lines within their individual recommended usage ranges at temperatures down to zero.

AC/Armaflex Pipe Insulation also can be used to insulate heated lines, where it will withstand temperatures up to 220 F.

ADVANTAGES

- **Wide Temperature Range** AC/Armaflex has a wide usage range from -40 F to +220 F.

- **High Insulating Efficiency** The closed cellular structure of AC/Armaflex gives it a low average k value of 0.253 at 75 F mean temperature. AC/Armaflex resists moisture and deterioration, so thermal efficiency remains high in service.

- **Resistant to Moisture Vapor** The uniformly sized, closed cells of AC/Armaflex seal out moisture vapor. The result is an average water-vapor permeability of 0.1 perm-in.

- **Dimensional Stability** AC/Armaflex Pipe Insulation, when tested at a soaking heat of 220 F for 7 days, averages less than 7% shrinkage. In application, only the inner surface is exposed to 220 F, so shrinkage is considerably less than the test figure.

- **Self-Extinguishing** When tested according to ASTM D1692 procedures, AC/Armaflex Pipe Insulation is rated SE 1.0 in., 33 sec by this test.

- **Ozone Resistant** AC/Armaflex is ozone resistant, it can be applied to bent pipe without danger of fissuring or cracking at the area under stress.

- **Smooth Surface** AC/Armaflex has an exceptionally smooth, uniform outer surface finish. This results in a neat-looking installation, whether the surface is left unfinished or given a protective coating.

APPLICATION TO PIPING

AC/Armaflex should be snapped over the piping before the adhesive is activated.

ADHESIVE

The adhesive used on AC/Armaflex has been formulated for job-site activation with the specially developed Armstrong Activator. The solvent action of the Activator causes the adhesive to behave in the same manner as a normal contact adhesive. The Activator is supplied in convenient applicators which allow fast activation of the adhesive film. Complete installation instructions are furnished with each carton of insulation.

FITTINGS

Fittings are fabricated and installed in the same manner as described for Armaflex Pipe Insulation.

206225

ARMAGLAS ONE PIECE PIPE INSULATION

DESCRIPTION

Armaglas One-Piece Pipe Insulation is composed of fine glass fibers bonded together with a phenolic resin molded into a flexible hollow cylinder which has a slit along its length to permit application on pipes or tubing. Made with a single seam, it spreads open to receive the pipe and snaps quickly in place.

This multi-purpose one-inventory pipe covering is designed for use on all lines operating from -0 to 450°F. One-Piece Pipe Insulation has one of the lowest "k" factors of any general purpose material available today.

Its thermal efficiency is such that for most insulation jobs less wall thickness is required. Therefore, it is more economical for all applications within its temperature range when compared with other pipe insulations.

Armaglas One-Piece Pipe Insulation also has the desirable features of glass; the glass fiber will not burn, is not affected by moisture, will not corrode metals and is permanent. It will permit expansion and contraction of the pipe without cracking.

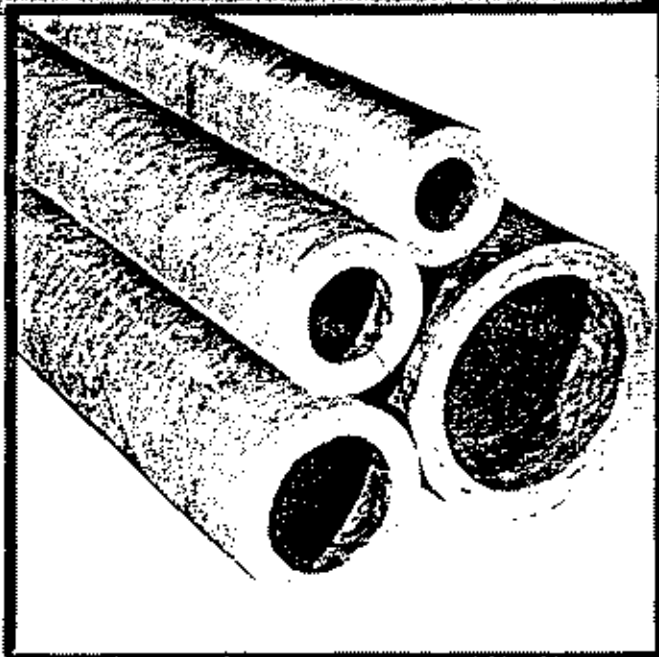
This product is furnished in 3-foot lengths, in sizes up to 33" IPS, in a range of wall thicknesses from 1/2" to 3" with or without the jackets specified herewith. It is regularly available with a standard weight canvas jacket. Other jackets described on the reverse side are also available at slight additional cost.

PHYSICAL PROPERTIES

Thermal Conductivity (Btu/hr sq ft (F/in)	
At 75°F Mean Temperature	0.22
100°F Mean Temperature	0.23
200°F Mean Temperature	0.26

USES

Armaglas One-Piece Pipe Insulation can be used in a wide range of applications for cold and heated piping from sub-zero to 450°F.



SPECIFICATION COMPLIANCE

- HH-1-552: Insulation, Pipe Covering, Thermal, and Insulation Blanket, Thermal Pipe Covering, Type I, Molded, Classes A and B.
- HH-1-562: Insulation, Thermal, Mineral Wool, Block or Board and Pipe Insulation (Molded) Type II, Classes 1, 2 and 3.
- *HH-1-558B: Insulation, Thermal (Mineral Fiber), Form D, Type III, Class 12.
- ASTM-C547-67: Mineral Fiber Preformed Pipe Insulation.
- MIL-1-22344B: Insulation, Pipe Covering, Thermal, Fibrous Glass.
- *HH-1-558B supersedes HH-1-552, HH-1-562 and HH-1-558a.

ADVANTAGES

- ONE PIECE** - Means quick, easy application.
- EASY FABRICATION** - Only a knife is needed for the most intricate shapes.
- RESILIENT** - Resists mechanical damage before, during and after application.
- ECONOMICAL** - Due to superior thermal efficiency, with equal or better performance than other insulations.
- PERMANENT, INORGANIC, FIRE-SAFE** - Glass fiber construction will never rot or assist corrosion. Dries out quickly when wet; lasts indefinitely.

ARMATEMP INC.**PRODUCT DATA**

ARMATEMP ALUMINUM JACKETED PIPE INSULATION

DESCRIPTION

Armtemp Aluminum Jacketed Pipe Insulation is mineral fiber pipe insulation fabricated from board form insulation and aluminum jacketing, completely factory assembled in a single unit ready for field application. The jacketing material is either plain or embossed .016 aluminum, Type T-3003H14.

The integral aluminum jacket is pre-rolled with sufficient overlap allowance on the aluminum jacketing to provide for adequate weather sealing of both circumferential and longitudinal joints.

Armtemp Aluminum Jacketed Pipe Insulation is available in thicknesses of 1", 1½", 2", 2½", and 3" and lengths of overall 36" (34" net coverage) for pipe sizes ½" through 30".

USES

This pipe insulation is recommended for use on steam lines, process lines and other cylindrical surfaces operating at temperatures up to 1000°F.

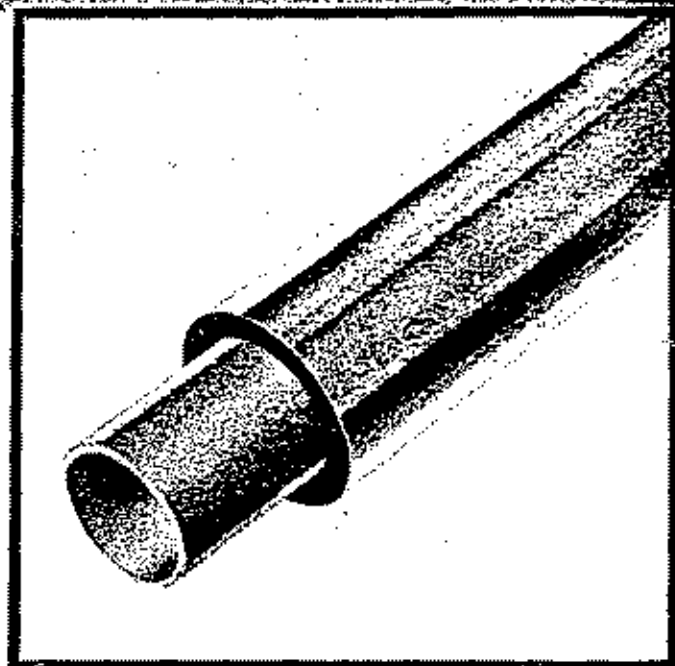
SPECIFICATION COMPLIANCE

Federal Specification

HH-I-558a, Form D, Type III, Class 13

ASTM Specification

CS47-67



PHYSICAL PROPERTIES

Maximum Use Limit	1000°F
Density (excluding jacket), lbs./cu. ft.	Nominal 8
Thermal Conductivity, Btu/hr sq ft (F/in)	
At 200°F Mean Temperature	0.25
400°F Mean Temperature	0.38
500°F Mean Temperature	0.47

ADVANTAGES

INSTALLATION — Precision fabrication at the factory assures accurate fit and rapid application.

ECONOMICAL — Factory pre-assembled jacketing and insulation means a one-step application with a resultant reduction in installation costs.

EFFICIENT — Lower "k" Factor results in reduced insulation thickness and lower material costs.

ARMATEMP
INC.**PRODUCT DATA****ARMATEMP
BLANKET
PIPE INSULATION****DESCRIPTION**

Armatemp Pipe Insulation is fabricated by securing high temperature mineral wool fibers between various types of metal fabrics. Each section is designed to completely enclose a specified size of pipe, and the product is regularly available in three standard forms as follows:

Armatemp Standard Blanket Pipe Insulation: (Photo A). The metal fabrics consist of strips of metal lath on the inside and galvanized wire netting held in place by soft galvanized wires. Running along the edges of the outside fabric for the full length of each side are two galvanized strips, one having three strong flexible tabs, the other, matching slots, for fast application of the insulation around the pipe.

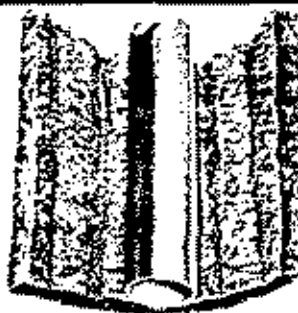
Armatemp Type No. 100 Pipe Insulation: This product is reinforced on the inside with strips of expanded metal lath and held together with metal tie wires extended through to metal lath on the opposite side. The edges are brought together around the pipe and secured by lacing soft annealed wire through the mesh. Designed for runs where insulating or finishing cement is to be used.

Armatemp Type No. 101 Pipe Insulation: (Photo B). This pipe insulation is reinforced on the outside with felted wire fencing. Rapid installation is made possible by the use of seven extended lead wires to fasten the two edges of insulation together. Designed for runs to be weather-proofed by covering with sheet metal or roofing felt.

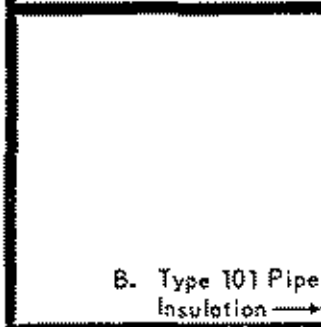
All products are manufactured in sections of two linear feet for nominal pipe sizes from 4" up to and including 30" diameter. Available in thicknesses of 1-1/2" to 4". (Larger sizes available on special order.)

USES

All three types of pipe insulation are ideal for steam traced or any groupings of lines to be insulated within the same cover. Specially suited for long high temperature transmission lines, operating at temperatures up to 1200°F.



A. Standard Blanket
← Pipe Insulation



B. Type 101 Pipe
Insulation →

**PHYSICAL PROPERTIES**

Maximum Use Limit	1200°F
Density, lbs. per cu. ft., Avg.	10
Thermal Conductivity, Btu/hr sq ft (F/in)	
At 200°F Mean Temperature	0.31
400°F Mean Temperature	0.43
600°F Mean Temperature	0.56

SPECIFICATION COMPLIANCE

Federal Specification	HH-1-558a, Form D, Type IV, Class 15
ASTM Specification	C592-66T, Class II

ADVANTAGES

HANDLEABILITY — The 24" sections mean ease of handling during installation.

MOISTURE RESISTANT — The natural properties of mineral wool are displayed in these products.

FAST APPLICATION — Saves time and labor.

REQUIRES LESS STORAGE SPACE — Packaged flat in cartons that are easy to handle and stack in a minimum of warehouse space. Also easier to handle on job scaffolding.

EASILY REMOVED — Simply unlatch the fastener in the section to be removed and replaced for line inspection.

LK CALCIUM SILICATE INSULATION

DESCRIPTION

LK Calcium Silicate Insulation is a light weight, molded, hydrous material manufactured by reacting a blend of special inorganic ingredients, reinforced with selected long fibers under suitable conditions of heat and water. LK Insulation is chemically converted under carefully controlled conditions into a strong, hard material.

This product is made in half sectional and regular segmental shapes, as well as block form, thus eliminating the need to stock a variety of different types of insulation. Pipe sizes correspond to standard iron pipe and copper tubing.

SIZES AND THICKNESSES:

LK Pipe Insulation (36" lengths)

Iron Pipe (IPS)	- 1/4" to 33"
Copper Tubing (CT)	- 1/2" to 6-1/8"
Thicknesses	- 1", 1 1/2", 2", 2 1/2", 3", 4" & 5" (depending on pipe size)

LK Block Insulation (18" and 36" lengths)

Widths	- 3", 6", 9", and 12"
Thicknesses	- 1/2" to 4"

LK Pipe Insulation is available plain or with jacketing materials as described on the reverse side.

LK Block Insulation is available in regular rectangular form in any of the dimensions indicated above and also factory scored to fit any contour, as required.

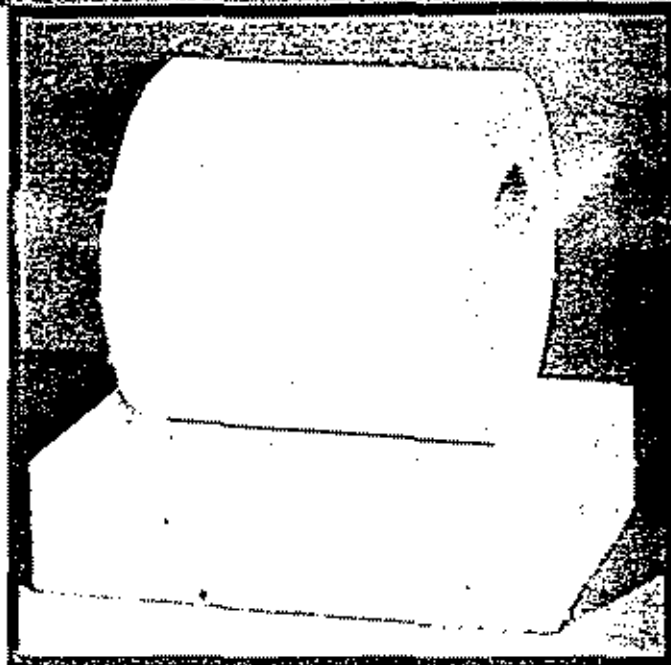
SPECIFICATION COMPLIANCE

LK Pipe Insulation

Federal Specification	HH-1-523c, Type II
Military Specification	MIL-I-2781D, Grade I, Class b; Grade II, Class d; Grade III, Class e, Type I
ASTM Specification	C533

LK Block Insulation

Federal Specification	HH-1-523c, Type I
Military Specification	MIL-I-2819E, Class I & 2
ASTM Specification	C533



USES

The low thermal conductivity of this product makes it ideal high temperature insulation for piping, ducts and equipment. LK Insulation is designed for temperatures up to 1200°F.

PHYSICAL PROPERTIES

Density, lbs./cu. ft. (Avg)	12.0
Temperature Limit, °F	1200
Thermal Conductivity (Btu/hr sq ft (F/in)	
At 300°F Mean Temperature	0.41
500°F Mean Temperature	0.51
Flexural Strength, lbs./sq. in.	75
Compressive Strength (at 5% deformation) psi	90-100
Linear Shrinkage after 24 hr. soaking heat At 1200°F, % Max.	1.8

ADVANTAGES

EXCEPTIONAL STRENGTH AND EASE OF HANDLING - LK Insulation is tough and resilient, thus it ships and handles on the job without cracking.

CHEMICALLY STABLE - This material is completely inorganic and will not rot or burn. It is non-flammable and may be specified advantageously for use in the presence of inflammable gases and liquids.

NOT DAMAGED BY WATER - LK Insulation can be soaked in water without damage. After drying, thermal conductivity is as good as before soaking. It is suited for outdoor and underground applications.

RIGIDFLEX PIPE INSULATION

DESCRIPTION

Rigidflex Pipe Insulation is a form of fiber glass insulation providing the rigidity of a heavy density product with the flexibility of lighter weight, blanket-type products. These exceptional properties result from an assembly of conventional fiber glass insulation and various facings.

Rigidflex Pipe Insulation is shipped flat but supplied with a longitudinal lap. Strips of jacketing are also supplied to cover the end joints. This product is cut to size and is available in the following sizes and thicknesses:

1/2", 3/4" and 1" thick	- 4" IPS and larger
1 1/2" thick	- 6" IPS and larger
2" thick	- 8" IPS and larger
2 1/2" and 3" thick	- 10" IPS and larger

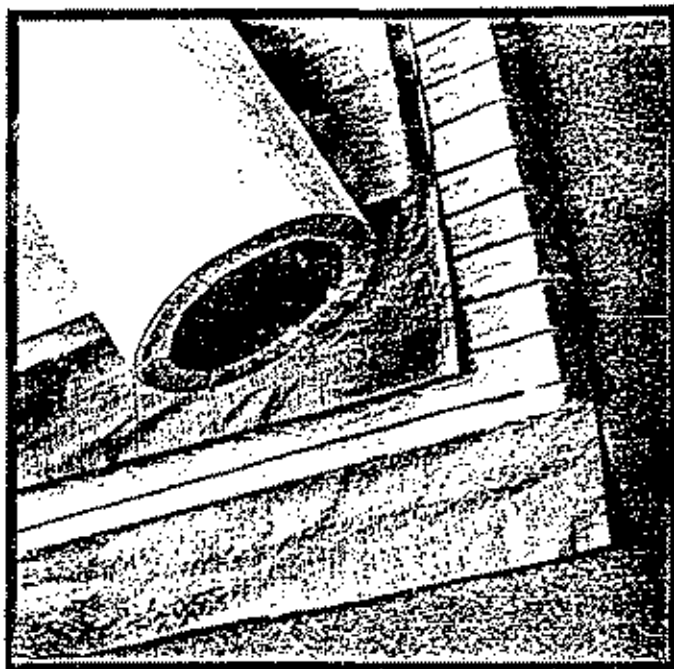
Depending upon the facing used, all of the components of Rigidflex Pipe Insulation, including the adhesive, are UL rated and do not exceed 25 Flame Spread or 50 for Smoke Developed.

PHYSICAL PROPERTIES

Temperature Use Limits	450° F
Density lbs./cu ft Avg.	3.25
Compressive Strength lbs./sq in at 25% Compression	5.5
Thermal Conductivity, Btu/hr sq ft (F/in)	
70°F Mean Temperature	0.28
90°F Mean Temperature	0.29

FACINGS

ORDERING NAME	DESCRIPTION
CANVAS	6 and 8 oz. canvas facings. Surface suitable for sizing, painting, etc.
WHITE FLAME RESISTANT JACKET (UL Vapor Barrier) Flame Spread 25 Smoke Developed 15	Laminated construction of aluminum foil, 6 x 6 glass reinforcing, flame extinguishing adhesive and white kraft paper, embossed to provide a pleasing appearance.
PRESIZED GLASS CLOTH Flame Spread 25 Smoke Developed 50	Made of impregnated fiber glass matt. Weight 7.8 oz. per yard. White finish with high light reflectance.



USES

Rigidflex Pipe Insulation can be used on cold and heated pipes, from subzero to 450° F.

ADVANTAGES

GOOD COMPRESSIVE STRENGTH - Superior to other forms of fiber glass insulation of equal and higher densities.

EASY TO APPLY - One piece. Only a knife needed to cut most intricate shapes.

MINIMIZES STOCKING PROBLEMS - Shipped flat in cartons, storage space is only a fraction of conventional pipe insulation.

PERMANENT, INORGANIC, FIRE SAFE - Glass fiber construction will not deteriorate. UL rated components comply with most stringent building codes.

URETHANE PIPE INSULATION

DESCRIPTION

Urethane Pipe Insulation is a closed cell rigid foam with uniform dimensional stability. This is due to the isotropic characteristics which provide properties almost identical in all three dimensions.

This material has greater thermal insulating value than most other insulations and therefore requires less thickness for the same efficiency. It is light in weight and exceptionally easy to shape with ordinary tools.

The non-burning property of Urethane Pipe Insulation is locked in during polymerization. It is therefore a permanently effective quality and, unlike the use of fire-retardant additives, produces no friability or degradation of other physical properties, nor causes any loss of integrity.

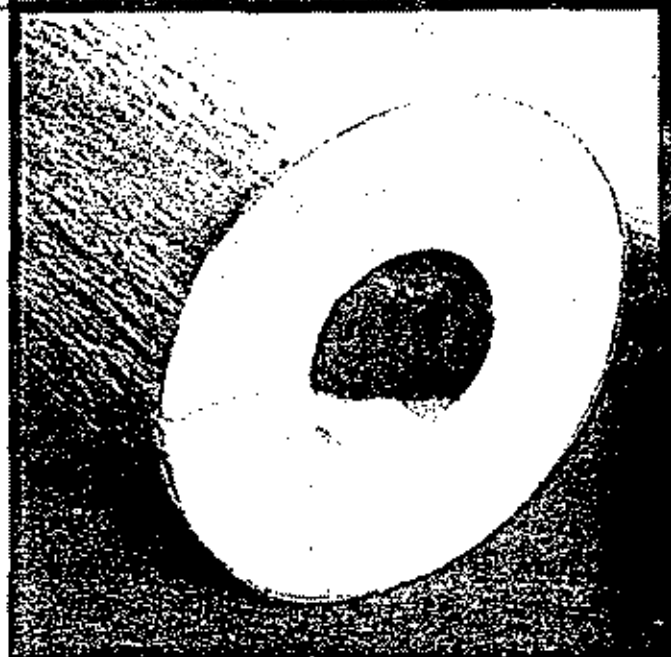
It is available in three grades, (Tan, Green, Blue or Ivory) and is furnished either plain or with Universal FRJ Jacket for operating temperatures above 50°F, and White FRJ Jacket for temperatures below 50°F.

This product is furnished in 3 foot lengths in sizes up to 24" IPS, in a range of wall thicknesses from 1/2" to 3" in 1/2" increments. Double layer construction is available on request.

USES

For use on piping operating in the Service Temperature Range of -423°F to +325°F as shown below for the various grades.

TAN	GREEN	BLUE	IVORY
-50 to +250	-320 to +300	-423 to +325	-423 to +225



PHYSICAL PROPERTIES

	TAN	GREEN	BLUE	IVORY
Density, lbs/cu ft (Avg)	1.8-1.9	1.9-2.1	2.0-2.2	2.0-2.2
Thermal Conductivity, Btu/hr sq ft (F/in)				
At 40°F Mean Temp.	.14	.14	.14	.14
Compressive Strength, lbs/sq in at 5% Comp.	22	25	28	21
Fire Retardance, ASTM D 1692	-SELF-EXTINGUISHING-			
Fire Hazard Classification, ASTM E 84				
Flame Spread (1")	-	-	30	25
Smoke Devel. (1")			100	140

ADVANTAGES

RESISTANT TO SOLVENTS - Since commercial solvents have no appreciable effect on Urethane, there is a wide choice of adhesives for bonding foam to any other material.

HIGH TEMPERATURE SERVICE - Urethane Pipe Insulation does not soften or lose strength at elevated service temperatures within the recommended limits.

LOW THERMAL CONDUCTIVITY - Precuring at the factory provides consistent physical properties.

AC S INC.**PRODUCT DATA****POLYSTYRENE
PIPE INSULATION****DESCRIPTION**

The low thermal conductivity of Polystyrene Pipe Insulation makes it an ideal insulating material for piping and equipment for all temperatures 165°F and below. The sparkling clean surface adds to the appearance of any plant and is especially appropriate in connection with beverages and foodstuffs.

Polystyrene Pipe Covering, with its excellent water vapor resistance and superior insulating qualities can solve many insulation problems. Also the ease with which it can be applied and its light weight, low density characteristics constitute a definite saving during installation and operation.

On low temperature lines Polystyrene Pipe Insulation prevents condensation and dripping and consequently retards corrosion.

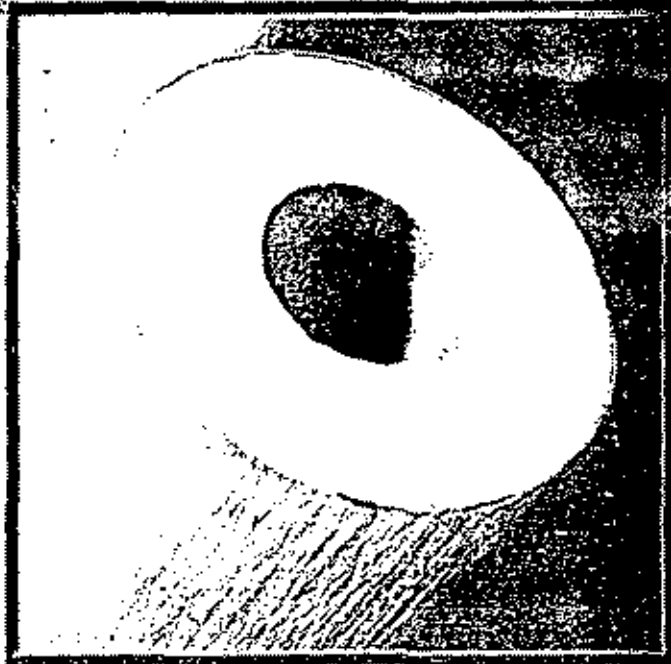
This product is supplied in 3 foot long half sections in pipe sizes corresponding to standard iron pipe and copper tubing, and is available with a Flame Retardant Vapor Barrier Jacket.

Iron Pipe	—	1/4 to 23 inches
Copper Tubing	—	3/8 to 6-1/8 inches
Insulation Thickness	—	1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4 inches

Other sizes available on special order.

USES

Polystyrene Pipe Insulation is designed for temperatures operating at 165°F and below.

**SPECIFICATION COMPLIANCE**

Federal Specification
Military Specification

HM-1-524a
MIL-P-40619

PHYSICAL PROPERTIES

Density, lbs/cu ft	1.8
Thermal Conductivity (Btu/hr sq ft (F/in)	
At 40°F Mean Temperature	0.26
75°F Mean Temperature	0.28
Compressive Strength, lbs/sq in (at 5% Deflection)	25.0
Water Absorption, % by volume	0.50
Burning Characteristics (ASTM D 1692-59T)	Self Ext.
Maximum Operating Temperature, °F	165

ADVANTAGES

EASY TO FORM AND APPLY — Non-dusting, non-flaking and can easily be cut to fit properly. Does not delaminate in service.

DURABLE AND PERMANENT — Polystyrene is highly resistant to rot and fungus, has no food value and does not attract insects or rodents.

RIGID AND LIGHT WEIGHT — Reduced labor costs result from greater ease of handling.

CELLULAR GLASS PIPE INSULATION

DESCRIPTION

Cellular Glass Pipe Insulation is a rigid, light weight material containing millions of individual, hermetically sealed cells, each a tiny dead-air insulating space. Because of this cellular structure it cannot be penetrated by moisture, thus eliminating corrosive attack on piping and equipment. This material is an inherent vapor barrier, making costly and often imperfect additional vapor barriers unnecessary.

Because of its inorganic nature, Cellular Glass will not deteriorate, burn, or rot. It is also impervious to common acids and acid fumes and always maintains its dimensional stability.

This product is made by applying precisely controlled heat to pulverized glass mixed with chemicals that cause molten glass to form. On cooling, the glass solidifies, trapping the air bubbles and creating the structure of Cellular Glass Pipe Insulation.

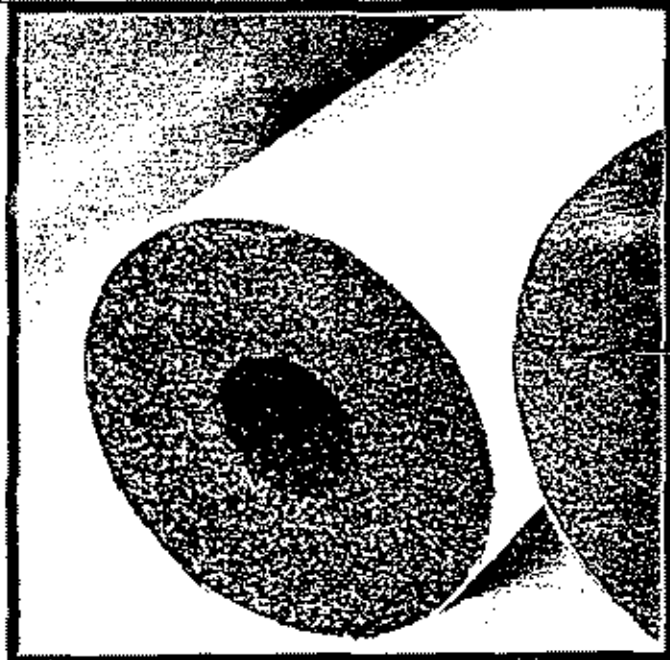
Cellular Glass Pipe Covering is made in 2 foot long half sections in pipe sizes corresponding to standard iron pipe and copper tubing:

Iron Pipe	-	1/4 to 36 inches
Copper Tubing	-	3/8 to 6-1/8 inches
Insulation Thickness	-	1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4 inches

It is available with a Glass Fabric, Stay-Dry Vapor Barrier or Flame Retardant Jacket.

USES

Cellular Glass Pipe Insulation is designed for piping and equipment operating at -450°F to +800°F.



PHYSICAL PROPERTIES

Density, lbs/cu ft	9
Thermal Conductivity (Btu/hr sq ft (F/in))	
At 0°F Mean Temperature	0.35
50°F Mean Temperature	0.38
300°F Mean Temperature	0.55
Compressive Strength, lbs/sq in (ult.)	100
Combustibility	Will not burn

SPECIFICATION COMPLIANCE

Federal Specification	HH-1-551c
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ADVANTAGES

HIGH COMPRESSIVE STRENGTH - Withstands pressures up to seven tons per sq. ft. (average, ultimate) without crushing. Will also support its own weight on vertical piping with no sagging.

EASY TO APPLY - No priming of pipe is necessary. The 24" sections are easy to cut for job fabrication, fittings, etc.

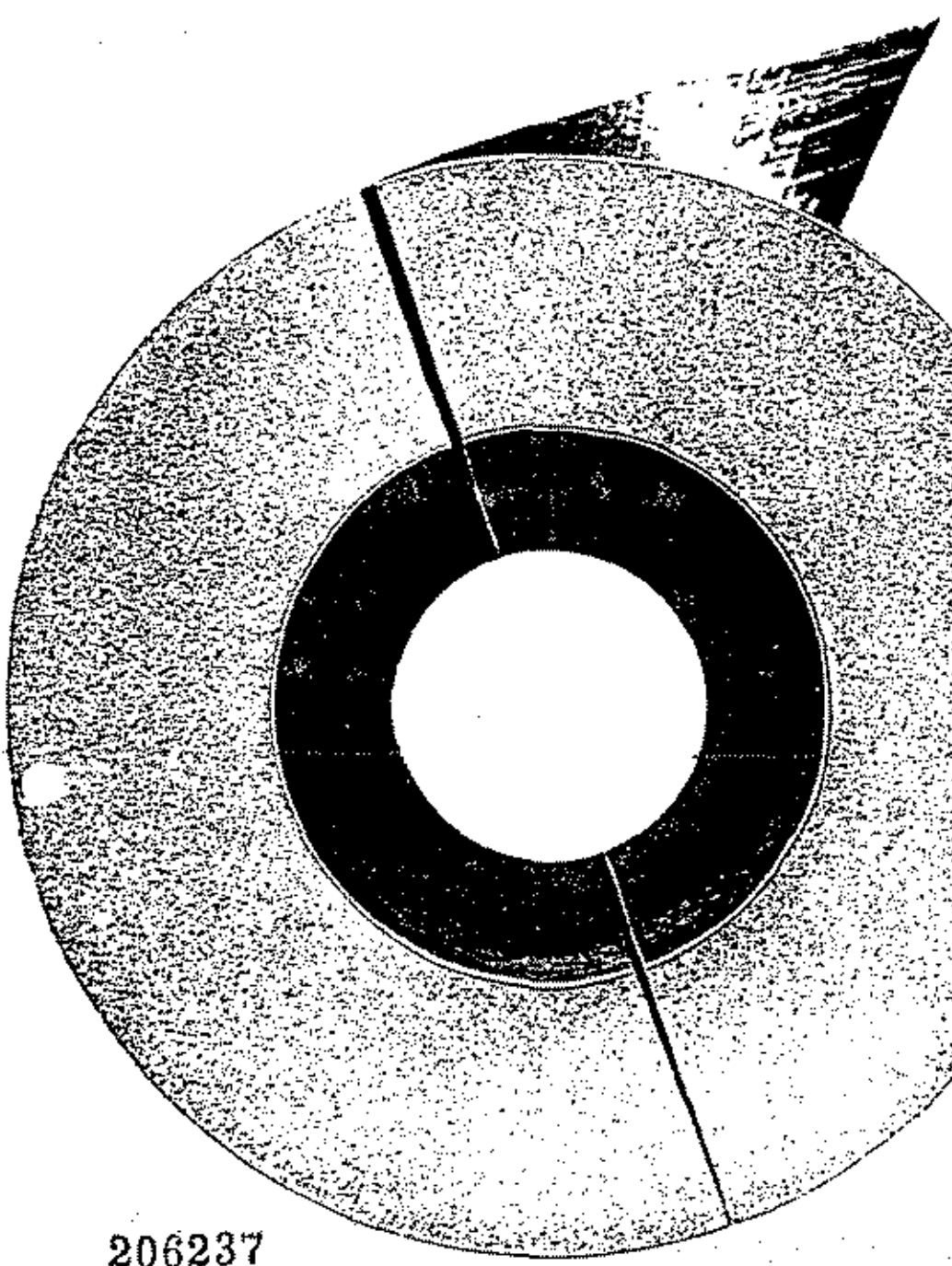
VAPOR-PROOF - Vapor cannot penetrate the closed glass cells of cellular glass.

206236



Armalok™

continuously molded
urethane foam insulation



Armalok . . . a unique pipe insulation that combines the high thermal efficiency of rigid urethane foam with the economy of fibrous glass—and adds these other outstanding advantages:

- Unusual dimensional stability.
- Broad temperature range—minus 250 F to plus 220 F.
- Close dimensional tolerances simplify and speed installation.
- High compressive strength virtually eliminates problems with pipe hangers and other load-bearing applications when appropriate metal shields are used.

Armalok is continuously molded by a new manufacturing method which foams the urethane between inner and outer jackets. This highly sophisticated process results in an unusual combination of excellent physical properties not available in rigid insulations formed from slab-type materials.

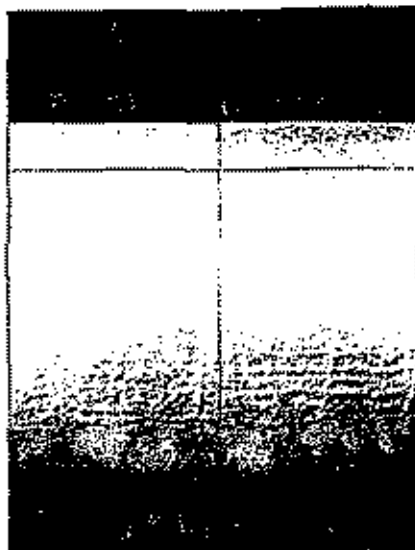
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Armalok is made in standard four-foot sections to speed installation.



Armalok is precisely sized. Note the snug fit on pipe.



Butt ends are accurately cut to form tight joints.



On hot lines, stapling is the recommended fastening method. Staples hold tightly in the firm Armalok core.



Adhesive bonding of the flap is recommended for cold- and dual-temperature lines. Armstrong 520 Adhesive forms a vaporproof seal.



Grooves for clevis hangers on hot lines are easily scooped from foam core, using a simple tool.



Finished installation around clevis hanger is neat and workmanlike.

206238



Joints are covered and sealed with three inch butt strips, stapled, or adhesive-bonded.

Low Material Cost—The Armalok manufacturing process eliminates the waste associated with conventionally fabricated rigid pipe insulation materials which are cut from slabs or blocks.

■ **Excellent Thermal Conductivity**—Armalok has an excellent k factor of 0.15 Btu/hr sq ft (deg F/in.) at a 40 F mean temperature. This increased efficiency makes it possible to use substantially reduced thicknesses of Armalok without any loss of insulation value. This is particularly true for low-temperature applications below 50 F, where insulation efficiency is most critical.

■ **Broad Temperature Range**—From -250 F to +220 F
Due to its broad temperature range, Armalok can be used for all types of low- and medium-temperature applications from cryogenic to hot water heating systems.

■ **Outstanding Dimensional Stability**—Unlike conventionally fabricated rigid insulations, Armalok is a laminate, with inner and outer facings intimately bonded to its insulation core. The result is an outstanding increase in dimensional stability. After a 48-hour exposure at 220 F, Armalok exhibits only a 0.4% change in length. This characteristic insures that Armalok can handle low- and dual-temperature applications without rupture of its vapor barrier jacket.

Close Dimensional Tolerances—Because of the highly sophisticated process used to manufacture Armalok, it is possible to control pipe size, wall thickness, outside diameter, and length to close tolerances. This assures that Armalok can be easily and properly installed and eliminates the problems which have been associated with some fabricated rigid materials and molded fibrous glass products.

Ease of Application—Due to its four-foot length and accurate dimensional tolerances, Armalok can be easily installed. Armalok's interior and exterior facings make the product clean and easy to handle. It can be cut and fabricated with all conventional tools, and staples can be used to reduce application costs for all applications above 50 F.

High Compressive Strength—Pipe hangers and other load-bearing applications are no problem with Armalok when appropriate metal shields are used because of its high compressive strength of 25 psi @ 10% deflection. This feature also gives Armalok superior resistance to physical abuse during and after installation.

Good Fire Resistance—Armalok's insulation core is composed of a self-extinguishing urethane foam. In addition, the outer vapor barrier jacket has low-burning characteristics when tested in accordance with UL 723. The UL-rated values are less than flame spread of 25 for the jacket and smoke developed of 50.

Properties	Test Method	Typical Values
Density, foam (core), lb/cu ft	ASTM D1622	1.8 to 2.2
Thermal Conductivity, foam, Btu/hr sq ft (F deg/in.)	ASTM C177 or C518	
40 F mean temperature		0.15
75 F mean temperature		0.16
Dimensional Stability, composite,	ASTM C548	
% Length Change, shrinkage	(For Procedure Only)	
48 hours @ 220 F (Temperature both sides)		0.4
48 hours @ -10 F (Temperature both sides)		0
Flammability, foam (core)	ASTM D1692	SE 1.7 in., 50 sec
Flammability, V.B. Jacket	UL 723	
Flame spread		<25
Smoke developed		<50
Compressive Strength, foam (core), psi, @ 10% deflection	ASTM D1621	25
Water Vapor Permeance, V.B. Jacket, Perm (Dry Cup)	ASTM C355	0.02
Closed Cell Content, %, foam (core)	Beckman Pycnometer	95
Capillarity, foam (core)	—	None
Upper Use Limit (One Side), composite, deg F	—	220

For further information on Armstrong Armatok Pipe Insulation, and for samples of this product, write Armstrong Cork Company, Lancaster, Pennsylvania 17604, or get in touch with the Armstrong office nearest you.

Charlotte, N.C.

Chicago, Ill.

Cincinnati, Ohio

New York, N.Y.

St. Louis, Mo.

San Francisco, Calif.

In Canada: 6911 Decarie Blvd., Montreal 255, Quebec

In Hawaii: King Center Building, 1451 S. King St.,
Honolulu 96814

In Puerto Rico: 1500 Roosevelt Avenue, San Juan,
Puerto Rico 00920

INDUSTRY PRODUCTS DIVISION

Armstrong

206240

INSULATED PIPE SADDLES

DESCRIPTION

Insulated Pipe Saddles are factory assembled sections of specially ribbed aluminum clad steel shields and half sections of fiber glass insulation. The insulation in 4" pipe size saddles and larger is reinforced with hardwood dowels, and the entire assembly is protected with a vapor barrier jacket.

Satisfactory for use over the broad temperature range of -120°F to +450°F, Insulated Pipe Saddles are compatible with all types of conventional pipe insulations and are available for all pipe sizes through 16" IPS and with variable thicknesses of insulation from 1/2" through 4".

SIZES AND THICKNESSES

IPS	Insulation Thickness	Overall Length*	Metal Thickness
1/2" - 3 1/2"	1/2" - 2"	12"	18 ga.
4" - 8"	1/2" - 3"	12"	16 ga.
10" - 16"	1" - 4"	12"	14 ga.**

* Longer length metal shield may be supplied on request.

** Extra 90° arc 12 gauge welded support included on all saddles 10" IPS and larger.

PHYSICAL PROPERTIES

Density, lbs/cu ft (excluding reinforcing media) 7 1/4 lbs.

Thermal Conductivity, Btu/hr sq ft (°F/in)
at 100°F Mean Temperature 0.25

Temperature Limits -120°F to +450°F

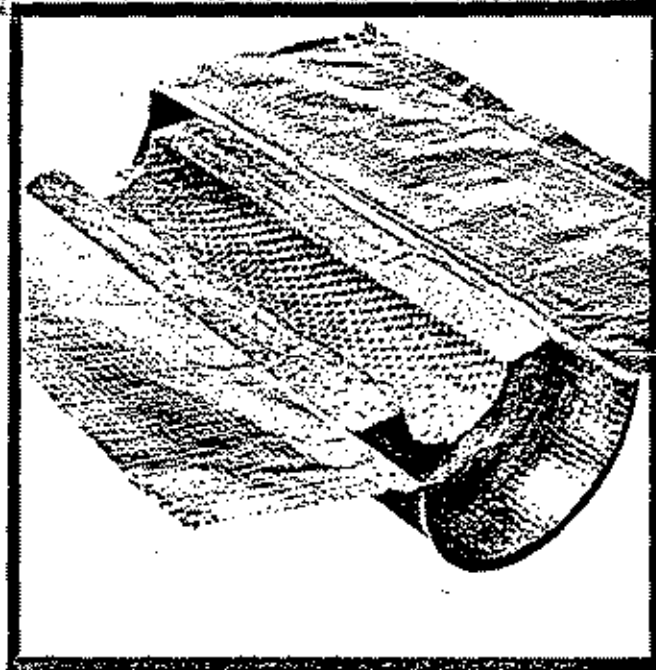
Water Vapor Permeability (vapor barrier jacket) 0.01 perms

Load Limit (depending on pipe size) † 350 to 1200 lbs.

† All saddles are designed to accommodate loadings resulting from maximum hanger spacings specified in Federal Specification WW-H-171c.

SPECIFICATION COMPLIANCE

Currently no government specification is applicable.



USES

Insulated Pipe Saddles are designed for use on insulated pipe lines to resist the crushing effect of heavy loadings at the pipe support points without sacrificing insulating efficiency at these points.

ADVANTAGES

SOLVES COMPRESSION PROBLEM - When insulated lines are subjected to compressive loads, as at pipe hanger locations, the Insulated Pipe Saddle can be used to support the load and maintain its full insulating efficiency.

HIGH INSULATING EFFICIENCY - The integrally reinforced load bearing insulation provides a low "k" value of 0.25 at a mean temperature of 100°F.

IMPERVIOUS TO MOISTURE VAPOR - On low temperature lines, the vapor barrier jackets extending a distance of 3" on either side of the insulation provides for effectively sealing out moisture vapor, and the bevelled ends of the shield prevent rupture of the vapor barrier on subsequent movement of the pipe line.

CORROSION RESISTANT - The aluminum clad steel shield provides the excellent weather resistance of aluminum and the strength of steel.



Armstrong

SHEET INSULATION

FR/Armaflex® and Standard Armaflex

Armaflex Sheet Insulations average physical properties*

	FR/Armaflex Sheet Insulation	Standard Armaflex Sheet Insulation	Test Method (See note 3)
Density, lb/cu ft	5.0	5.7	ASTM D1622
Thermal conductivity Btu/hr sq ft (F deg/in.) 75 F mean temp 90 F mean temp	0.28 0.286	0.27 0.274	ASTM C177 or C518
Upper use limit, deg F (See note 1)	220	220	—
Lower use limit, deg F (See note 2)	-40	-40	—
Thermal stability, % shrinkage 7 days, 200 F 7 days, 220 F	5.0 6.1	0.6 5.0	ASTM C548
Water vapor permeability, wet cup, perm-in.	0.17	0.1	ASTM C355
Water absorption, % by weight	8.4	4.9	ASTM D1056
Ozone resistance	GOOD	GOOD	—
Odor	NEGLIGIBLE	NEGLIGIBLE	—
Flammability (self-extinguishing)	—	SELF-EXTINGUISHING SE 1.0 in., 53 sec BY THIS TEST	ASTM D1692
Flame spread (available thicknesses 1" or less)	25	—	ASTM E84
Smoke developed (available thicknesses) 1" 1/2" 3/4" 1/2" 1"	75 110 150 225 290	—	ASTM E84
Sizes Width and length, inches Thickness, inches (See note 4)	36 x 48 1/4 to 1 (1/2 increments)	36 x 48 1/4 to 1 (1/2 increments)	— —

*When Armaflex Sheet is installed by adhering butt joints and seams only, the upper temperature limit is 220 F using 520 Adhesive. Armaflex Sheet adhered with complete adhesive coverage on flat or curved metal surfaces may be applied to surfaces that will operate as high as 180 F using 520 Adhesive.

†At -20 F, flexible Armaflex Insulations become hard and, as temperatures drop below -20 F, will be increasingly brittle; however, this hardening characteristic does not affect thermal efficiency and resistance to water vapor permeability. Application below -40 F is at user's discretion.

‡ASTM method, in some cases, may be modified slightly to make results more meaningful for end-use application, if details are required. Contact Armstrong Cork Company.

§Armaflex Sheet in 1/2" thickness not available.

*Average values are not to be used for writing material specifications. Contact Armstrong for specification ranges.

Armaflex Sheet Insulation thickness recommendations

	Ducts—Tanks—Vessels—Equipment Metal Surface Temperature		
	50 F 1/4"	35 F 3/4"	0 F 1"
BASED ON NORMAL DESIGN CONDITIONS Armaflex in the thicknesses noted and within the specified temperature ranges will prevent condensation indoors under normal design conditions, a maximum severity of 85 F and 70% RH. Armstrong research and field experience indicate that indoor conditions anywhere in the United States seldom exceed this degree of severity.			
BASED ON MILD DESIGN CONDITIONS Armaflex in the thicknesses noted and within the specified temperature ranges will prevent condensation indoors under mild design conditions, a maximum severity of 80 F and 50% RH. Typical of these conditions are most air-conditioned spaces and arid climates.	1/4"	3/4"	1"
BASED ON SEVERE DESIGN CONDITIONS Armaflex in the thicknesses noted and within the specified temperature ranges will prevent condensation indoors under severe design conditions, a maximum severity of 80 F and 80% RH. Typical of these conditions are indoor areas in which extensive moisture is introduced or in poorly ventilated, confined areas where the temperature may be depressed below ambient.	3/4"	1 1/4"	1 1/2"

DESCRIPTION

Armstrong Armaflex Sheet Insulation is a flexible, elastomeric thermal insulation material incorporating the three most desirable properties of a low-to-medium-temperature insulation: high insulation efficiency, high resistance to transmission of water vapor, and ease of application.

Armaflex Sheet is available in both Fire-Retardant (FR) and Standard types. Physical characteristics of both materials are similar except for superior fire-retardant characteristics of the FR material.

Armaflex Sheet is particularly adaptable to insulating of large tanks of all shapes, ductwork, irregular vessels, and large piping. Armaflex Sheet may be applied with full adhesive coverage to metal surfaces that will operate as high as 180 F. When used within recommended usage ranges, Armaflex Sheet thicknesses have been calculated to prevent condensation on cold surfaces. Temperatures below zero may require application of Armaflex Sheet in multiple layers.

When used for pipe insulation, with adhesive at seams and joints only, Armaflex Sheet can be applied to lines that will operate as high as 220 F.

Specification Compliance

- FR/Armaflex and Standard Armaflex Sheet
ASTM C534, Type II
ASTM D1056 SBE 41-42
MIL-C-3133B (MIL STD 670B)
Grade SBE 3
HH-I-573B, Class S
- FR/Armaflex Sheet
MIL-P-15280, Form S

ADVANTAGES

Fire-Retardant Characteristics

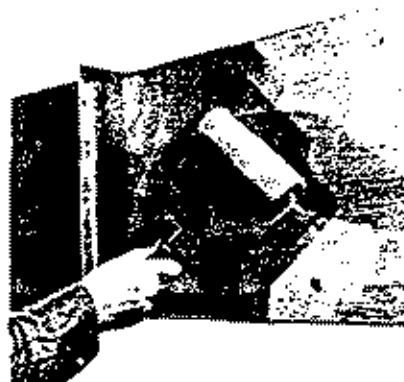
FR/Armaflex Sheet, when tested by the ASTM E84 method, in thicknesses of 1/4" to 1", has a flame spread rating of 25.

For smoke developed, FR/Armaflex Sheet rates at 75 for 1/4"; 110 for 1/2"; 150 for 3/4"; 225 for 1"; and 290 for 1 1/2".

Standard Armaflex Sheet, when tested according to ASTM D1692 procedures, is rated SE 1.0 in., 53 sec.



When Armaflex Sheet is used with full adhesive coverage, adhesive is easily applied with brush or roller.



A thin coating of adhesive also is applied to large surfaces that will be insulated with Armaflex Sheet.



When adhesive on sheet and surface has dried to the touch, the sheet is carefully positioned as contact bond is made.

Armaflex is not a thermoplastic. It is a vulcanized synthetic elastomer and will not melt or drip during exposure to heat.

High Insulating Efficiency

The closed cellular structure of Armaflex gives it a low average "k" value. Armaflex resists moisture and deterioration, so thermal efficiency remains high in service.

Resistance to Moisture Vapor

The uniformly sized, closed cells of Armaflex seal out moisture vapor.

Dimensional Stability

When Armaflex Sheet Insulation is tested at a soaking heat of 220 F for 7 days, shrinkage is 5.0% for Standard material and 6.1% for FR material. In application, only the inner surface is exposed to 220 F, so shrinkage is considerably less than the test figure.

Wide Temperature Range

Armaflex Sheet has a wide usage range from -40 F to +180 F or +220 F, depending on method of installation.

Smooth Surface

Armaflex has an exceptionally smooth, uniform outer surface finish. This results in a neat-looking installation, whether the surface is left unfinished or given a protective coating.

Fast, Easy Application

Armaflex Sheet can be applied directly to clean, dry metal surfaces with Armstrong 520 Adhesive. Conventional mechanical supports are unnecessary. High resistance to water vapor transmission

eliminates the need for a separate vapor barrier, but outdoor installations should be protected against weather with Armstrong Armaflex™ Finish, a vinyl-lacquer-type coating.

APPLICATION OF FR/ARMAFLEX SHEET

Note: These specifications refer throughout to FR/Armaflex. Standard Armaflex can be installed by the same techniques.

1. Sheet Insulation

1.1 General

1.1.1 Insulation shall be flexible, closed-cell, elastomeric thermal sheet insulation, Armstrong FR/Armaflex or approved equal. Insulation shall have a flame spread rating of 25 or less when tested by ASTM E84 method.

1.1.2 FR/Armaflex Sheet shall be applied with the smooth or skin side out. It is to be applied to metal surfaces that will operate as high as 180 F with full surface bonding of 520 Adhesive.

1.1.3 FR/Armaflex Sheet shall be adhered with a thin but adequate coat of 520 Adhesive applied to both surfaces to be joined.

Before pressing surfaces together, the adhesive shall be allowed to dry until dry to the touch but tacky under slight pressure. 520 Adhesive is an instant-bonding type; therefore, surfaces are to be positioned accurately as contact is made.

1.1.4 Metal surfaces shall be clean, dry, and free of all dirt, scale, loose paint, plaster, oil, etc. If the metal surface has been primed, a test area of approximately two square feet shall be coated with

520 Adhesive to determine whether the solvent in the adhesive will loosen or lift the primer. If there is any indication of loosening or lifting the primer, FR/Armaflex Sheet shall not be applied until the primer is removed or replaced with acceptable material.

1.1.5 FR/Armaflex Sheet is not to be applied over asphaltic surfaces where surface bonding is necessary, since 520 Adhesive will not bond to asphalt.

1.1.6 Where special corrosion-resistant coatings are specified for metal surfaces, they shall be compatible with Armstrong 520 Adhesive.

1.2 Application

1.2.1 APPLICATION TO METAL TANK, VESSEL, AND EQUIPMENT SURFACES BY COMPRESSION-FIT METHOD

1.2.1.1 A coat of 520 Adhesive shall be applied with brush or short-nap paint roller to the surface to be insulated, covering enough area to receive one FR/Armaflex Sheet.

1.2.1.2 A coat of 520 Adhesive shall be applied with brush or short-nap paint roller to the back of the FR/Armaflex Sheet leaving a 1/2"-wide uncoated border around the perimeter of the sheet.

1.2.1.3 The adhesive shall be allowed to dry until dry to the touch but tacky under slight pressure before bringing the two surfaces into contact.

1.2.1.4 The sheet being installed is to be positioned in such manner that it overlaps the edges of the previously applied sheet or sheets by 1/2". While held in this position, the center of the sheet shall be

spot-achored. The butt edges of the sheets are to be compressed into place to achieve a tight joint. The remainder of the sheet shall then be bonded by pressing firmly into place. A small hand roller is useful for applying pressure.

1.2.1.5 The sheet joint is to be spread apart and, by means of a small brush, 520 Adhesive shall be applied to both butt edges which are then aligned for good appearance.

1.2.1.6 Vertical joints are to be staggered where FR Armatlex Sheet is applied to vertical tanks. In the case of horizontal tanks, the horizontal joints are to be staggered.

1.2.2 APPLICATION TO METAL DUCT SURFACES

1.2.2.1 FR Armatlex Sheet shall be adhered to the duct surface using 520 Adhesive. Adjacent sheets shall be applied using the compression-fit method (see Paragraph 1.2.1). The adhesive is to be applied on both surfaces to be joined with a brush or short-nap paint roller. The adhesive shall be allowed to dry until dry to the touch but tacky under slight pressure before bringing the two surfaces together.

1.2.2.2 For square and rectangular ducts, FR Armatlex Sheet shall be applied first on the bottom surface, neatly fitted to the width. The side insulation shall then be extended over the edges of the bottom insulation. The top insulation shall extend over the top of the insulation on both sides.

1.2.2.2.1 *Alternate:* Square, rectangular, or round ducts shall be insulated by wrapping a continuous blanket of FR Armatlex Sheet around the duct perimeter joining the seam on the bottom or side surface of the duct.

1.2.2.3 Standing metal duct seams shall be insulated with the same FR Armatlex Insulation thickness as installed on the duct surface.

1.2.2.3.1 *Alternate:* Half sections of FR Armatlex Pipe Insulation of proper wall thickness may be used to insulate standing metal duct seams.

1.3 Finishes

1.3.1 INDOOR FINISH*

*(specifier shall choose one finish)
(specifier is cautioned that only Armatlex Finish will withstand excessive flexing after drying)*

1.3.1.1 No finish shall be applied over FR Armatlex Sheet Insulation.

1.3.1.2 Two coats of Armatlex Finish shall be applied directly to the FR Armatlex Sheet.

1.3.1.3 Two coats of Armstrong Insulcolor[®] shall be applied directly to the FR Armatlex Sheet.

1.3.1.4 Commercially available (high-quality interior enamel) (latex enamel paint) shall be applied directly to the FR Armatlex Sheet.

1.3.2 OUTDOOR FINISH*

*(specifier shall choose one finish)
(specifier is cautioned that only Armatlex Finish will withstand excessive flexing after drying)*

1.3.2.1 Two coats of Armatlex Finish shall be applied directly to the FR Armatlex Sheet.

1.3.2.2 Two coats of Armstrong Insulcolor shall be applied over white glass mesh adhered to the FR Armatlex Sheet surface with Insulcolor Lagging Adhesive.

1.3.2.3 Two coats of Armstrong Weatherproof Plastic shall be applied directly to the FR Armatlex Sheet with black glass mesh embedded in the first coat while wet.

*CAUTION: Only Armatlex Finish will withstand excessive flexing after drying. For best results, wipe the surface of FR Armatlex Sheet with a damp cloth, preferably dampened with a nonoily solvent to remove powdered lubricant before applying finish coatings. The commercial finishes are to be tested by the user for compatibility with FR Armatlex.

Adhesive-bonded seams and joints of FR Armatlex Sheet must cure before solvent-base finishes are applied. Where the insulation is installed by adhering seams and butt joints only, the adhesive must cure 24 to 36 hours. Where the insulation is installed against surfaces with full adhesive coverage, requiring wet adhesive at joints, the adhesive must cure seven days.

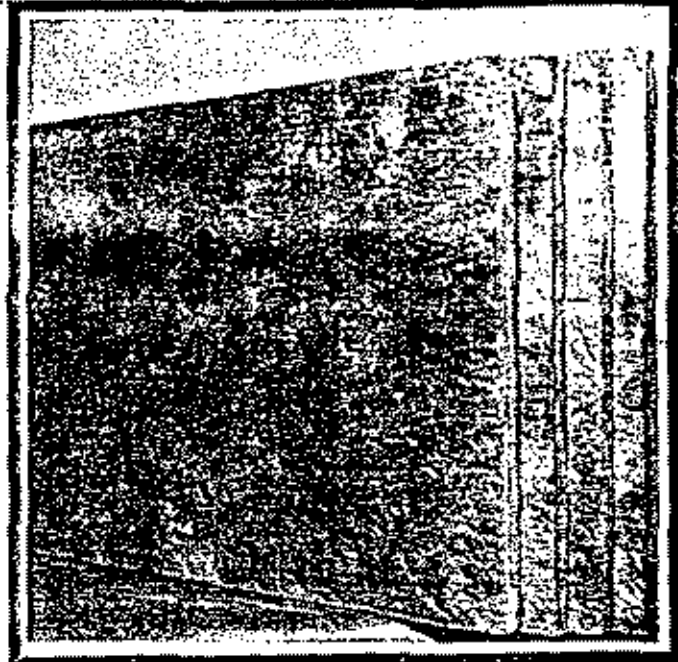


LANCASTER, PA.

206245

ACAGLAS INC.**PRODUCT DATA**

ARMAGLAS INSULATION BATTS



DESCRIPTION

Armoglas Insulation Batts are composed of fine glass fibers bonded together with a phenolic resin binder. They are available in the density range of 0.80 to 2.50 lbs. per cu. ft. This insulation is produced in 24" x 48" sheets, and in thicknesses of 1", 1-1/2", and 2".

USES

This batt-type insulation is recommended for use as boiler and stack insulation, for equipment rooms, as well as power and process equipment, and for all applications where a degree of rigidity and good insulating efficiency are required.

SPECIFICATION COMPLIANCE

Federal Specification HH-1-558a, Form A, Class 1

PHYSICAL PROPERTIES

Maximum Temperature Use Limit 450°F
Density, lbs./cu.ft. 0.8, 1.0, 1.1, 1.25, 1.58, 2.0, 2.5
Thermal Conductivity, Btu/hr sq ft (F/in)

	Density	K Value
At 75°F Mean Temperature	.8	.295
	1.0	.27
	1.1	.26
	1.25	.25
	1.58	.24
	2.0	.23
	2.5	.23

ADVANTAGES

EASY HANDLING — The flexible fibers produce a material that is easy to handle and won't flake or crumble.

UNAFFECTED BY MOISTURE — In the event the board becomes wet, it dries rapidly with no effect.

ARMAGLAS INSULATION BOARD

DESCRIPTION

Armaglas Insulation Board is composed of fine glass fibers bonded together with a phenolic resin binder. It is available plain or with factory applied vapor barrier facings. The low "k" of .23 at 75°F mean temperature for all densities demonstrates its high thermal effectiveness.

This insulation is manufactured in 24" x 48" sheets, in 1/2, 5/8, 3/4, 1, 1-1/2 and 2 inch thicknesses.

USES

Heating, ventilating, air conditioning ducts and equipment can be quickly and efficiently insulated with Armaglas Insulation Board. The ease of cutting and handling speeds application and produces a very neat appearance.

A variety of surface finishes are available which produce attractive appearance and vapor barrier characteristics when required. A complete description of available facings and coatings may be found on the reverse side of this page and are generally available as standard stock items.

Unfaced Armaglas Insulation Board may be used on surfaces as high as 450°F. Faced boards should not be exposed to temperatures above 250°F.

PHYSICAL PROPERTIES

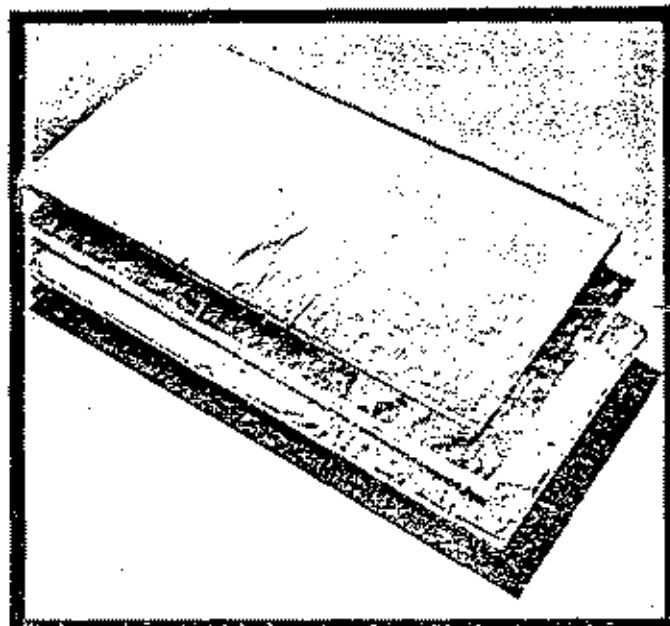
Armaglas Insulation Board will not burn, corrode metals, absorb moisture, rot, sustain mold or vermin, break, settle, sag or decompose.

Density, lbs./cu. ft. 3, 4.2 and 6

Thermal Conductivity, (Btu/hr sq ft (F/in)
At 75°F Mean Temperature 0.23

Friction Coefficient* .202 (average)

* Bare Metal is .018 to .022



SPECIFICATION COMPLIANCE

HH-1-542: Insulation, Felt, Thermal, Mineral Wool (for low temperatures). Type II - Semi-rigid (sheets).

HH-1-00558: Insulation, Thermal (Mineral Fiber, for Elevated Temperatures).

HH-1-00559: Insulation, Thermal (Mineral Fiber, for Low Temperatures).

HH-1-562: Insulation, Thermal, Mineral Wool, Block or Board, and Pipe Insulation (Molded), Type I, Classes 1 & 2.

HH-1-564: Forms I and II, Class A - 4.2 and 6 lb. density.

*HH-1-558a: Insulation, Thermal (Mineral Fiber), Form A, Class 1 - 2 to 6 lb. density; Class 2 - 4.2 to 6 lb. density.

ASTM C378-63T: Mineral Fiber Block, Type II.

ASTM C392-63: Mineral Fiber Block, Type I.

* HH-1-558a supersedes HH-1-00558, HH-1-00559, HH-1-542 and HH-1-562.

ADVANTAGES

STRUCTURALLY STRONG - The boards are tough and resilient; they will not break with rough handling on the job or in transit, making them virtually 100% usable.

EASY TO HANDLE - The flexible fibers produce a material that is easy to handle, and won't flake or crumble.

UNAFFECTED BY MOISTURE - In the event the board becomes wet, it will dry rapidly with no effect.

RIGIDFLEX INSULATION

DESCRIPTION

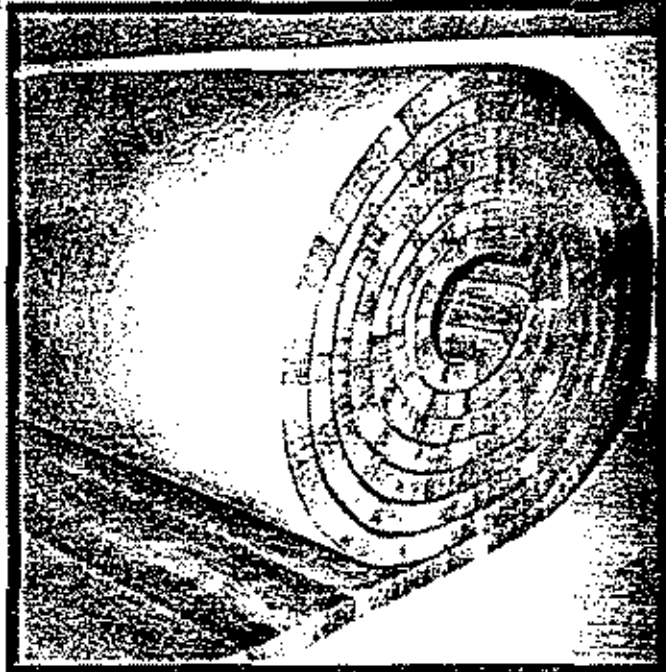
Rigidflex Insulation is a form of fiber glass insulation providing the rigidity of a heavy density product with the flexibility of lighter weight, blanket-type products. These exceptional properties result from an assembly of conventional fiber glass insulation and various facings.

Rigidflex, in 1" through 1-1/2" thicknesses is furnished in roll form, 3' wide x 33-1/3' long. In the 2" and over thicknesses, the length of material is limited to 16-2' 3" in a roll.

Depending upon the facing used, as listed on the other side of this page, all of the components of Rigidflex Insulation, including the adhesive, are UL rated and do not exceed 25 Flame Spread, or 50 for Smoke Developed.

USES

Rigidflex Insulation can be used on cold and heated pipes, ducts, and equipment from subzero to 450°F. Because of its unique characteristics and physical form, it is ideally suited for use on all cylindrical shapes and can be used on flat surfaces as well. Typical applications include cylindrical high pressure duct systems, large piping of any size, breechings, flanged fittings, roof drains and hubs, traced piping and hot water tanks. In addition to facilitating application, Rigidflex, since it fits any size cylinder, obviates the need for stocking many large odd sized pieces of pipe covering.



PHYSICAL PROPERTIES

Temperature Use Limits	450°F
Density lbs./cu ft Avg.	3.25
Compressive Strength, lbs./sq in at 25% Compression	5.5
Thermal Conductivity, Btu/hr sq ft (F/in)	
70°F Mean Temperature	0.28
90°F Mean Temperature	0.29

ADVANTAGES

GOOD COMPRESSIVE STRENGTH — Superior to other forms of fiber glass insulation of equal and higher densities.

EASY TO APPLY — One piece. Only a knife needed to cut most intricate shapes.

MINIMIZES STOCKING PROBLEMS — Fits all surfaces. Flexibility permits close fit to all size pipe, duct, and equipment, regardless of shape or contour.

PERMANENT, INORGANIC, FIRE SAFE — Glass fiber construction will not deteriorate. UL rated components comply with most stringent building codes.

RIGIDFLEX-600 INSULATION

DESCRIPTION

Rigidflex-600 insulation is a form of fiber glass insulation providing the rigidity of a heavy density product with the flexibility of lighter weight, blanket-type products. These exceptional properties result from an assembly of conventional fiber glass insulation and various facings.

Rigidflex-600 is furnished in roll form 3' wide x 33-1/3' long in 1" and 1-1/2" thicknesses; 16-2/3' long in 2" and over thicknesses.

Depending upon the facing used, as listed on the other side of this page, all of the components of Rigidflex-600 insulation, including the adhesive, are UL rated and do not exceed 25 Flame Spread, or 50 for Smoke Developed.

USES

Rigidflex-600 insulation can be used on cold and heated pipes, ducts, and equipment from subzero to 600°F. Because of its unique characteristics and physical form, it is ideally suited for use on all cylindrical shapes and can be used on flat surfaces as well. Typical applications include cylindrical high pressure duct systems, large piping of any size, breechings, flanged fittings, roof drains and hubs, traced piping and hot water tanks. In addition to facilitating application, Rigidflex, since it fits any size cylinder, obviates the need for stocking many large odd sized pieces of pipe covering.

PHYSICAL PROPERTIES

Temperature Use Limits	600°F
Density lbs/cu ft avg.	3.25
Thermal Conductivity, Btu/hr sq ft (F/in) *	
150°F Mean Temperature	0.32
300°F Mean Temperature	0.43

* The values given here are average typical values but are subject to change. Check nearest AC and S office for more accurate information where required.

ADVANTAGES

GOOD COMPRESSIVE STRENGTH — Superior to other forms of fiber glass insulation of equal and higher densities.

EASY TO APPLY — One piece. Only a knife needed to cut most intricate shapes.

MINIMIZES STOCKING PROBLEMS — Fits all surfaces. Flexibility permits close fit to all size pipe, duct, and equipment, regardless of shape or contour.

PERMANENT, INORGANIC, FIRE SAFE — Glass fiber construction will not deteriorate. UL rated components comply with most stringent building codes.

ARMATEMP BLANKET INSULATION

DESCRIPTION

Armatemp Blanket Insulation consists of flexible blankets manufactured by felting high temperature, moisture resistant, spun mineral wool fibers in large flat sheets between different styles of metal fabrics.

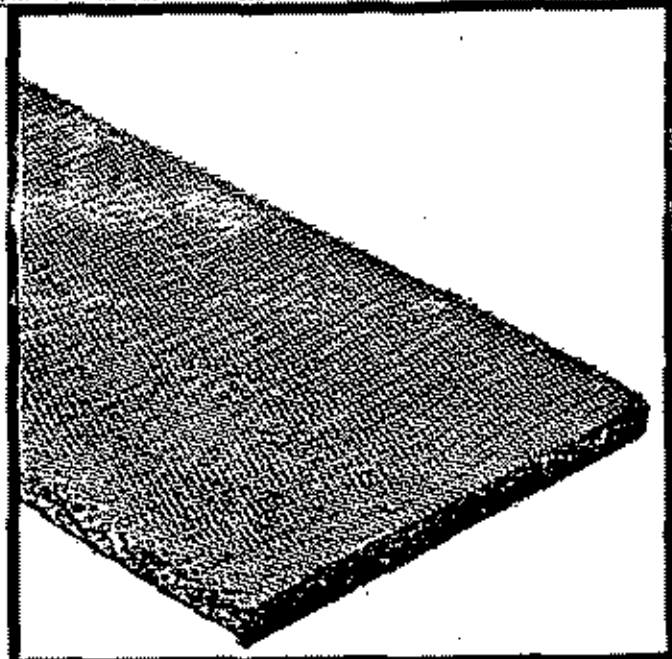
The soft fibers of each blanket interlock with the edges of the one next to it forming a quickly applied, continuous blanket of insulation without cracks or joints. Since this material is flexible, it can be applied to equipment with curved or irregular surfaces without cracking. If equipment does not have a metal casing and a cement finish is desired a blanket which has expanded metal lath on one side and wire mesh on the other makes a good surface for adhering cement. Armatemp Blanket is available with the following standard style fabrics:

- 1" Wire Mesh both sides
- 1" Wire Mesh and Stucco Lath
- 1" Wire Mesh and Expanded Metal Lath
- 1" Wire Mesh and 3/8" Rib Lath turned in
- Stucco Lath both sides
- Expanded Metal Lath both sides
- Stucco Lath one side, Expanded Metal Lath other side
- Stucco Lath and 3/8" Rib Lath (rib turned in)
- Stucco Lath and 3/8" Rib Lath (rib turned out)
- Stucco Lath and 3/4" Rib Lath (rib turned in)
- Stucco Lath and 3/4" Rib Lath (rib turned out)
- 3/8" Rib Lath both sides
- #12 Mesh Fly Screen Wire both sides
- 3/8" Rib Lath turned in and 3/4" Rib Lath turned out
- Special Facings available upon request

Armatemp Blanket is supplied 24" wide by either 48" or 96" long, in thicknesses from 1" to 8" (in 1/4" increments).

USES

Armatemp Mineral Wool Blanket is designed for insulating surfaces such as tanks, towers, vessels, turbines, ovens, breechings, boilers, etc. Effective up to 1200°F, it is unexcelled for its insulating efficiency and economy.



PHYSICAL PROPERTIES

Density, lbs. per cu. ft.	10
Thermal Conductivity (Btu/hr sq ft (F/in))	
At 200°F Mean Temperature	0.34
400°F Mean Temperature	0.50
600°F Mean Temperature	0.70

SPECIFICATION COMPLIANCE

Federal Specification	HH-I-558a, Form C, Class II
Military Specification	MIL-I-2818A
ASTM Specification	C592-66T, Class II

ADVANTAGES

VERSATILITY - The numerous styles of blanket permit many different applications with wide variety of finishes.

INHERENT STRENGTH - The spun mineral wool fibers are removed from the production line in roll form and the metal mesh applied without disturbing the natural interlocking of the fibers.

OUTSTANDING STABILITY - Material will resist the action of moisture or corrosive fumes; will withstand normal vibration and retain efficiency without breaking down.

ACANDS INC.**PRODUCT DATA****ARMATEMP
BLOCK
INSULATION****DESCRIPTION**

Armatemp Block is a mineral wool product composed of high temperature spun mineral fibers and an inorganic binder. It is manufactured by a special process designed to interlock the long fibers to form a rigid, strong, resilient block. As a result, it is light and easily workable with outstanding insulating qualities. Stability under severe temperature conditions is assured, and due to their composition, the fibers are unaffected by exposure to moisture and heat.

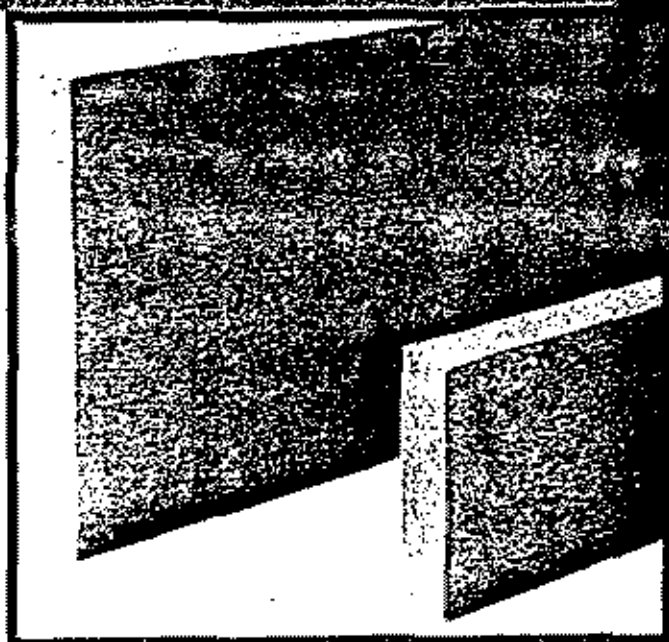
Since these blocks are water repellant, they provide a surface that gives much greater coverage and trowelable adhesion for finishing cements.

Armatemp Block is available in the following standard sizes and thicknesses:

Length — 18" and 36"
Width — 6", 12", 18" and 24"
Thickness — 1" to 4" (in ½" increments)

PHYSICAL PROPERTIES

Density, lbs. per cu. ft.	15 to 18
Thermal Conductivity (Btu/hr sq ft (F/in)	
At 200°F Mean Temperature	0.35
600°F Mean Temperature	0.51
1200°F Mean Temperature	0.90
Flexural Strength, lbs. per sq. in.	40
Moisture Absorption	nil

**USES**

Armatemp Block may be used for insulating heated surfaces on steam boilers, ovens, kilns, furnaces, refinery towers, etc. It is designed for temperature ranges up to 1800°F.

SPECIFICATION COMPLIANCE

Federal Specification	HH-1-564; HH-1-558a, Form A, Class 5
ASTM Specification	C-392-63, Type 3
Commercial Standard	CS117

ADVANTAGES

NEGLIGIBLE BREAKAGE — Armatemp Block is stronger because of the long mineral fibers and unique construction.

READILY APPLIED — Easily cut with a knife. Conforms to curvatures and projections without cracking.

NON-CORROSIVE, MOISTURE RESISTANT — Offers excellent resistance to moisture and destructive chemicals. Will not contribute to the corrosion of metal surfaces.

206254

ACANDS

LK CALCIUM SILICATE INSULATION

DESCRIPTION

LK Calcium Silicate Insulation is a light weight, molded, hydrous material manufactured by reacting a blend of special inorganic ingredients, reinforced with selected long fibers under suitable conditions of heat and water. LK Insulation is chemically converted under carefully controlled conditions into a strong, hard material.

This product is made in half sectional and regular segmental shapes, as well as block form, thus eliminating the need to stock a variety of different types of insulation. Pipe sizes correspond to standard iron pipe and copper tubing.

SIZES AND THICKNESSES:

LK Pipe Insulation (36" lengths)

Iron Pipe (IPS)	~ 1/2" to 33"
Copper Tubing (CT)	~ 1/2" to 6-1/8"
Thicknesses	~ 1", 1 1/2", 2", 2 1/2", 3", 4" & 5" (depending on pipe size)

LK Block Insulation (18" and 36" lengths)

Widths	~ 3", 6", 9", and 12"
Thicknesses	~ 1/2" to 4"

LK Pipe Insulation is available plain or with jacketing materials as described on the reverse side.

LK Block Insulation is available in regular rectangular form in any of the dimensions indicated above and also factory scored to fit any contour, as required.

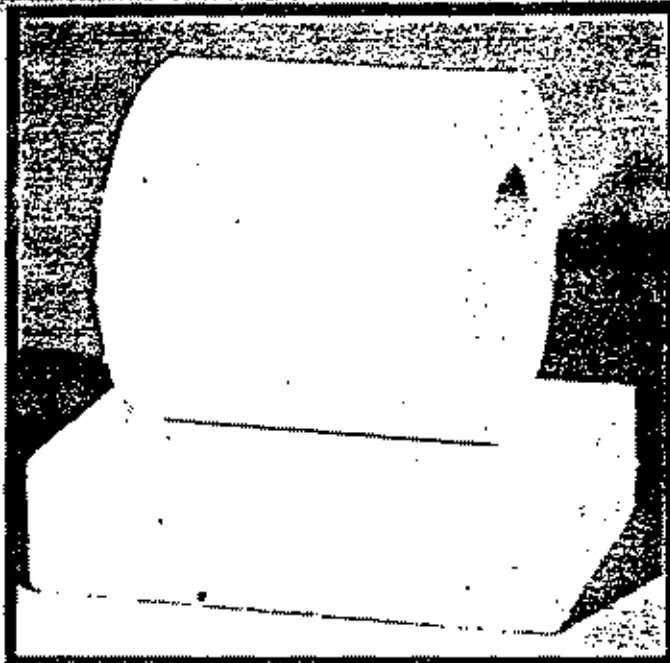
SPECIFICATION COMPLIANCE

LK Pipe Insulation

Federal Specification	HH-I-523c, Type II
Military Specification	MIL-I-2781D, Grade I, Class b; Grade II, Class d; Grade III, Class a, Type I
ASTM Specification	C533

LK Block Insulation

Federal Specification	HH-I-523c, Type I
Military Specification	MIL-I-2819E, Class I & 2
ASTM Specification	C533



USES

The low thermal conductivity of this product makes it ideal high temperature insulation for piping, ducts and equipment. LK Insulation is designed for temperatures up to 1200° F.

PHYSICAL PROPERTIES

Density, lbs./cu. ft. (Avg)	12.0
Temperature Limit, °F	1200
Thermal Conductivity (Btu/hr sq ft (F./in)	
At 300° F Mean Temperature	0.41
500° F Mean Temperature	0.51
Flexural Strength, lbs./sq. in.	.25
Compressive Strength (at 5% deformation) psi	90 - 100
Linear Shrinkage after 24 hr. soaking heat	
At 1200° F, % Max.	1.8

ADVANTAGES

EXCEPTIONAL STRENGTH AND EASE OF HANDLING - LK Insulation is tough and resilient, thus it ships and handles on the job without cracking.

CHEMICALLY STABLE - This material is completely inorganic and will not rot or burn. It is non-flammable and may be specified advantageously for use in the presence of inflammable gases and liquids.

NOT DAMAGED BY WATER - LK Insulation can be soaked in water without damage. After drying, thermal conductivity is as good as before soaking. It is suited for outdoor and underground applications.

ARMAGLAS FLEXIBLE DUCT INSULATION

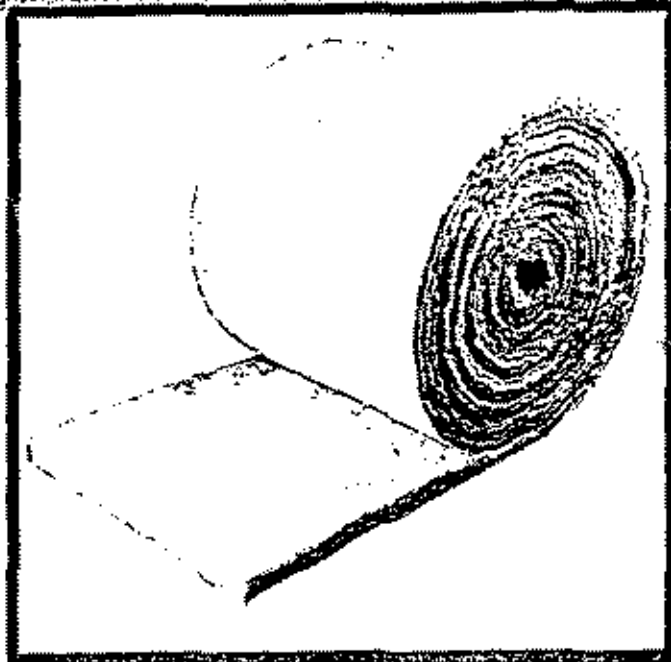
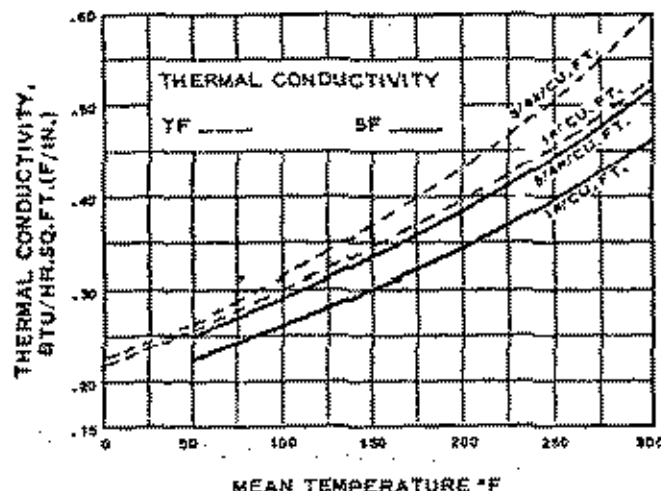
DESCRIPTION

Armoglas Flexible Duct Insulation is available in two forms: (1) TF Flexible Duct - a long, continuous textile type fiber, chopped 2 to 4 inches long and firmly bonded in random orientation with a thermo-setting phenolic resin. This product is designed for superior strength and resiliency. (2) SF Flexible Duct - a fine glass fiber bonded with a thermo-setting phenolic resin. These extremely fine diameter fibers provide for a maximum number of air spaces in each pound of insulation.

The unique combination of flexibility, light weight, high insulating efficiency and moisture resistance makes this product a highly desirable all-purpose duct insulation. Densities range from 1/2 lb. to 3 lbs. per cubic foot.

This insulation is manufactured in widths of 24, 36, 48 and 72 inches and lengths of 50, 100 or 200 feet, depending on thickness and density. It is available in thicknesses of 1/2, 3/4, 1, 1-1/2 and 2 inches. Although this information represents standard sizes in roll form, other dimensions are available upon request. A variety of facings is also available. (See other side of this sheet).

PHYSICAL PROPERTIES



USES

This product is a highly efficient thermal insulating blanket of inorganic glass fibers which offers versatility, economy and flexibility as an exterior insulation for a variety of ducts operating up to 450°F. It is especially designed to insulate exteriors of both round and rectangular hot and cold air ducts.

SPECIFICATION COMPLIANCE

HH-1-542: Insulation Felt, Thermal, Mineral Wool (for low temperatures). Type I - Flexible (rolls and sheets); Type II - Semi-rigid.

HH-1-558a: Insulation Blankets, Thermal, (Mineral Fiber Industrial Type). Form B, Type I, Classes 6 & 7.

ASTM C553-70: Type I, Classes B-2 thru B-5.

MIL-I-22023C: Type I and II, Classes 2, 3, 4 and 5.

Maritime Specification 32-MA-3C: Insulation Felt, Thermal Fibrous Glass. Classes 1 through 4.

U.S. Coast Guard Specification for Incombustible Materials for Merchant Vessels: Subpart 164.009/75/0, 0.6 lbs. per cubic foot. Special Armoglas TF only.

* HH-1-558a supersedes HH-1-542.

ADVANTAGES

EASE OF APPLICATION - Simple fastening, such as staples and adhesives, speeds application and reduces overall applied costs.

MOISTURE ABSORPTION - Resists water or moisture permanently without chemical breakdown.

ARMAGLAS STANDARD DUCT INSULATION

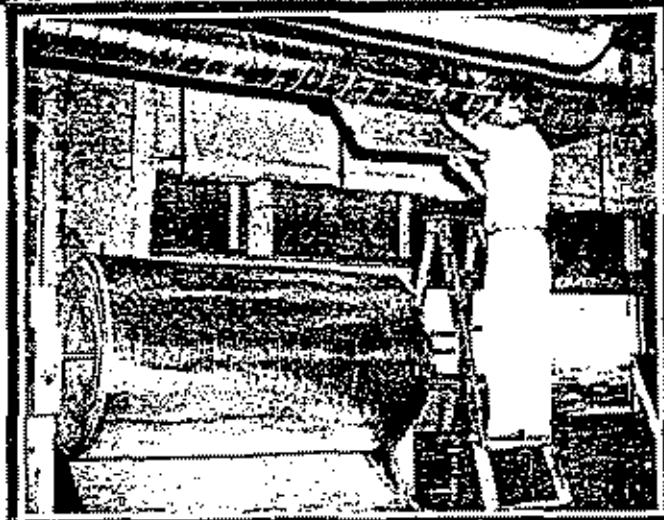
DESCRIPTION

Armaglas Standard Duct Insulation is a lightweight fine fiber glass blanket supplied with any one of a variety of factory applied vapor barriers on one side. (See available types below.) It has excellent resiliency and readily conforms to uneven or irregular surfaces. The vapor barrier facings are furnished with a 2" tab along one edge to overlap the adjacent section of insulation providing a continuous vapor barrier.

This material is manufactured in 48" wide rolls in 1, 1½ and 2 inch thicknesses. Roll lengths are 100' for 1", 75' for 1½", and 50' for 2" thicknesses. All rolls are furnished in paper wrapped packages with ends sealed.

VAPOR BARRIER SELECTION GUIDE

TYPE	FACING	DESCRIPTION
I	Reinforced Kraft	Double layer kraft laminate, reinforced, puncture resistant, low cost.
II	Foil-Scrim-Kraft (light duty)	Foil-kraft combination with glass reinforcing scrim between. Tough and durable.
III	Aluminum Foil .002" thick	Outstanding vapor barrier, light reflective. Foil laminated to insulation with fire-retardant adhesive.
IV	Foil-Scrim-Kraft	Composed of aluminum foil, glass reinforcing and kraft paper. Facing lamination and facing-to-blanket bond made with fire-retardant adhesive.
V	.004 Vinyl Film Grey or White	Tough flexible vinyl film vapor barrier. Aluminum pigmented plastic vinyl film .004" thick.



USES

Armaglas Standard Duct Insulation is an efficient, easy to apply insulation, for use on air conditioning ducts of all kinds. Due to its excellent resiliency, it readily conforms to uneven or irregular surfaces.

PHYSICAL PROPERTIES

Thermal Conductivity, Btu. hr sq ft (F in)
At 75° F Mean Temperature 0.28

Permeability, Fire Ratings and Density of Facings

TYPE	FIRE RATING*	PERM RATING	DENSITY
I	Combustible	0.05	0.75
II	Combustible	0.05	0.75
III	Flame Spread 15-20	0.01	0.75
IV	Flame Spread 25	0.01	1.00
V	Flame Spread 75	1.30	0.75

* UL Standard 723 (ASTM E 84)

SPECIFICATION COMPLIANCE

Military Spec. MIL-I-22023C, Class 2, Types II, III, IV
Class 3, Type IV

ADVANTAGES

EASE OF APPLICATION - Factory applied facings with tab provided facilitate application.

VARIETY OF FACINGS - A choice of facings provides economy in using only that quality needed for the particular job requirements.

ARMAGLAS FLEXIBLE DUCT LINERS

DESCRIPTION

Armaglas Flexible Duct Liners are available in two forms:
(1) TF Duct Liner — a long continuous textile type fiber, chopped 2 to 4 inches long and firmly bonded in random orientation with a thermo-setting phenolic resin. This product is designed for superior strength and resiliency.
(2) SF Duct Liner — a fine glass fiber bonded with a thermo-setting phenolic resin. These extremely fine diameter fibers provide for a maximum number of air spaces in each pound of insulation.

Both products are coated with flame-resistant neoprene and combine versatility, economic thermal efficiency and superior sound absorption for the duct insulation market. As duct liners they possess the highly desirable qualities of lower resistance to air flow. Compared to other insulations, greater thermal effectiveness can be gained with equal thickness of these commodities. Labor costs are reduced since no expensive, time consuming application methods are required.

Armaglas Duct Liners may be adhered to sheet metal before the ducts are formed. The sheet metal, with liner adhered, can then be formed with the liner already in place.

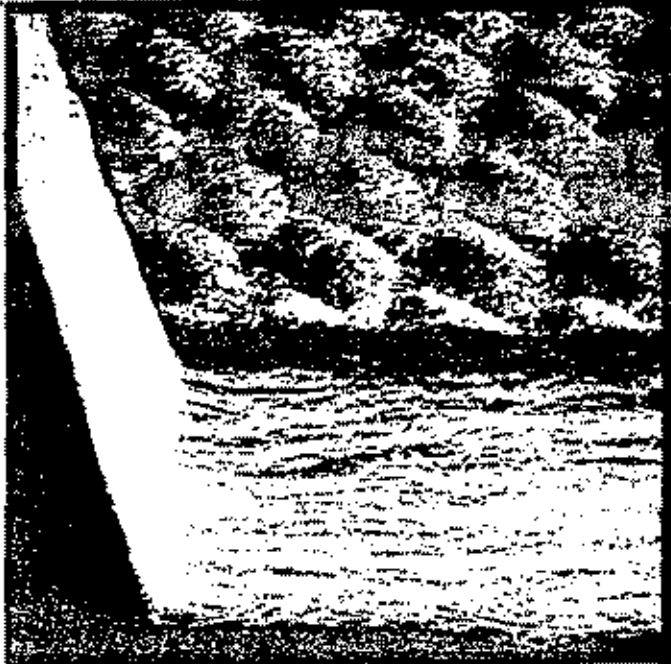
This material is manufactured in 36 and 48 inch widths, and lengths of 50, 100 and 200 feet, depending on density. It is available in 1/2 and 1 inch thicknesses and in densities of 1 1/2, 2 and 3 lbs. per cubic foot. Although this information represents standard sizes, other dimensions are available on request.

PHYSICAL PROPERTIES

Underwriters' Rating (UL Standard 723)

Flame Spread	25
Fuel Contributed	20-40
Smoke Developed	20-40

(Meets requirements of NFPA 90A. NFPA compliance is repeated in a continuous printed strip on the skin side of the insulation).



USES

Armaglas Flexible Duct Liners may be used on ducts operating up to 250°F, and at air flow velocities below 4,000 feet per minute.

SPECIFICATION COMPLIANCE

HH-I-00545: Insulation Felt, Thermal, Mineral Fiber, Duct Lining Material. Type I, Class A.

HH-I-542, Types 1 & 2: Insulation, Felt, Thermal, Mineral Wool (for low temperatures).

* HH-I-558a: Insulation Blanket, Thermal (Mineral Fiber, Industrial Type).

* HH-I-558a supersedes HH-I-542.

ADVANTAGES

MOISTURE ABSORPTION — Both SF and TF will resist water or moisture permanently without chemical breakdown.

SOUND ABSORPTION — These products offer a high degree of sound and vibration absorption.

THERMAL INSULATION — The high thermal insulating coefficients of SF and TF Duct Liners give maximum protection. Refer to charts on reverse side.

ARMAGLAS ULTRA DUCT LINER

DESCRIPTION

Armoglas Ultra Duct Liner is a distinctive one piece fiber glass duct liner with graduated density, providing a skin-smooth interior surface. It is made from long continuous textile type glass fibers firmly bonded in random orientation with a thermosetting phenolic resin. This product delivers the acoustic, air flow, and economic features of "mat faced" and "dual density" products, while retaining the trouble free performance of monolithic construction. Available in roll form, wrapped in Sialkraf paper, in thicknesses of 1/2", 1" and 1 1/2"; slab form, 2" thick in standard cardboard cartons; widths between 24" and 48".

SPECIFICATION COMPLIANCE

HH-1-521C: Type I, Class A.
HH-1-542: Type I, Flexible.
HH-1-00545a: Type I, Flexible, Flat.
HH-1-00545: Type I, Class D.
*HH-1-558a: Form A, Class I, and Form B, Type I, Classes 6 and 7.
MIL-1-21023C: Types I and II, Class 5.
* HH-1-558a supersedes HH-1-542.

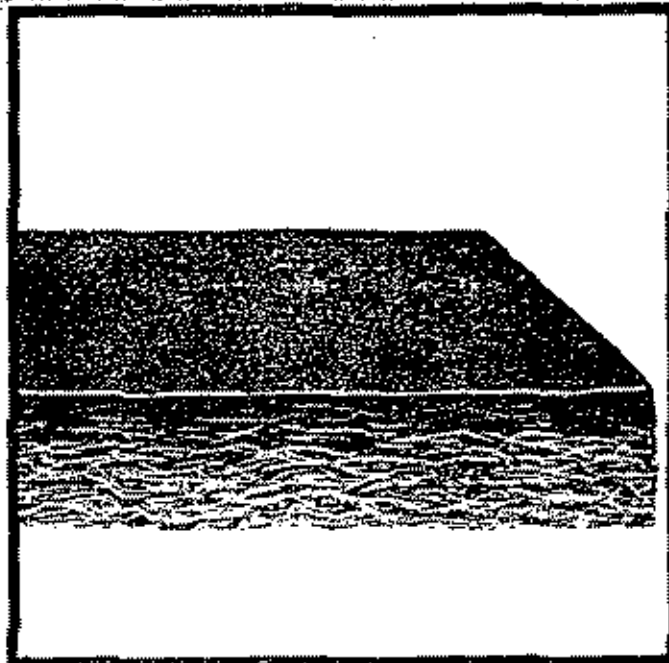
ADVANTAGES

MONOLITHIC CONSTRUCTION — This unique feature prevents the possibility of the material itself separating.

NO COATING — Eliminates a separate coating which is subject to delamination.

EDGE TREATMENT — No necessity of specially treating the edge of this product.

N.F.P.A. REQUIREMENT — Has same flame spread as plain Armoglas under UL test which is 15-25 flame spread, 25-35 fuel contributed, and 0-5 smoke delivered, and is well within the requirements of N.F.P.A. 90A and 90B.



USES

Armoglas Ultra Duct Liner is designed primarily for use as a lining for sheet metal ducts providing both thermal and acoustical insulation, for temperatures as high as 425°F.

PHYSICAL PROPERTIES

Thermal Conductivity, Btu/hr sq ft (F/in)
At 75°F Mean Temperature 0.23
100°F Mean Temperature 0.25
150°F Mean Temperature 0.29

Acoustical Rating

Thick- ness	Sound Absorption at Frequencies						NRC* Spec. Range
	125	250	500	1000	2000	4000	
1/2"	.16	.53	.41	.60	.84	.87	.55-.60
1"	.30	.54	.69	.90	.93	.88	.75-.80

(Riverbank Acoustical Laboratories Tests — Mounting #6)

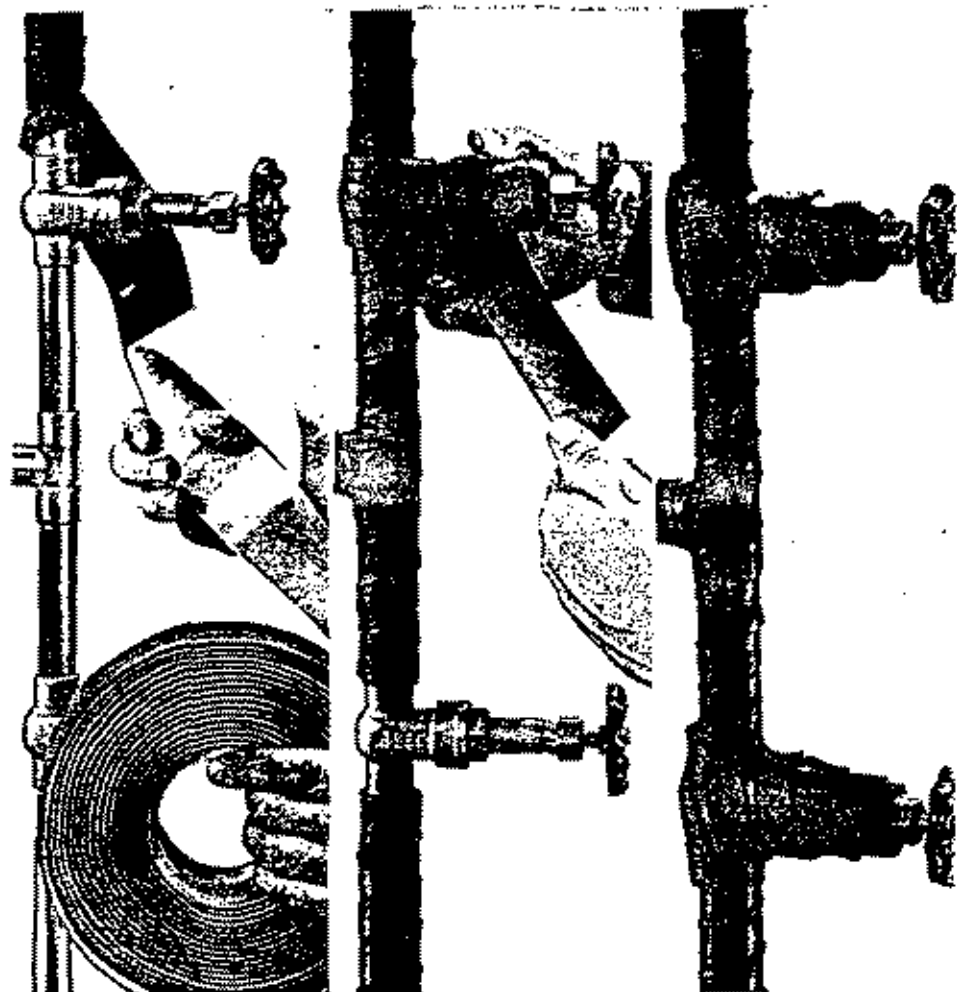
Fire Rating — Meets N.F.P.A. 90A and 90B and has a flame spread classification of less than 25.

Moisture Absorption — Absorbs 1.13% moisture by weight when exposed 72 hours to moisture laden air at 120°F and 96% relative humidity.

Erosion Resistance — No sign of erosion in velocities up to 10,000 ft. per minute. Design velocity of 4,000 ft. per minute under UL 181 is recommended.



ARMSTRONG ARMAFLEX INSULATION TAPE



DESCRIPTION

Armaflex Insulation Tape is made of the same high-quality elastomeric thermal insulation material that is used for Armaflex Pipe Insulation. The tape is supplied in convenient strip form, $\frac{1}{8}$ " thick, 2" wide, and 30' long. Armaflex Tape provides a fast, easy method of insulating pipes and fittings. It is used to prevent condensation dripping from domestic cold water, refrigeration, chilled water, and other cold piping and fittings and to save heat when applied to heated lines that will operate to 180 F.

Armaflex Tape may be used in conjunction with Armaflex Pipe and Sheet Insulation. Its greatest advantage, however, is the ease with which it can be used to insulate short lengths of pipe and fittings in congested or hard-to-reach areas.

Armaflex Tape offers the same high-quality characteristics that have made Armaflex products the best accepted flexible insulations.

ADVANTAGES

Attractive appearance—clean, non-sticky, smooth, black surface gives insulated lines neat, workmanlike appearance. On outdoor installations, excellent protection is provided by Armstrong Armaflex™ Finish, a vinyl lacquer-type coating. Indoors, Armaflex Tape requires no finish, but for a decorative or protective coating, Armaflex Finish is recommended.

Closed-cell structure—seals out air and moisture without need for additional vapor barrier.

Low "k"—excellent insulating prop-

erties retard heat flow, keeping cold lines cold and hot lines hot.

Ozone resistance—special composition makes tape resist cracking from ozone.

Self-extinguishing—when flame is removed, burning stops.

Convenient and easy to use—paper is easily removed, tape wraps easily and quickly, sticks in place firmly. No bands, wires, or additional adhesive needed. Tape is applied in multiple wraps to meet various service requirements. See reverse side for complete application details.

Average properties of Armstrong Armaflex Insulation Tape

Thermal conductivity, Btu/hr sq ft (F deg/in.)

70 F mean temperature	0.27
90 F mean temperature	0.276
Upper temperature use limit, deg F	up to 180
Water vapor permeability, perm-in.	0.1
Water absorption,	
28-day immersion, % by vol.	less than 4
Ozone resistance	good
Fire rating, ASTM D1692-68	SE 1.9 in., 67 sec self-extinguishing by this test

206263

ACANIS INC.**PRODUCT DATA****ARMATEMP
No. 166 CEMENT****DESCRIPTION**

Armatemp No. 166 Cement is a thermally efficient plastic insulation produced from high temperature-resisting spun wool fibers combined with high grade long fiber asbestos and a colloidal clay. Its exceptional plasticity and adhesiveness makes it adaptable for use on all types of surfaces of heated equipment, including many irregular surfaces where the application of other insulation would be almost impossible.

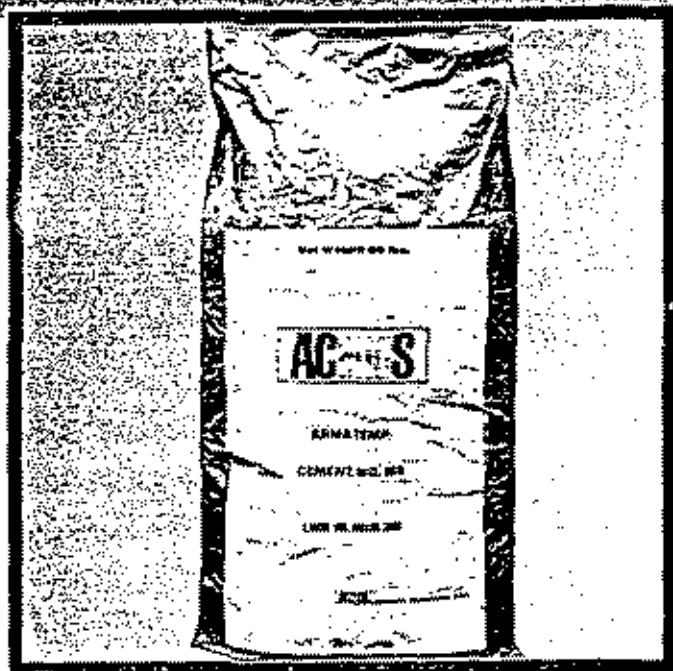
In addition to its natural noncorrosive properties, Armatemp No. 166 Cement also contains a rust inhibitor. Thus, when properly applied to an iron or steel surface, it will not cause or accelerate corrosion. This resistance to corrosive action is applicable whether the cement dries out immediately on a hot surface or air dries.

USES

Armatemp No. 166 Cement is effective up to 1800°F. It may be applied as leveling material over insulating blocks, blankets, etc., as complete insulation on irregular surfaces, as patching or repair material, or for general insulating work.

SPECIFICATION COMPLIANCE

Federal Specification	SS-C-160, Type 3, Grade U
Military Specification	MIL-C-2861C
ASTM Specification	C-195

**PHYSICAL PROPERTIES**

Density, lbs. per cu. ft. (dry)	23
Coverage, sq. ft. per 100 lbs. (1" thick) (dry) *	50
Linear Shrinkage (after heating to 1800°F.), %	3
Fire Resistance	Incombustible
Adhesion to steel, psi	9
Thermal Conductivity (Btu/hr sq ft (F/in)	
At 200°F Mean Temperature	0.58
400°F Mean Temperature	0.70
600°F Mean Temperature	0.80

* Shipped in 50 lb. multi-wall kraft bags

ADVANTAGES

EASY TO APPLY — This means much less time out of service and a quicker, more thorough insulating job. It does not "roll up" behind the trowel or "slide off" the surface. Simply add water according to directions and mix to a trowelable consistency.

206265

AGANDS INC.**PRODUCT DATA****ARMATEMP
No. 10 CEMENT****DESCRIPTION**

Armatemp No. 10 Cement is a dry mixture of high temperature-resisting spun mineral wool fiber, a hydraulic-setting binder and other ingredients, none of which is asbestos. Mixed with water, it can be troweled on any surface with a minimum effort. It sets quickly to form a smooth, white glazed surface. After drying, it may be painted without further treatment.

Because so many features have been "built" into Armatemp No. 10 Cement, pointing, sealing, insulating and finished surface are all accomplished with one coat. When applied outdoors, it will withstand a drenching rain, sleet or snow within two hours after application. This means no extra expense for tarpaulin coverings or delays for drying. For permanent weather application, additional protection is necessary (weatherproofing may be applied directly to the cement).

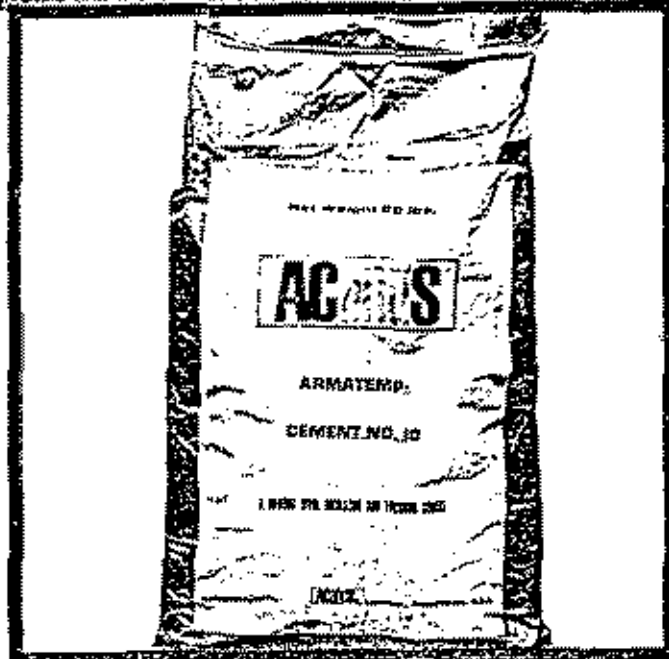
Although this cement requires no finishing treatment when applied indoors, the dried surface may be painted if desired with an oil-base paint and additional coats of water-base paints may be applied successively.

USES

Armatemp No. 10 Cement may be used as a finishing cement over blocks, metal lath surfaces of blankets, pipe covering, other insulating cements, etc. Used alone it affords good insulation value over fittings, valves and irregular surfaces carrying temperatures of up to 1000°F.

SPECIFICATION COMPLIANCE

Military Specification	MIL-C-2908A, Type II
ASTM Specification	C-449-64
Federal Specification	SS-C-160, Type III, Grade F

**PHYSICAL PROPERTIES**

Density, lbs. per cu. ft. (dry)	34
Coverage, sq. ft. per 100 lbs. (1" thick) *	35
Thermal Conductivity (Btu/hr sq ft (F/in)	
At 200 °F Mean Temperature	0.70
400 °F Mean Temperature	0.81
600 °F Mean Temperature	0.96
Volumetric and Linear Shrinkage	Negligible
Fire Resistance	Incombustible

* Shipped in 50 lb. multi-wall kraft bags

ADVANTAGES

ONE COAT IS ENOUGH — Insulating — protecting — finishing — all three jobs done in one quick and easy application. It may be applied up to 3 inch in thickness depending on insulation value required.

WIDE VARIETY OF APPLICATIONS — This product has many varied applications in the heat-control operations of today's industries.

206266

AGANDS

ARMATEMP Loose and Granulated Wool

DESCRIPTION

Armtemp Spun Loose Wool consists of long-fiber mineral wool collected as it comes from the fiber-forming process and packed without regard to form or dimension.

Armtemp Spun Granulated Wool consists of long-fiber mineral wool, collected, nodulated and rolled into granules approximately $\frac{1}{2}$ to $1\frac{1}{2}$ inches in diameter.

USES

Loose Wool — is designed for general use as a hand-packed fill insulation for spaces of irregular shape, dimension and contour. It may also be used under metal jackets around vessels with many pipe connections, around underground steam and heated pipe lines inside tile conduit, and as expansion joint filler in heated refractory walls — such as those of brick kilns. It is suited for heated surfaces up to 1200°F and with suitable vapor barrier, for all low temperature service to -350°F.

Granulated Wool — is designed as a fill insulation for pneumatic application using special blowing machines; also for pouring or hand application. Pneumatic application gives best and most uniform insulating value. Adaptable for complete insulation of spaces of irregular shape or contour, or for application through narrow openings. Used on jacketed vessels, steam-traced or multiple pipe lines in a common casing, and enclosures for valves, fittings and pumps. Granulated Wool can be used in the same temperature range as Loose Wool.



GRANULATED WOOL

LOOSE WOOL

PHYSICAL PROPERTIES

Density, lbs. per cu. ft. (maximum packed)	
Loose Wool (hand)	7 to 9
Granulated Wool (hand)	5 to 7
Granulated Wool (pneumatic)	3 to 5

SPECIFICATION COMPLIANCE

Federal Specification	(Loose) HH-1-521c, Type II
Federal Specification	(Granulated) HH-1-521c, Type III
Commercial Standard	CS117, Loose Wool, Class D
Commercial Standard	CS117, Granulated Wool, Class D

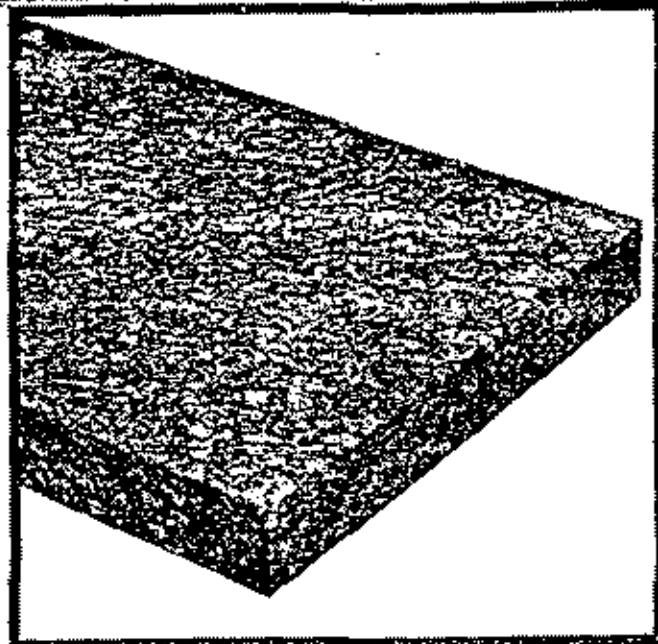
ADVANTAGES

MOISTURE RESISTANT — Fibers not attacked by water.

NONCOMBUSTIBLE — Mineral fibers cannot burn.

LIGHT WEIGHT — In addition to its resiliency, Armtemp Loose and Granulated Wool is light in weight.

CORKBOARD INSULATION



DESCRIPTION

Corkboard Insulation is made of carefully sized granules of pure cork, compressed and baked at very high temperatures into large blocks. In the baking process, the natural resins of the cork are released and serve as an adhesive, firmly bonding the granules together. After the large, homogenous cork block is removed from the mold, it is cut into various accurately sized pieces.

Through its many years of proven and dependable service, Corkboard has become the recognized standard of comparison for all low temperature insulating materials. Its low thermal conductivity, combined with its natural resistance to moisture and other desirable physical characteristics, makes it a most practical and efficient insulating material for every low temperature installation.

The tough walls of the tiny cells, which make up each cork granule, effectively seal moisture out of the material. Also, because of the unique cellular structure of cork, water cannot be drawn through by capillary action.

Corkboard Insulation is manufactured in sizes 12" x 36", 18" x 36", and 24" x 36". Thicknesses of this product are 1, 1½, 2, 3 and 4 inches. This material is generally shipped in cartons containing 72 board feet except for 18" x 36" which is packed 54 board feet to a carton.

PHYSICAL PROPERTIES

Temperature Use Range, °F	-300°F to +200°F
Density, lbs./cu. ft.	6 to 8
Coefficient of Expansion, in./°F	.00005
Thermal Conductivity, Btu-in./ft. ² -hr.-°F	
At -30°F Mean Temperature	0.23
0°F Mean Temperature	0.24
30°F Mean Temperature	0.25
60°F Mean Temperature	0.26
90°F Mean Temperature	0.27
Fire Resistance Rating	Fire Retardant

SPECIFICATION COMPLIANCE

This material equals or exceeds Federal Specification HPL-525 for Corkboard Insulation.

USES

Corkboard Insulation is ideal for use in all low temperature rooms. It can also be used for low temperature equipment, tanks and vessels.

ADVANTAGES

STRUCTURALLY STRONG - The structural strength of Corkboard is excellent. Solid walls of this material can be erected to a height of 14 feet without being held in place by supporting construction. It will not buckle or swell, shrink or warp.

LIGHT IN WEIGHT - The weight of Corkboard Insulation averages from 0.55 to 0.65 lbs. per board foot. It is easily and quickly handled and erected in any kind of low temperature construction.

DECAY RESISTANT - Corkboard has outstanding resistance to decay, mold, or other structural changes.

WILL NOT SETTLE - This rigid material will not settle and pack down, even under the most severe conditions of vibration. It stays permanently in place, leaving no empty spaces where heat and moisture can penetrate.

ACANDIS INC.**PRODUCT DATA**

FLEXIBLE FIBER-GLASS AIR DUCT

DESCRIPTION

Flexible Fiber-Glass Air Duct consists of a spiral-wound wire covered with one inch of fiberglass insulation enclosed in a quality 5-mil thick vapor barrier jacket. This jacket is highly scuff-resistant and makes a very attractive appearance. The interior surface of the duct is coated with a special fire-resistant flexible coating to prevent fiber erosion.

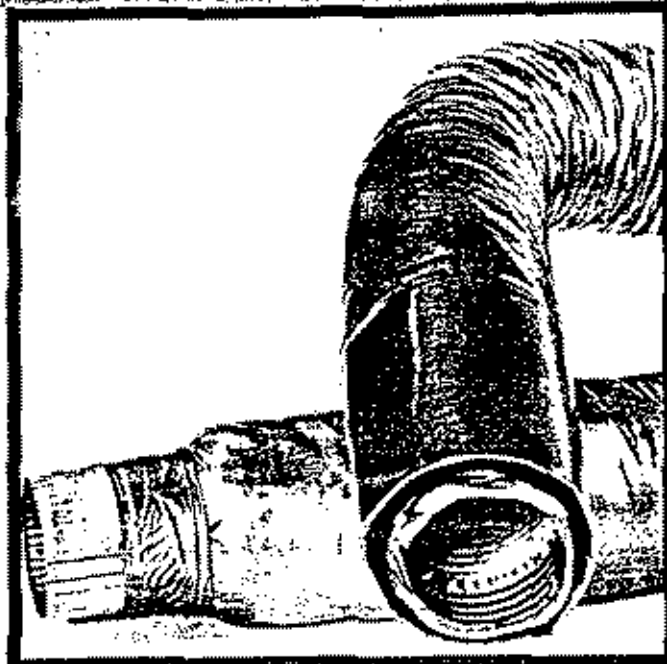
This flexible duct unit combines built-in thermal and acoustical properties. One of the unique features of this product is the extreme flexibility which allows it to be flexed up to 180° without damage.

The male end of a section of Fiber-Glass Air Duct has a standard galvanized sheet metal sleeve attached to the duct. The female end is encapsuled in vinyl film to protect the receiving end. Connectors are standard sizes to fit all standard metal fittings.

Sections of this material are supplied in 7 foot lengths in the following sizes: 4", 5", 6", 7", 8", 9", 10", 12", 14", 16" and 18" inside diameters.

USES

Flexible Fiber-Glass Air Duct can be used for heating and air conditioning systems in residential, commercial and industrial buildings. The recommended maximum air temperature is 250°F. Consult your local AC and S office for specialty applications.

**PHYSICAL PROPERTIES**

Heat Transmission Coeff: U factor @ 75°F mean	.23	
Sound Absorption (at 2500 CPS)		
Straight Section — decibels per foot	3	
With 45° bend — decibels per foot	5	
Temperature Use Limit, °F	250	
Velocities and Pressures		
Recommended maximum velocity (ft. per min.)	2400	
Recommended maximum pressure (water, in.)	1½	
Underwriters' Rating (UL Standard 723)	Outside Diam.	Inside Diam.
Flame Spread	25	25
Fuel Contributed	5	10
Smoke Developed	40	15

ADVANTAGES

EASY TO INSTALL — Minimum skill required to make installation; no tools, bolts, screws or fasteners needed, resulting in great saving of time.

ECONOMICAL — Costs less than insulated metal duct.

LIGHT WEIGHT — Seven foot section weighs only about four pounds.

FLEXIBLE — Elbows are eliminated due to flexibility; sections are easily connected and taped.

206269**AC S**

LANCASTER, PENNSYLVANIA, U.S.A.

MACHINERY ISOLATION CORK

DESCRIPTION

Machinery Isolation Cork is a resilient board composed of pure cork granules, baked and compressed under pressure without a foreign binder. They are strong and durable. The structure of these boards is formed by thousands of minute air cells making a cushion which never loses its elasticity. Unlike felt, rubber or other materials, Machinery Isolation Cork never hardens or sets if loaded within its proper limits. Even after years of service, its efficiency remains undiminished.

It is resistant to sunlight, heat or cold, oil, water and acids normally encountered in industrial applications. It does not decay or rot and resists parasites and vegetation.

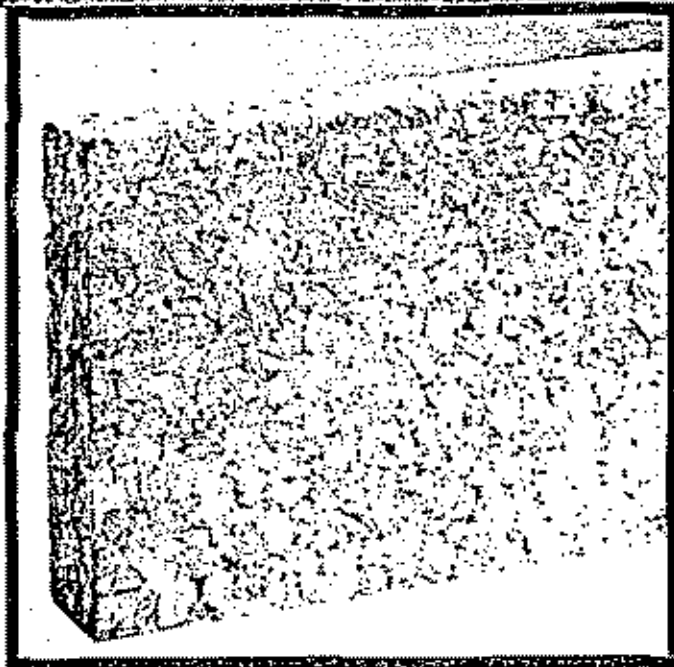
USES

This product is used to reduce noise and isolate vibration from a wide variety of machinery involving both new and relocation installations. It can be used in connection with blowers, compressors, diesel engines, engine generators, lathes, hydraulic presses, etc.

The uniformity and the range of densities and thicknesses in which this material is available permits its scientific application to all service conditions and to virtually any type of machine.

SPECIFICATION COMPLIANCE

No government specification is applicable to this material.



PHYSICAL PROPERTIES

Density, lbs. per cu. ft.	
Standard Density	12 to 16
Heavy Density	16 to 20
Load Capacity, lbs. per sq. ft.	
Standard Density	1500 to 4500
Heavy Density	4500 to 8500
Standard Board Size, inches (both densities)	12 x 36
Standard Board Thickness, inches (both densities)	1 to 4

ADVANTAGES

LENGTHENS MACHINE LIFE - This material prevents rapid depreciation and reduces maintenance costs.

RESISTS WALKING - Resists any tendency of machines to "walk" while in operation.

QUIETER OPERATION - Machinery Isolation Cork insures against a high degree of noise while lessening employee fatigue.

206270

DECORATOR CORK PRODUCTS

DESCRIPTION

The following products are available for interior decorating purposes:

Corkbark Type 12 is made from thin sheets of corkbark of natural color and texture, and laminated to composition cork sheets. When applied to flat wall surfaces, it results in a rugged natural panelized appearance and produces a feeling of warmth.

Decorator Corkboard is composed of fine, closely knit granules of pure cork "welded" together and formed into 36" x 12" x 1/2" thick blocks. The individual blocks, after installation, produce a seamless monolithic textured type of surface, rich dark brown in color.

USES

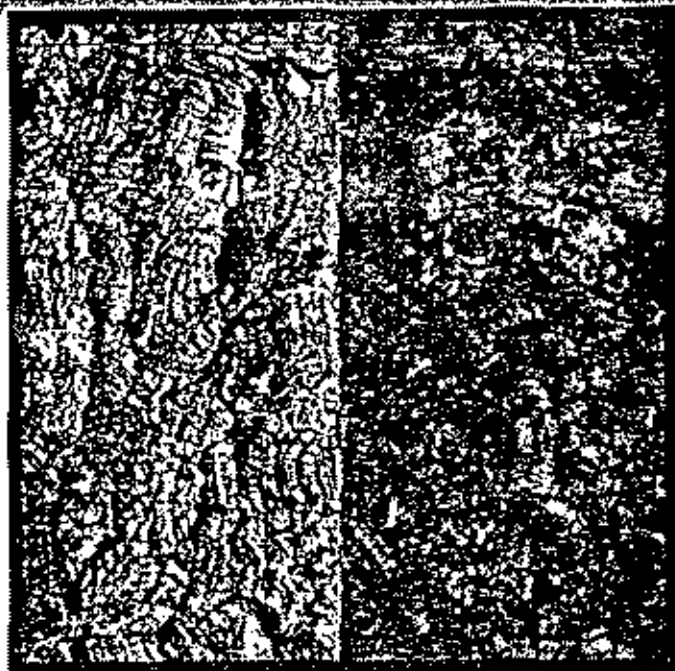
The natural beauty of both of these products can be utilized as dividers in reception areas, as "accent" walls, on ceilings, etc., or generally to enhance the appearance of all types of residential and commercial buildings.

EASY TO INSTALL

These products can be cut easily and accurately with either a sharp knife or a fine-tooth saw. They can be applied directly to any sound substrate such as gypsum plaster, wall board, concrete block, etc., as follows:

Corkbark Type 12 — Use a good commercial grade of "contact-type" adhesive brushed on both surfaces. Coverage — approximately 100 sq. ft. both sides per gallon.

Decorator Corkboard — Use a good commercial grade of "panel board" cement at the rate of about 30 sq. ft. per gallon, spotting the cement on the four corners and center of each board.



CORKBARK TYPE 12

DECORATOR CORKBOARD

PACKAGING INFORMATION

Corkbark Type 12 is packaged in cartons each containing 26 sq. ft. Individual pieces measure 12" x 12" x 1/2" thick.

Decorator Corkboard is packaged in cartons each containing 144 sq. ft. Individual sheets measure 12" x 36" x 1/2" thick. (Other thicknesses and sizes are available on request.)

FEATURES

EASILY CLEANED — These decorator items require little or no maintenance; however, when necessary, are easily cleaned by conventional methods.

ACOUSTICAL VALUE — In addition to their outstanding appearance, these products also possess good sound absorption properties.

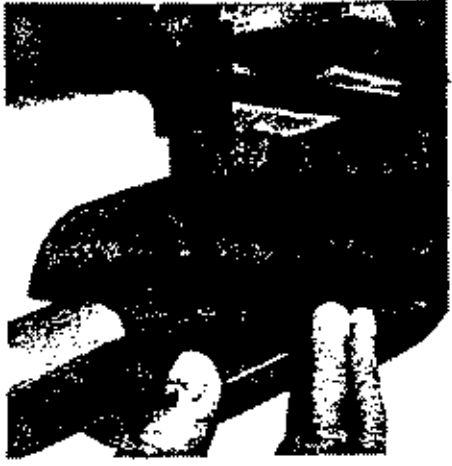
NOTE: Being of natural rather than manufactured origin, these cork products will more dimensionally when subjected to excessive dry or moist air and should therefore be conditioned at least 48 hours in the environment in which they are to be installed to minimize the effect of such movement.

In addition, the Decorator Corkboard possesses a slight "baked wood" odor. While seldom found objectionable, there are no known sealers to completely arrest this odor.

206271

AG S.

LANCASTER, PENNSYLVANIA, U.S.A.



How to apply Armstrong Armaflex® Insulations

206272

INDEX	Page
Armstrong Armallex Products	3
Applying Armallex on New Piping	4-7
Applying Armallex on Existing Piping	8-9
Fitting Covers	10-11
Tools for Making Fittings	10
Adhesive	10
Fitting Covers by Miter Tube	12-13
Fitting Covers by Miter Box	14-15
Pipe Size Table	14
Fitting Covers by Sheet Template	16-17
Sheet Template Chart	16
Fitting Covers for Large "Elbs"	18-19
Fitting Covers for Flanged Valves	20-21
Armallex Sheet on Metal Duct Surfaces	22-23
Pipe Hanger Locations and Application	24-25
Armallex Tape Application	26-27
Armallex™ Finish Application	26-27
Armstrong District Offices	back cover

206273

ARMAFLEX PIPE INSULATION

Armaflex Pipe Insulation is flexible for fast, easy applications. It can be slipped on in tubular form before piping is in place, or slit and snapped over piping already installed. Pre-slit Armaflex is also available, with factory-applied dry adhesive [AD/Armaflex, see pages 8-9] or without adhesive.

ARMAFLEX SHEET INSULATION

Armaflex Sheet is particularly adaptable to insulating ductwork, large pipes above 5" IPS, large tanks of all shapes, and irregular vessels. Special templates are used for accurate sizing of fitting covers (see pages 16-23 for complete details).

RIGID ARMAFLEX PIPE INSULATION

Rigid Armaflex is used at pipe hanger locations and other places where the insulation must resist compression. See section on Rigid Armaflex on pages 24-25.

ARMAFLEX INSULATION TAPE

Armaflex Tape is used in conjunction with Armaflex Pipe and Sheet Insulation to insulate fittings and short lengths of pipe in cramped or hard-to-reach areas. See pages 26-27 for complete application details.

ARMSTRONG 520 ADHESIVE

520 Adhesive is used to seal all seams and butt joints of Armaflex Pipe and Sheet Insulation. See pages 10-11 for complete application instructions.

ARMAFLEX FINISH

Armaflex Finish provides a flexible high-gloss protective finish over Armaflex Pipe and Sheet Insulation. Used outdoors for weather protection, Armaflex Finish can be brushed, sprayed, or roller-coated. See pages 26-27 for application details.

Armstrong Armaflex Insulations are ideal for such mechanical systems as plumbing, hot-water heating, dual temperature, air conditioning, and refrigeration. Pipe insulation and sheet materials are available in both Standard and Fire-Retardant (FR) forms. The application instructions are identical for both types.

Armaflex Insulations are two-purpose materials. They stop condensation on cold lines operating at temperatures down to -40 F when used in recommended wall thicknesses. They save heat on hot lines operating at temperatures to 220 F.

How well Armaflex does these jobs depends on how good a job you do of installing the insulation. By following the simple directions in this booklet, you can do a first-class Armaflex installation job every time.

JOB PREPARATION IS IMPORTANT

Rule 1.

Apply Armaflex Insulations only when lines are clean, dry, and unheated.

Rule 2.

DO NOT COMPRESS Armaflex at joints, studs, columns, ducts, etc. This is important because any insulation loses some of its insulation value if it is compressed. On cold lines, condensation may occur where the insulation is compressed.

Rule 3.

DO NOT CROWD Armaflex-covered lines. Space piping to allow for free circulation of air. Air movement is an extra safeguard against condensation on cold lines, especially in hot, humid weather.

Rule 4.

NEVER STRETCH ARMAFLEX.

Always use the proper-size Armaflex for a particular-size pipe. Do not stretch it over the pipe. Use pieces of Armaflex that are at least as long as the section of pipe to be insulated.

Butt-end joints can then be made without stretching the lengths of Armaflex, and there will be no straining of the surface and joints.

The slip-on method

The slip-on method is used when you can insulate new piping before it goes up or while it's being installed.

1. All you do is slip the pipe insulation over the pipe or copper tubing. The ID of Armatflex Pipe Insulation is coated with a powdered lubricant, making it easy to slip the insulation over the pipe.

(NOTE: Small amounts of powdered lubricant may enter open ends of pipe or tubing. This dust must be kept out of refrigeration systems. Plug open ends before slipping on Armatflex Pipe Insulation.)

2. Since Armatflex tubing is flexible, it will follow bends in tubing and can be slipped right over bent tubing, 45° sweat ells, and couplings.

3. At sweat ells over 45°, cut the insulation, and butt against each side of the fitting. A fitting cover will be installed later over these fittings. (See pages 10-11 for more information.)

4. Use a length of Armatflex as long as or a trifle longer than the section of piping to be covered. NEVER STRETCH ARMAFLEX.

5. Apply brush coating of 520 Adhesive to both butt ends to be joined.

6. When adhesive has dried until non-tacky to the touch, press ends of Armatflex firmly together.



206276

Sweat fittings on new pipe

1. Before fitting is soldered, push the Armaflex back on the tubing, and hold in place with clamps applied to the tubing. Remove clamps after fitting has been soldered and has cooled. Note that sweat fittings are insulated with the same size Armaflex as used on the tubing.

NOTE:

Apply clamps to tubing, not to Armaflex.
Insulate heavy bronze fittings with fitting covers fabricated and applied as directed under screwed-type fittings at right.
The solvent in 520 Adhesive is flammable, so take precautions during soldering. Always close the container tightly when not using; keep it away from heat or sparks.

2. Fabricate fitting cover from properly miter-cut pieces. (See pages 10-15.) After adhesive has dried, carefully slit the fitting cover.

3. Snap fitting cover in place over the fitting.

4. After the line has been tested, apply brush coating of 520 Adhesive to all joint surfaces.

5. When the adhesive has dried until non-tacky to the touch, press joints firmly together.

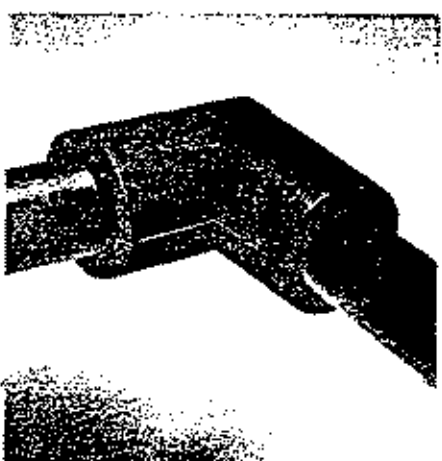
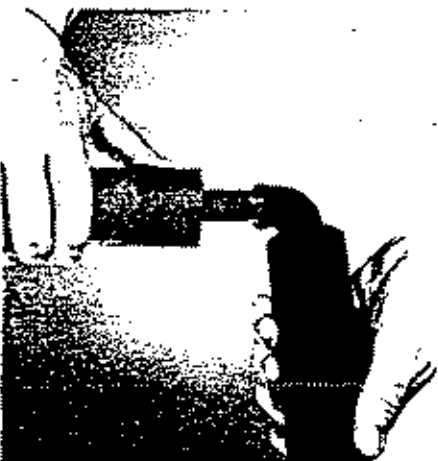
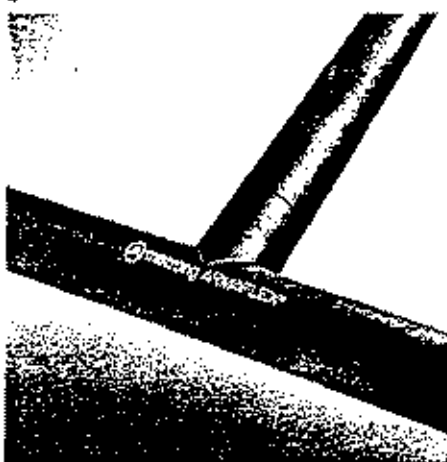
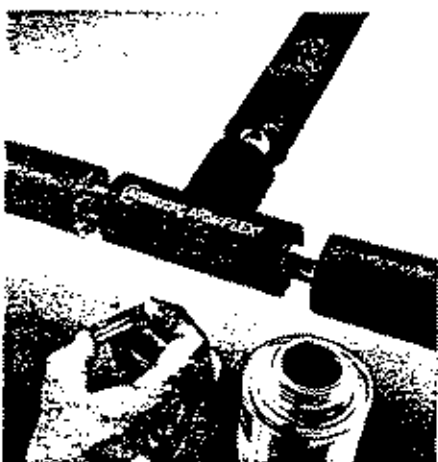
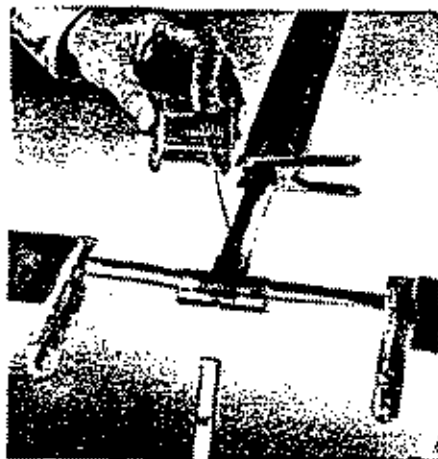
Screwed fittings on new pipe

Insulate screwed fittings with sleeve-type fitting covers made up from Armaflex Pipe Insulation having an inside diameter large enough to overlap the insulation on the straight piping next to the fitting. See chart on page 14 for sleeving sizes.

6. Armaflex is slipped over the line and butted tightly against the fitting.

7. Fabricate fitting covers from miter-cut pieces of Armaflex. Slit the completed cover, and snap it in position over the fitting. (Fitting cover should overlap the pipe insulation by at least one inch.)

8. After the line has been tested, complete the application by cementing the slit joint of the fitting cover with 520 Adhesive. When adhesive has dried until non-tacky to the touch, press the joint firmly together. Also, cement the 1" overlap with 520 Adhesive by forcing the brush between the two surfaces.



206278

The snap-on method

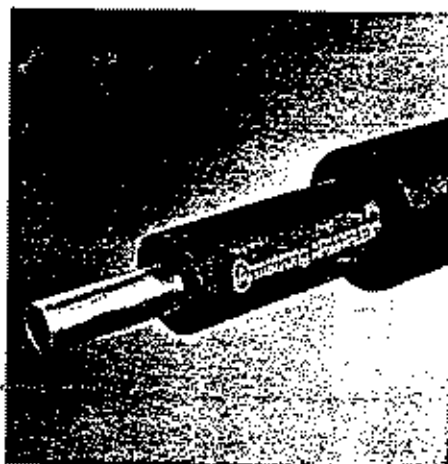
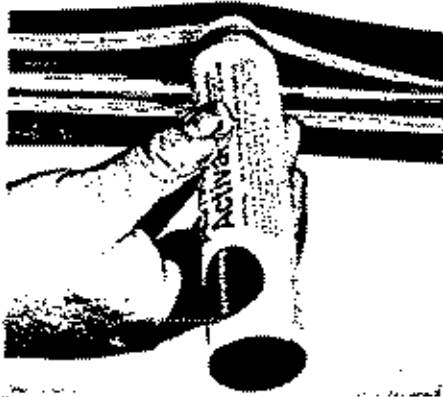
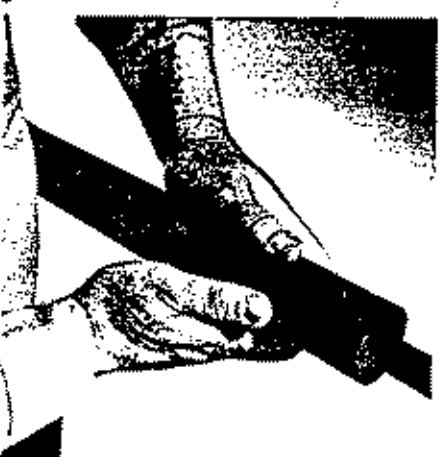
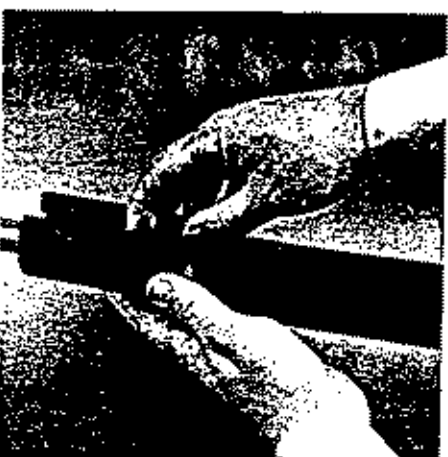
The snap-on method is used when pipe or copper tubing is insulated after it has been installed and connected.

You have three options for such installations: unslit tubular Armatflex Pipe Insulation; factory pre-slit Armatflex; or AC/Armatflex, a pre-slit tubing which has a factory-applied adhesive on its longitudinal seams and butt ends. Installation is as follows:

1. With unslit tubular Armatflex Pipe Insulation, use a sharp knife to slit the Armatflex lengthwise on one side.
2. Snap the insulation over the pipe. This step is the same for all three options.
3. Except for AC/Armatflex, brush-coat slit surfaces with Armstrong 520 Adhesive. Push the insulation down over pipe to hold adhesive-coated surfaces apart while the adhesive dries.
4. Allow the adhesive films to air-dry until dry to touch but tacky under slight pressure before joining surfaces. Test with back of fingernails as shown.
5. If the insulation should become stuck to the pipe after applying adhesive, break the insulation loose by running a finger down the pipe as shown in the illustration.
6. When the adhesive has air-dried, apply moderate pressure to entire joint to assure a tight, vaporproof bond.
7. With AC/Armatflex, wet the adhesive film with Armstrong Activator. Detailed instructions are supplied in each carton of AC/Armatflex and also printed on the Activator container label. Test for tackiness as in Step 4, then apply pressure to seams as in Step 6.
8. In double-layer work when using the snap-on method, apply Armatflex with side and end joints staggered where possible.

Fitting covers on existing pipe

Both sweat-type and screw-type fitting covers for the snap-on Armatflex method are installed in the same procedure as explained on pages 10-15.



206260

Fitting covers

Read the section at right entitled "Tight Joints" before starting work.

Use unslit Armaflex when making up covers for fittings.

Make up a group of covers at one time instead of cutting and assembling each one as you come to it.

Covers for both sweat and screwed fittings are made up exactly the same way.

When larger sizes of Armaflex Pipe Insulation are shipped with cardboard tubes inside, leave the tubes in when making your miter cuts. They keep the covering round, and cuts are more accurate.

On sweat fittings, use the same-size Armaflex for covers that you use to insulate the tubing.

On screwed fittings, make up fitting covers from Armaflex with an inside diameter large enough to overlap the insulation on the pipe next to the fitting. Make the fitting cover long enough to overlap pipe insulation by a minimum of one inch on each side. (See sleeving sizes on page 14.)

On large-size weld pipes (3" IPS and above) and screwed iron pipes 2", 2½", and 3", fitting covers can be fabricated from Armaflex Sheet Insulation. Sheets can be cut easily and accurately, using a sharp knife and a template. See page 16 for template size and pattern number.

Tools for making fitting covers

1. Miter Tubes

Armstrong Armaflex Miter Tubes are the fast method for fabricating fittings for the most commonly used copper tubing sizes. They are easy to use and make 45° and 90° elbows, tees, and cross fittings a snap to do.

2. Miter Box

A sturdy miter box and a knife with serrated edges can do most large-size pipe fittings up to 5" IPS. The miter box can also be used on smaller size pipe fittings as an alternate to the miter tubes.

3. Sheet Templates

For screwed iron pipe fittings 2", 2½", and 3" IPS and for long radius weld iron pipe fittings 3" IPS to 16" IPS, use an Armstrong Armaflex Sheet Template. These sheet templates take all the guesswork out of insulating 45° ell, 90° ell, and tee fittings. Available at any Armstrong office, each template set comes with complete application instructions. (See pages 16-17 for details.)

Tight joints mean a trouble-free job

Use Armstrong 520 Adhesive only. This vapor-barrier adhesive has been developed for use with Armaflex insulations, and if you use it properly, you'll get a joint that will stay tight.

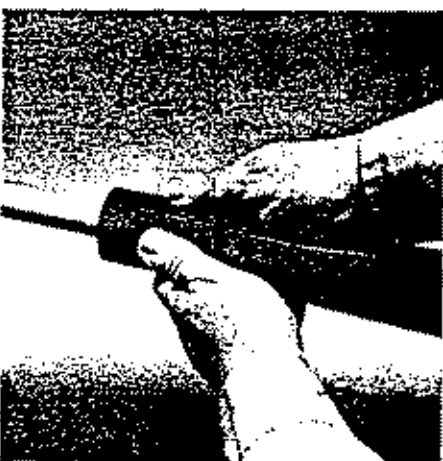
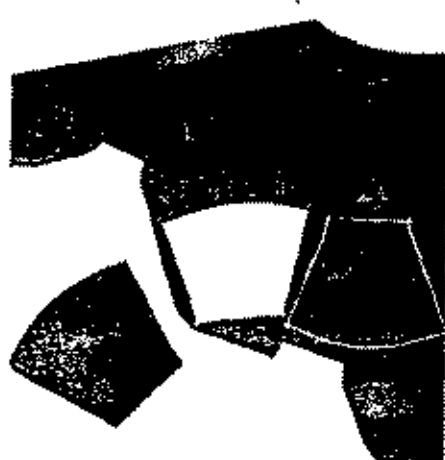
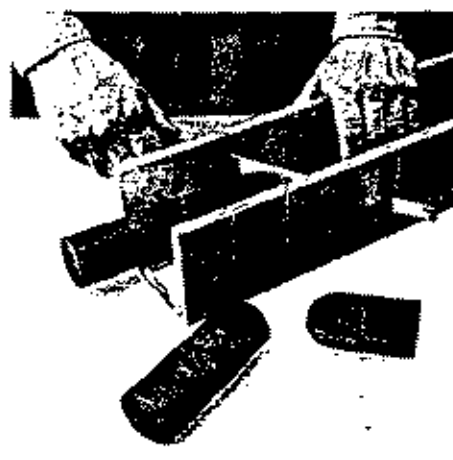
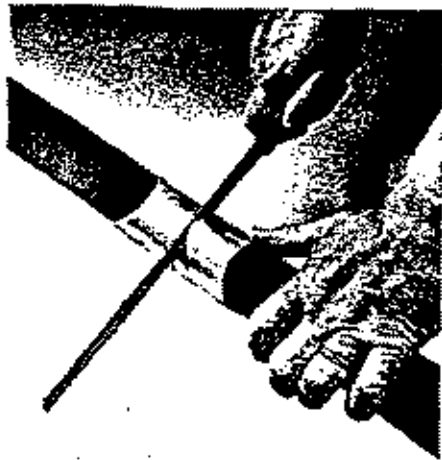
4. Agitate 520 Adhesive before using, and apply only to clean, dry, oil-free surfaces. Apply at air temperatures above 40 F. Open time of more than 20 minutes must be avoided.

5. For best results, the adhesive should be brush-applied in a thin, uniform coat to both surfaces. Do not install Armaflex with 520 Adhesive on hot pipes.

6. Allow the adhesive to dry until dry to the touch but tacky under slight pressure before joining surfaces.

7. 520 Adhesive bonds instantly on contact, so pieces must be positioned accurately. Press joints together firmly, making sure that you get a bond all the way through the joint, not just at the outer edges.

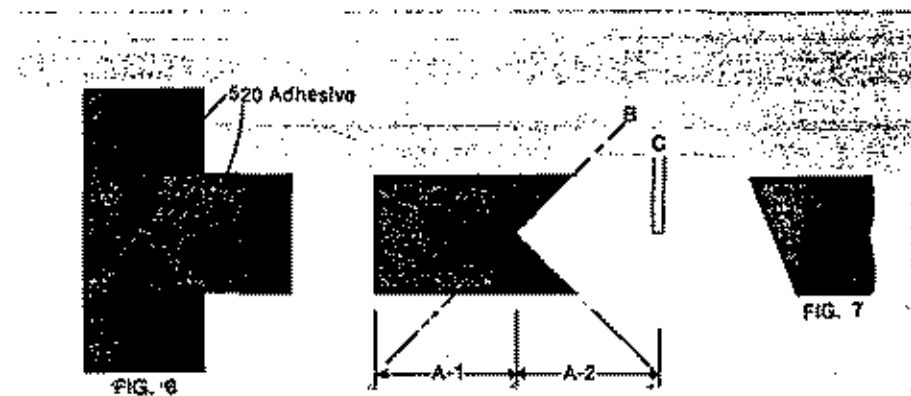
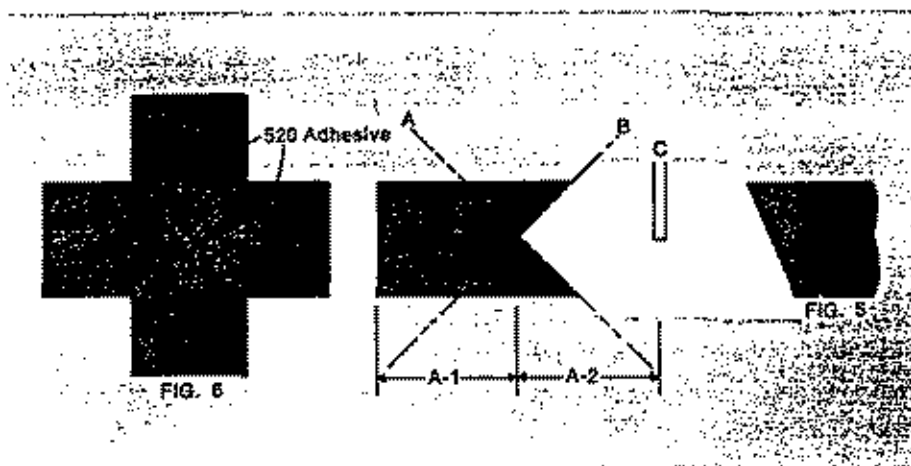
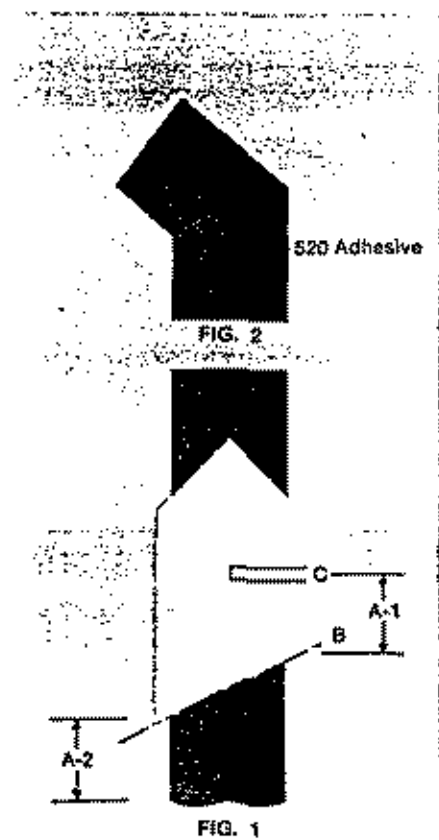
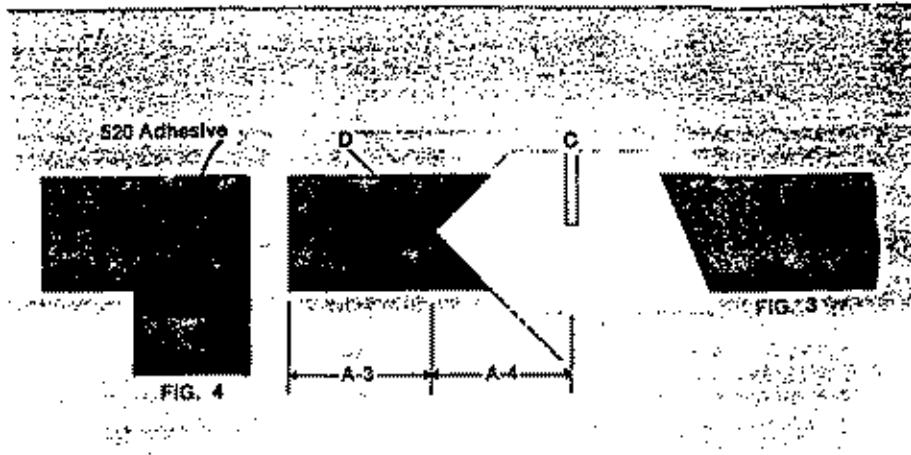
NOTE: When hot lines rather than cold lines are involved, allow a minimum of 36 hours before circulating hot water into insulated lines having adhesive-bonded slit seams.



206282

How to use Armstrong Armalflex miter tubes

1. Select the tube that most closely fits the size of Armalflex to be fabricated. See labels on each individual tube.
2. Use a sharp knife to make clean, accurate cuts.
3. Start fabrication of fitting cover by pulling Armalflex Pipe Insulation through the miter tube far enough that the fitting legs will be of equal length. (See instructions that follow.)
4. Adhere all joints with 520 Adhesive.
5. To make up a 45° elbow, pull Armalflex through the 22½° angle end of the miter tube so that A-1 equals A-2 (Figure 1). Cut along B and at center slot C. Cement the two equal parts together (Figure 2).
6. To make up a 90° elbow fitting cover, pull Armalflex through tube so that dimension A-3 equals A-4 (Figure 3). Cut along line D and at slot C. Cement the two equal parts together (Figure 4).
7. To make up a cross fitting cover, pull Armalflex through the tube so that A-1 equals A-2 (Figure 5). Cut along lines A and B and at slot C. Repeat, and you will have the four pointed pieces needed. Cement the four equal pieces together (Figure 6).
8. To make a tee cover, cut two pieces as shown in Figure 5 and one piece as shown in Figure 7. In Figure 7, pull the Armalflex through the tube so that A-1 equals A-2 and cut along line B. Do not cut at line C unless you are making two fitting covers. Cement the three pieces together (Figure 8).



206284

ARMAFLEX NOMINAL THICKNESS STANDARDS AND SLEEVING SIZES

How to use the miter-box method

1. Use a sharp knife, preferably one with serrated edges, or a hacksaw blade. Note the long length shown in photo.
2. On smaller pieces of Armaflex Pipe Insulation, brace the piece to be cut with your hand as illustrated. This will insure a clean and accurate cut.

Armaflex Insulation Sizes	Copper Tubing		Nom Iron Pipe Size (in.)	Actual Minimum* Wall Thickness (inches)			Sleeving Sizes†		
	Nom Size (in.)	OD Size (in.)		Nom 1/4"	Nom 1/2"	Nom 3/4"	Nom 1/4" Wall	Nom 1/2" Wall	Nom 3/4" Wall
3/4" ID	1/4	3/4	—	0.30	0.36	0.59	1 1/4" ID	1" IPS	1 1/2" IPS
1 1/2" ID	3/4	1 1/2	1/4	0.30	0.38	0.62	1" IPS	1 1/4" ID	1 1/2" IPS
1 3/4" ID	1 1/2	1 3/4	3/4	0.30	0.40	0.66	1" IPS	1 1/4" ID	2 1/4" ID
2 1/4" ID	1 3/4	2 1/4	—	0.30	0.42	0.68	1 1/4" ID	1 1/2" IPS	2" IPS
2 1/2" ID	2	2 1/2	1 1/2	0.30	0.43	0.70	1 1/4" ID	1 1/2" IPS	2" IPS
2 3/4" IPS	—	—	1 1/2	0.30	0.44	0.73	1 1/2" IPS	2 1/4" ID	2 1/2" IPS
1 1/2" ID	1	1 1/2	—	0.30	0.45	0.74	1 1/2" IPS	2" IPS	2 1/2" IPS
1" IPS	—	—	1	0.30	0.46	0.76	2 1/4" ID	2" IPS	3 1/4" ID
1 1/4" ID	1 1/4	1 1/4	—	0.30	0.46	0.77	2 1/4" ID	2" IPS	3 1/4" ID
1 3/4" ID	1 1/2	1 3/4	1 1/4	0.35	0.47	0.79	2" IPS	2 1/2" IPS	3" IPS
1 1/2" IPS	—	—	1 1/2	0.35	0.48	0.82	2 1/2" IPS	3 1/4" ID	3 1/2" IPS
2 1/4" ID	2	2 1/4	—	0.35	0.49	0.83	3 1/4" ID	3" IPS	3 1/2" IPS
2" IPS	—	—	2	0.35	0.50	0.85	3" IPS	3" IPS	4" IPS
2 1/4" ID	2 1/2	2 1/4	—	0.35	0.50	0.86	3" IPS	3 1/4" IPS	4" IPS
2 1/2" IPS	—	—	2 1/2	0.35	0.51	0.87	**3 1/2" IPS	4 1/4" ID	• 5" IPS
3 1/4" ID	3	3 1/4	—	0.35	0.51	0.88	**3 1/2" IPS	4" IPS	• 5" IPS
3" IPS	—	—	3	0.35	0.52	0.89	**4" IPS	• 5" IPS	5" IPS
3 1/2" ID	3 1/2	3 1/2	—	—	0.52	0.90	—	• 5" IPS	5" IPS
3 3/4" IPS	—	—	3 1/2	—	0.53	0.91	—	• 5" IPS	Sheet
4 1/4" ID	4	4 1/4	—	—	0.53	0.92	—	• 5" IPS	Sheet
4" IPS	—	—	4	—	0.53	0.93	—	Sheet	Sheet
5" IPS	—	—	5	—	0.54	0.95	—	Sheet	Sheet

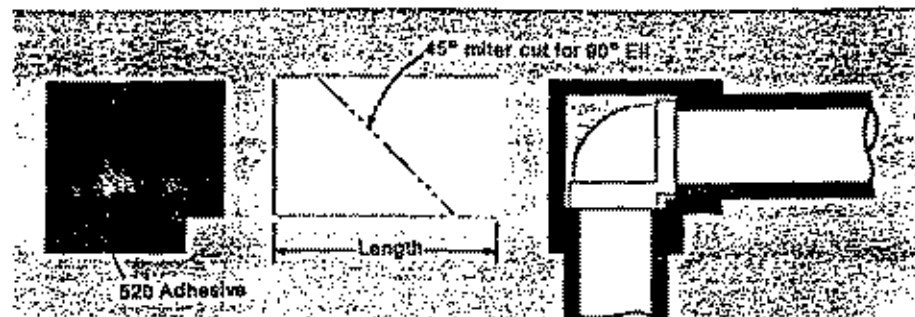
*Wall thickness tolerances — 0, + 1/16" except Nom 3/4" thickness 1/2" IPS thru 5" IPS is — 0, + 1/16".

†Based on average wall thicknesses developed from factory tolerances.

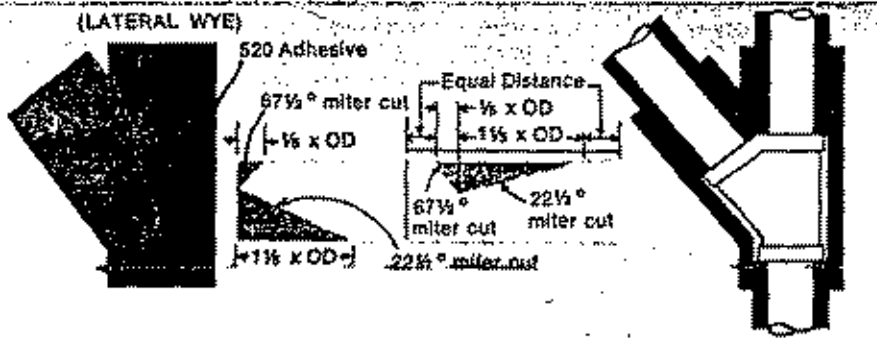
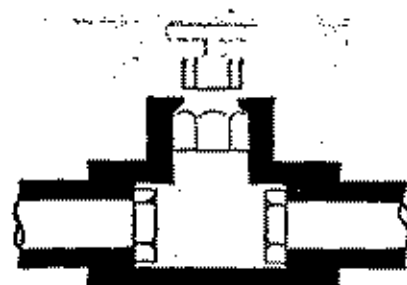
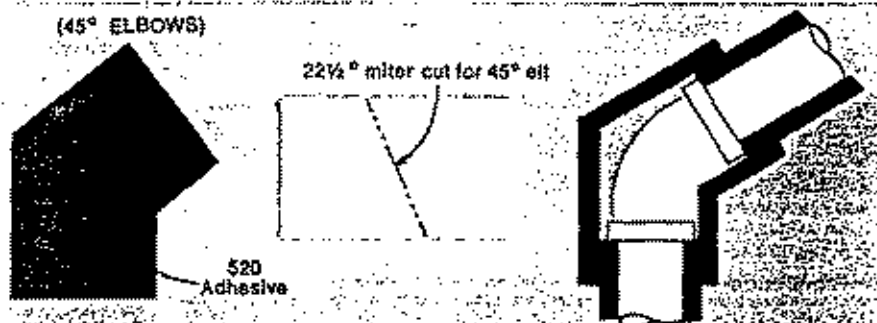
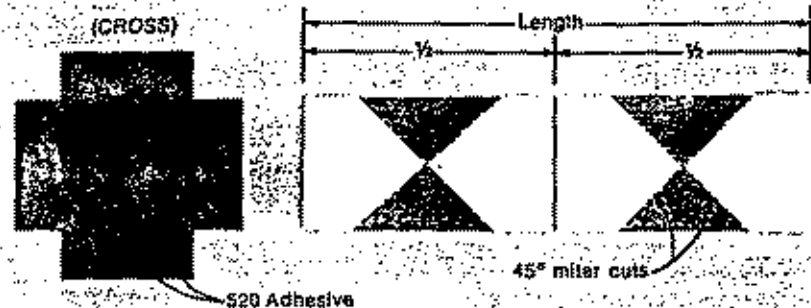
• May require cutting.

**Available Nom 1/4" or Nom 1/2" thickness only.

206285



(TEE & VALVE)



206286

TEMPLATES ARE AVAILABLE FOR SCREWED AND LONG RADIUS FITTINGS

*Weld Fittings for the Iron Pipe Sizes Shown Below in
Nominal 1/4", 1/2" and 3/4" Armaflex:*

screwed

Pipe Size	Nom 1/4"	Nom 1/2"	Nom 3/4"
IPS	45° 90° T	45° 90° T	45° 90° T
2"	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
2 1/2"	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
3"	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
weld			
3"		✓ ✓ ✓	✓ ✓ ✓
3 1/2"		✓ ✓ ✓	✓ ✓ ✓
4"		✓ ✓ ✓	✓ ✓ ✓
5"		✓ ✓ ✓	✓ ✓ ✓
6"		✓ ✓ ✓	✓ ✓ ✓
8"		✓ ✓ ✓	✓ ✓ ✓
10"		✓ ✓ ✓	✓ ✓ ✓

There are nine template sheets each containing the pattern for the templates indicated. The sheet containing the size template required may be obtained from the nearest Armstrong office.

Template number and description

AT Set A

Screwed 45° Elbows Nominal
1/4" — 1/2" — 3/4" Walls — 2", 2 1/2", 3" IPS

AT Set B

Screwed 90° Elbows Nominal
1/4" — 1/2" — 3/4" Walls — 2", 2 1/2", 3" IPS

AT Set C

Screwed Tees Nominal 1/4" — 1/2" — 3/4"
Walls — 2", 2 1/2", 3" IPS

AT Set D

Weld 45° Long Radius Elbows Nominal 1/2"
Wall — 3" IPS thru 10" IPS

AT Set E

Weld 45° Long Radius Elbows Nominal 3/4"
Wall — 3" IPS thru 10" IPS

AT Set F

Weld 90° Long Radius Elbows Nominal 1/2"
Wall — 3" IPS thru 10" IPS

AT Set G

Weld 90° Long Radius Elbows Nominal 3/4"
Wall — 3" IPS thru 10" IPS

AT Set H

Weld Tees Nominal 1/2" Wall — 3" IPS thru 10" IPS

AT Set I

Weld Tees Nominal 3/4" Wall — 3" IPS thru 10" IPS

Armaflex sheet insulation

Application to Pipes

1. Apply Armaflex Sheet Insulation on pipes larger than 5" IPS. Cut the sheet insulation to proper width, permitting it to fit loosely without stretching around the pipe. (If pipe size is 6", 8", or 10", Pre-cut Armaflex Pipe Insulation can be used.)

2. Brush-coat both surfaces of the lengthwise seam with 520 Adhesive. When adhesive has dried until non-tacky to the touch, wrap the sheet around the pipe, and seal the seam by pressing the surfaces firmly together. Join butt joints between individual sections using 520 Adhesive.

Application to Fittings

3. Fitting covers are easily made, using templates designed specially for screwed fittings 2", 2 1/2", and 3" and long radius weld fittings from 3" to 10" IPS. (See chart at left for correct size.)

NOTE: Templates should be traced on stiff paper, sheet metal, or hardboard and cut to form a reusable pattern.

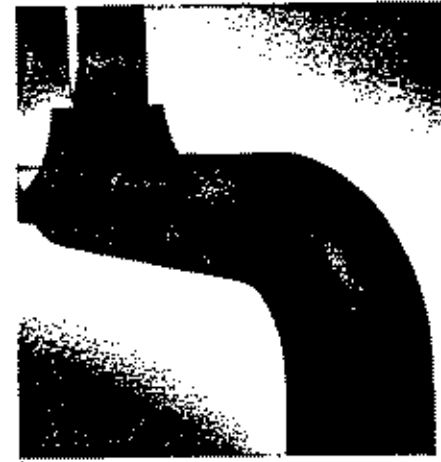
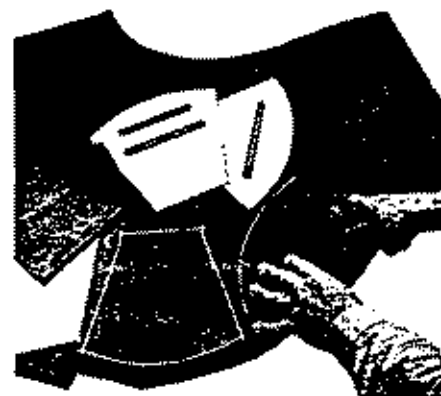
4. Since each template for 45° and 90° fits is shown as a symmetrical half of the full fitting cover, the complete fitting cover is formed by adhering two halves together at the long outer arc. Coat both surfaces with 520 Adhesive. When the adhesive has dried until non-tacky to the touch, seal the seam by pressing the surfaces firmly together throughout, not just at the edges. (The tee template is a symmetrical half, but, in this case, both halves are laid out together to form the proper outline of the fitting cover.)

5. Snap the formed cover in place over the fitting. Adhere the mating surfaces of the inner arc joint with 520 Adhesive. Join the straight pipe covering to the fitting cover, making sure to coat both the pipe section butt surface and the fitting cover butt surface.

NOTE: On screwed fittings, select the proper template from the above. Notice that the screwed fitting cover templates allow for the 1" minimum overlap on the straight pipe next to the fitting. Remember to cement this 1" overlap with 520 Adhesive by forcing the brush between the two surfaces.

6. When the adhesive has dried until non-tacky to the touch, press surfaces firmly together to seal.

206287



45° ELL



90° ELL



TEE

206288

Method for generating
templates for fitting
covers on large "ells"
(10" IPS to 24" IPS)

1. Establish R_i (inside radius)—use
chart below—

Long Radius	90° Ell Size	Short Radius
9 1/4"	10"	4 1/4"
11 1/4"	12"	5 1/4"
14"	14"	7"
16"	16"	8"
18"	18"	9"
20"	20"	10"
24"	24"	12"

2. Determine (C) circumference by
measuring the outside of the elbow with a
strip of scrap Armaflex Sheet. Then
establish R_o (outside radius).

Outside radius:

The sum of inside radius
plus half the circumference

3. Lay out on Armaflex Sheet (half fitting
cover).

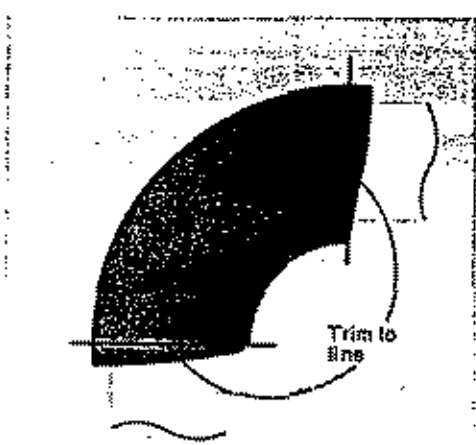
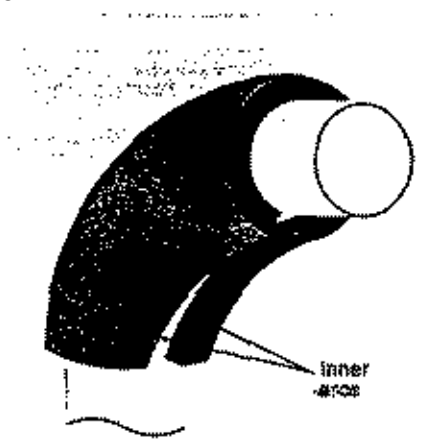
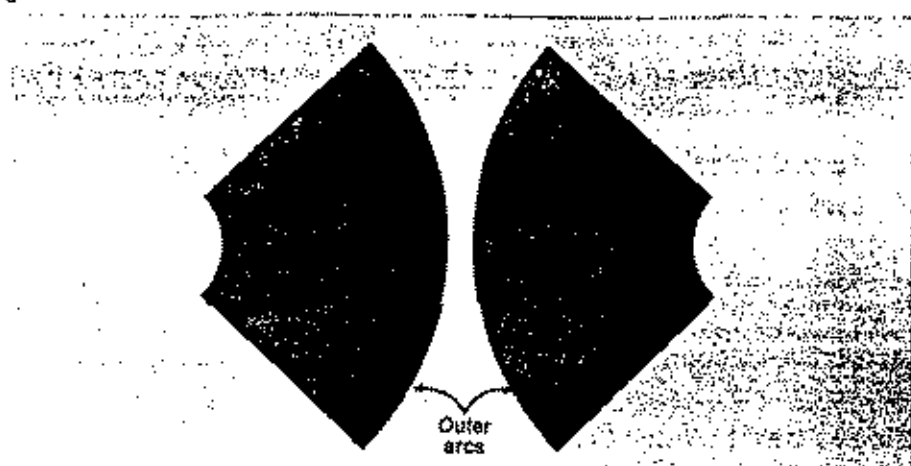
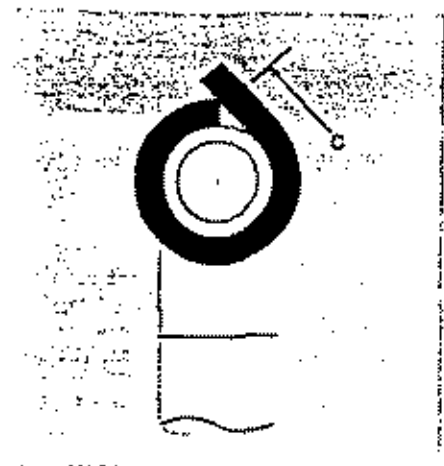
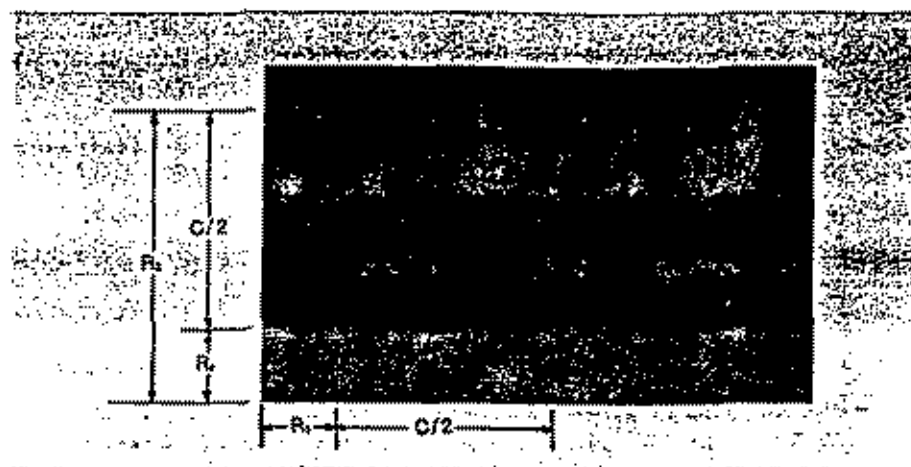
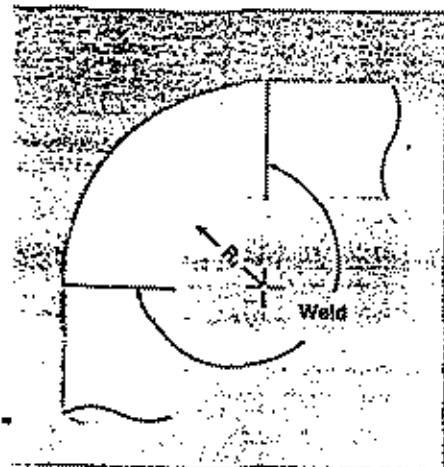
4. Make two halves of elbow cover as
shown in Figure 4, and adhere them
together at the outer arcs with 520
Adhesive.

As arcs are adhered, the cover will dish
upward. After seam is squeezed together
on one side, "dish" the cover the opposite
direction, and squeeze the other side of
seam.

5. Install fitting cover over elbow, and
adhere inner arcs with 520 Adhesive.

6. Square fitting cover ends after
installation.

Place metal band or metal strap around
fitting cover, and scribe a straight line.
Then trim with a sharp knife.



206290

Method for generating templates for flanged valve fitting covers

These instructions are meant to serve as a guide to insulating flanged valves with Armaflex. Because of the variety in shape and design of flanged valves, some modifications to these instructions may be necessary.

1. Cut Armaflex donuts, and install at pipe/flange and valve stem areas.
2. Use scrap strips of Armaflex Sheet to build the body of the valve out until it is the same dimension as the OD of the flanges. Adhere the Armaflex strips directly to the valve body, using 520 Adhesive.
3. Use a strip of Armaflex Sheet to wrap around the flange to measure the circumference or length of the Armaflex Sheet needed for the valve body.
4. Cut Armaflex Sheet for the valve body.
 - A. This length is determined as shown in Figure 3.
 - B. This length is obtained by measuring the distance between the outer edges of the Armaflex donuts which are located at the flanges.
 - C. To fit around the valve throat, a semi-circle is cut from each end of the Armaflex Sheet. The diameter of semi-circle is determined by the measurement across the throat of the valve at a point under the flange where the stem enters.
5. The Armaflex Sheet, cut out as shown in Figure 4, is installed around the valve body and the joint adhered with 520 Adhesive.

At this time the Armaflex donuts at the ends of the fitting should be sealed to the fitting body insulation with 520 Adhesive. This is accomplished by run-

ning the adhesive brush between outer circumference of the Armaflex donut and the inside of the ends of the body insulation (a wet joint).

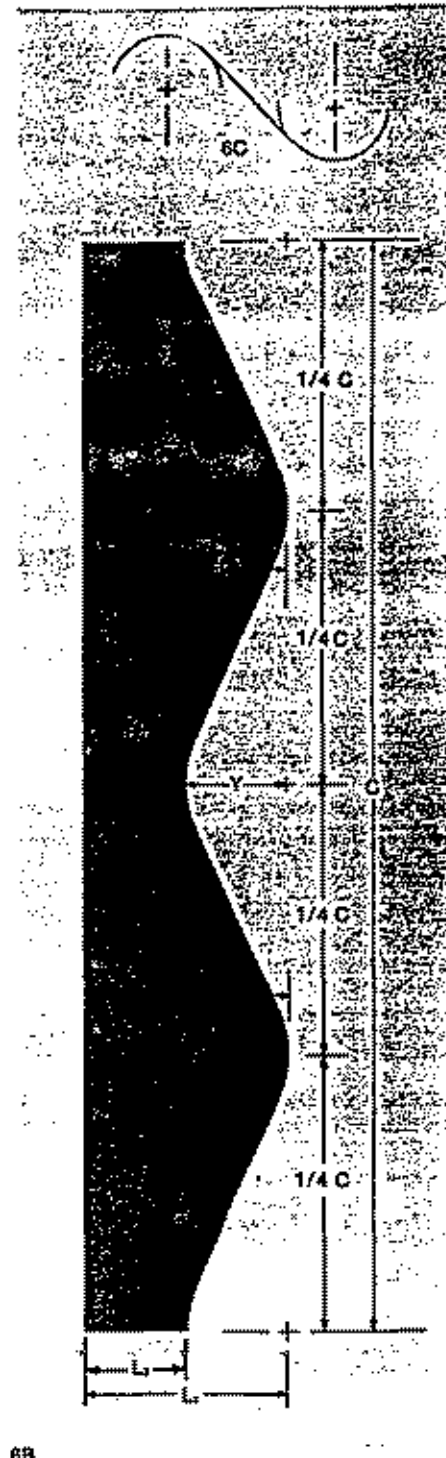
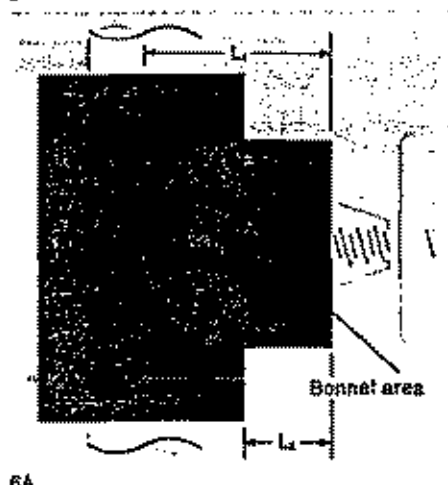
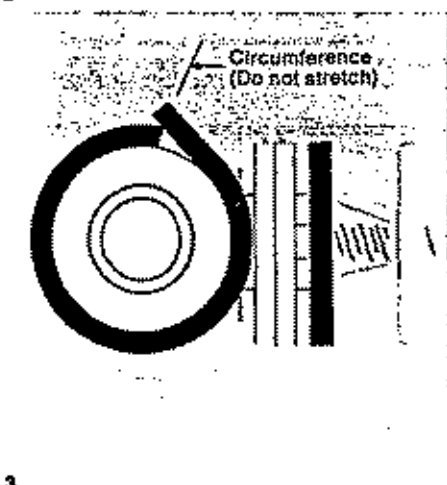
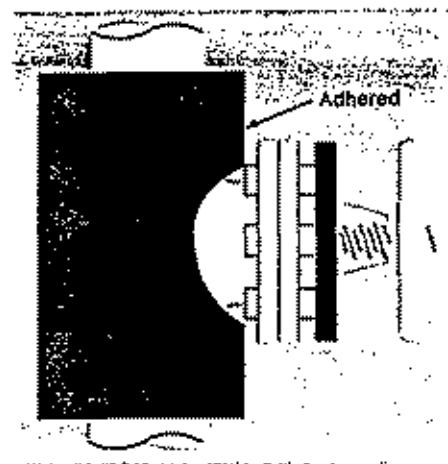
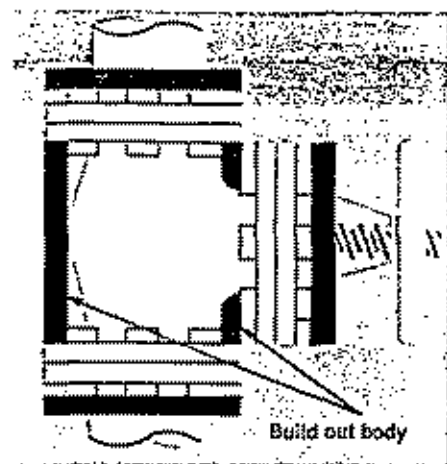
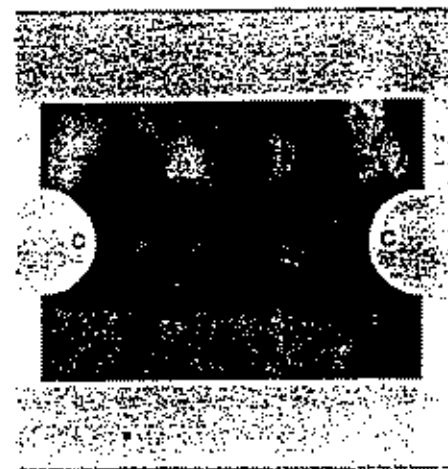
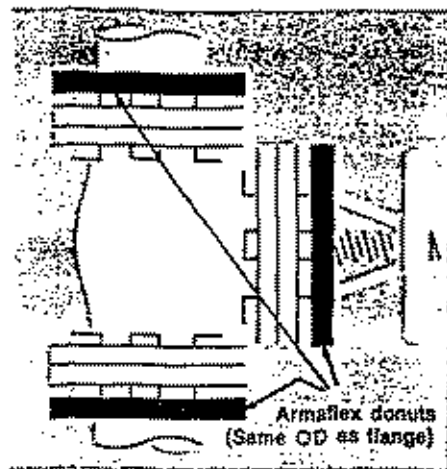
6. The last piece of insulation needed will insulate the bonnet area. This is shown in Figure 5A and is made as shown in Figure 5B.

The measurements for Figure 5B are determined as follows:

- "C"—The overall length is determined by wrapping a strip of Armaflex Sheet around the bonnet flange (do not stretch) and marking where the ends meet.
- "L₁"—This distance is obtained by measuring from the outer surface of the Armaflex donut to the approximate middle of the valve body insulation.
- "L₂"—This distance is obtained by measuring from the outer surface of the Armaflex donut to the closest surface of the valve body insulation.
- "Y"—Is the difference between "L₁" and "L₂".

The bonnet insulation of Armaflex Sheet is cut to the size of "C" x "L₁". This is then marked to show "L₂" and marked in quarters as shown in Figure 5B. Next the scalloped edge of the insulation is determined by swinging an arc from each point marked "X" in Figure 5B. The radius of the arc is equal to "Y". These arcs are connected with straight lines to give smooth scalloped edge (see Figure 5C). The scalloped edge of the insulation must be undercut (beveled) to correctly meet the body insulation.

The bonnet insulation may now be installed using 520 Adhesive to bond the two ends, to adhere the bonnet insulation to the body insulation and to adhere the bonnet insulation around the Armaflex donut. This should complete the flange valve fitting.



Installing Armaflex Sheet on metal duct surfaces

The preferred method for square and rectangular ducts is to cut and fit the sheets, using full coverage of Armstrong 520 Adhesive to adhere the insulation.

1. Measure—Sheets should be sized with the following application sequence in mind. Cut the bottom piece first, making it the same width as the duct. Then cut the two side pieces, so that they extend down over the edges of the bottom insulation; keep top edges flush with the top of the duct. The top insulation should be sized so that it extends over the side insulations.

2. Cut—A sharp knife and a straightedge are the only tools required. Armaflex Sheet cuts cleanly.

3. Apply Adhesive—First brush- or roller-coat 520 Adhesive on the metal duct surface. Then coat the back side of the Armaflex Sheet, leaving a $\frac{1}{2}$ "-wide uncoated border at butt-edge seams. Allow the adhesive to dry to the touch but still tacky under slight pressure before joining surfaces.

4. Bond—Position the sheet so that it overlaps the edges of previously installed sheet or sheets by $\frac{1}{4}$ ". Hold the sheet in this position, and spot-adhere it in the center. Compress the butt edges into place for a tight joint with adjoining sheets. Then bond the remainder of the sheet by pressing it firmly into place. A small hand roller will help apply pressure.

5. Adhere Joints—Spread the joint, and with a small brush apply 520 Adhesive to both butt edges. Do not flood joint with adhesive. Align carefully for good appearance, and apply pressure to joint.

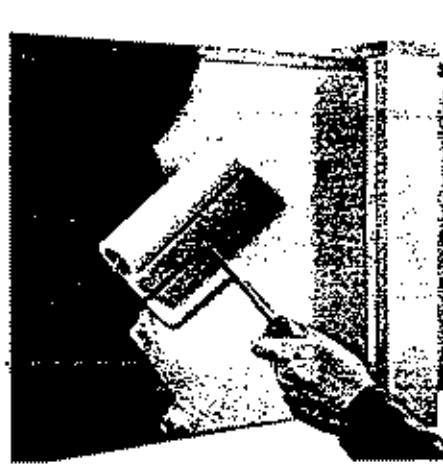
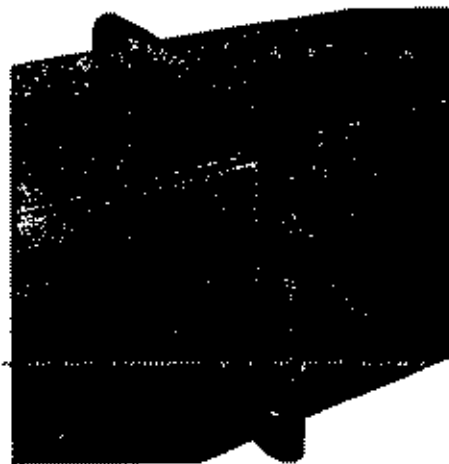
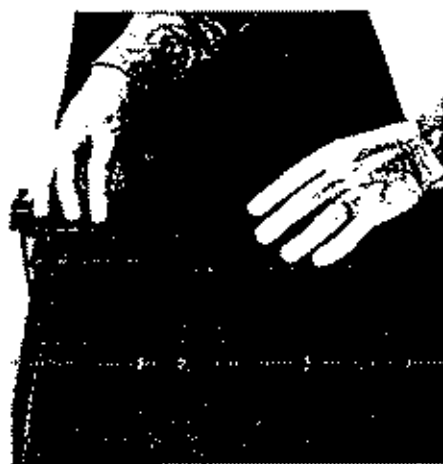
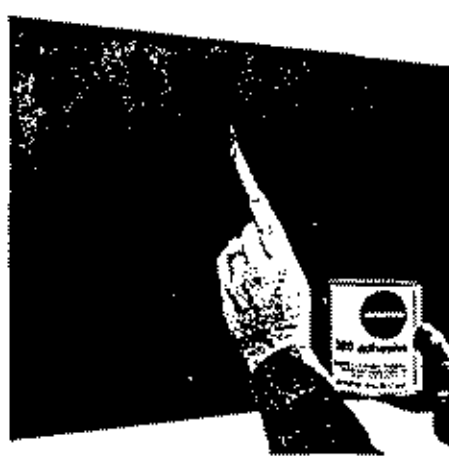
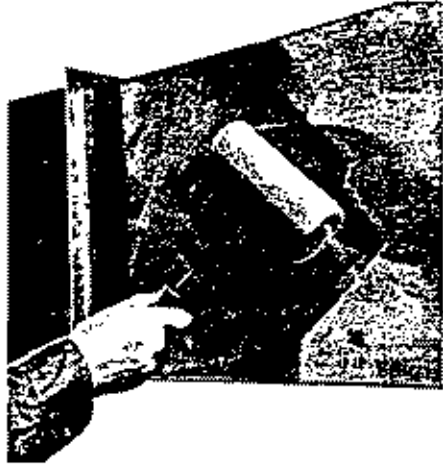
6. Alternate Method—For square, rectangular, or round ducts, wrap a continuous blanket of Armaflex Sheet around the duct perimeter, joining the seam on the bottom or side duct surface.

7. Standing Seams—These can be insulated with strips of Armaflex Sheet, generally cut from scrap.

8. Alternate Method—Standing seams can also be insulated with half sections of Armaflex Pipe Insulation, corresponding in thickness to the sheet used on the duct surface. Ends should be miter-cut to insure tight fit when bonded.

9. Apply Armaflex Finish—Two coats of Armaflex Finish, a vinyl-lacquer-type coating, are all that are required to provide a high-gloss protective finish for outdoor installations. Armaflex Finish can be brushed, roller-coated, or airless-sprayed.

206293



206294

Pipe hanger locations

1. At pipe hanger locations and other places where the insulation must resist compression, apply Rigid Armaflex. This load-bearing insulation, used with metal shields, prevents compression problems at hanger locations. See the table on page 25 for recommended pipe support lengths and pipe hanger spacing.

2. As an alternate method, flexible Armaflex Pipe Insulation can be used at hanger locations using cork stoppers or wood inserts to prevent the weight of the pipe from compressing the insulation. Simply cut round holes in the flexible Armaflex, and insert cork stoppers or wood inserts well coated with 520 Adhesive as shown in the illustration. A handy tool to punch holes in the insulation is a short length of copper tubing with the end surfaces sharpened.

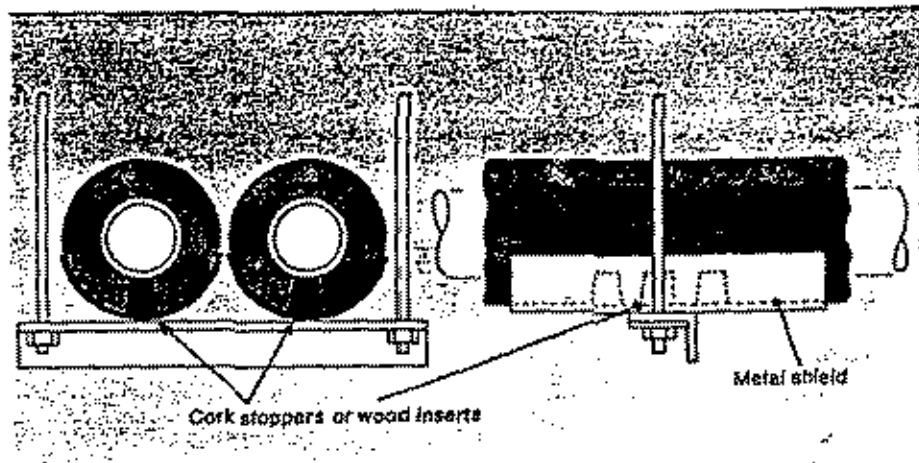
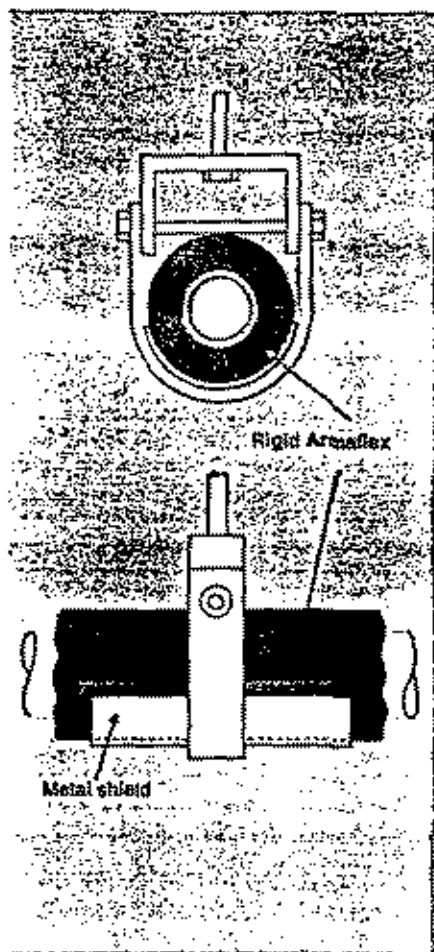


TABLE OF RIGID ARMAFLEX PIPE SUPPORTS

Rigid Armaflex Sizes	Copper Tubing		Nom Iron Pipe Size (in.)	Recommended Support Length Inches (min)*†	Recommended Pipe Hanger Spacing Feet (max)*
	Nom Size (in.)	OD Size (in.)			
3/8" ID	3/8	3/8	—	3	7
1/2" ID	1/2	1/2	3/8	4	7
5/8" ID	1/2	5/8	3/8	4	7
3/4" ID	3/4	3/4	—	4	7
7/8" ID	3/4	7/8	1/2	4	7
1" IPS	—	—	3/4	6	8
1 1/8" ID	1	1 1/8	—	6	8
1" IPS	—	—	1	8	9
1 1/4" ID	1 1/4	1 1/4	—	8	9
1 1/2" ID	1 1/2	1 1/2	1 1/4	8	9
1 1/2" IPS	—	—	1 1/2	10	10
2 1/8" ID	2	2 1/8	—	8	10
2" IPS	—	—	2	12	11
2 1/4" ID	2 1/4	2 1/4	—	12	12
2 1/2" IPS	—	—	2 1/2	18	14
3 1/8" ID	3	3 1/8	—	18	14
3" IPS	—	—	3	18	14
3 1/4" ID	3 1/4	3 1/4	—	18	14
3 1/2" IPS	—	—	3 1/2	18	14
4 1/8" ID	4	4 1/8	—	18	14
4" IPS	—	—	4	18	14
5" IPS	—	—	5	18	12

*Where combination copper tube and iron pipe exists, support length and pipe hanger spacing are based upon iron pipe.

126-ga metal shields (less than 1 1/2" IPS) and 26-ga (1 1/2" IPS and larger) the same length as the Rigid Armaflex are to be used at all pipe hanger locations.

Armflex Insulation Tape

Armflex Insulation Tape provides a fast, easy method of insulating pipes and fittings in cramped areas and covering complicated parts or contours difficult to handle with regular Armflex Pipe Insulation.

Armflex Insulation Tape is easy to use. Simply remove the protective backing as the tape is spirally wrapped around the piping or fittings, and press firmly in place. The table below shows the proper thickness or number of wrappings to prevent pipe sweating and dripping.

To insulate valves, wyes, and other complicated parts, cut short lengths of tape and press in place where necessary. Be sure no metal shows through. Apply additional overwrap for durable and efficient job.

NOTE: On single wrap, permitted on cold-water pipes only, edges should be butted tightly together. On multiple wraps, tape should be applied with a spiral wrap to obtain a 50% overlap. Additional layers are added to build up insulation to the required thickness.

Thickness to Prevent Sweating and Dripping

Air temperature and relative humidity	Pipe temperature	
	50 F	35 F
80 F & 50% RH	Single Layer*	50% Overlap
85 F & 70% RH	50% Overlap plus Single Layer	50% Overlap plus 50% Overlap

*Dual-temperature line must be 50% overlap application.

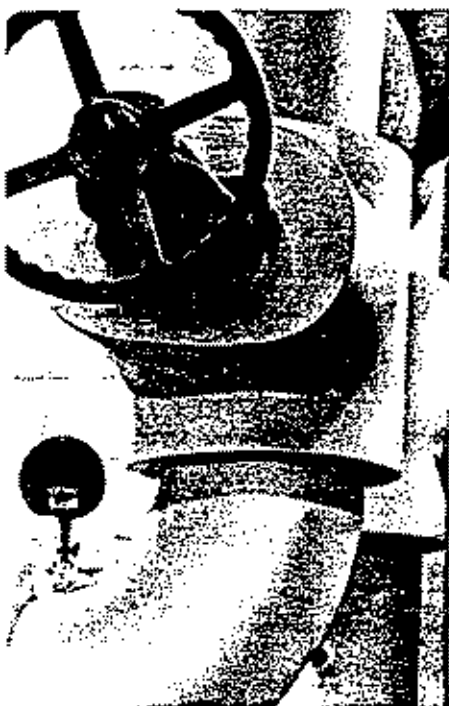
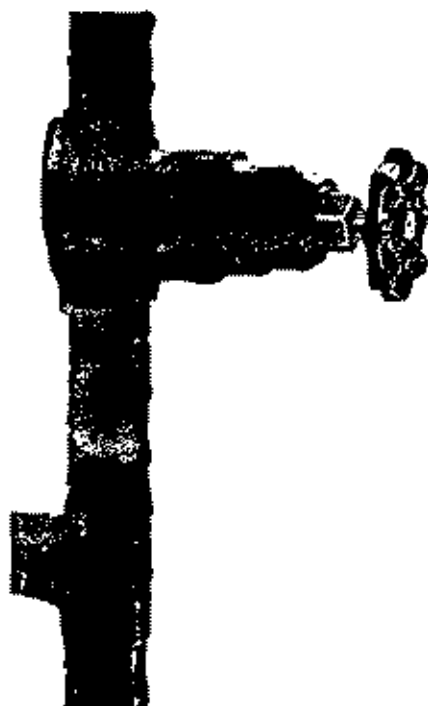
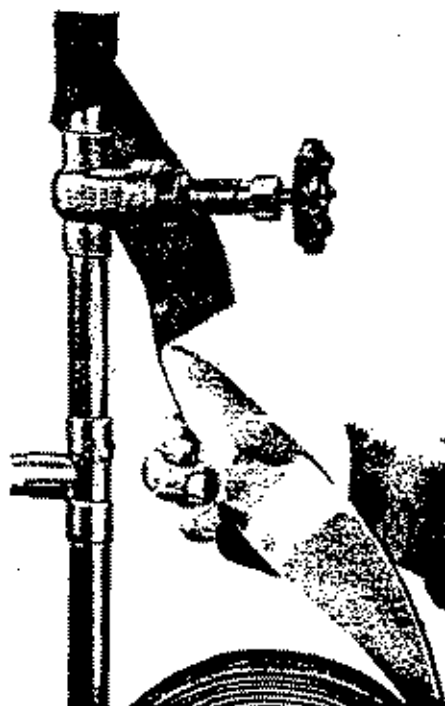
Armflex Finish

Armstrong Armflex Finish should not be applied over joints freshly cemented with 520 Adhesive. Allow adhesive joints of Armflex Pipe Insulation to dry 24 hours to 36 hours before applying finish. The joints of Armflex Sheet Insulation applied with full adhesive bonding must dry 7 days before applying Armflex Finish.

Armflex Finish is applied directly to clean, dry Armflex Insulation in two coats. For best results, wipe the Armflex surface with a cloth dampened with a nonoil solvent such as alcohol or toluol to clean the surface and remove the powdered lubricant. Allow the first coat to dry a minimum of two hours before applying the second coat. No reinforcing mesh is needed for either indoor or outdoor application. When dry, Armflex Finish produces a tough film with flexibility similar to Armflex Insulation. Armflex Finish maintains this flexibility upon aging and at exposures to low temperatures.

NOTE: Armflex Finish is recommended for Armflex Insulation Products only—it should not be used over other insulation material unless first tested.

206297



206298



Industry Products Division, Lancaster, Pa.

INDUSTRY PRODUCTS DIVISION OFFICES

CHARLOTTE, NC 28204
1341 E. Morehead Street

CHICAGO, IL
422 Northwest Highway
Park Ridge, IL 60068

CINCINNATI, OH 45241
4100 Executive Park Drive

NEW YORK, NY
Park 80 Plaza West—One
Garden State Parkway at Interstate 80
Saddle Brook, NJ 07662

ST. LOUIS, MO 63105
222 South Meramec Avenue

SAN FRANCISCO, CA
1814 Ogden Drive
Burlingame, CA 94010

ARMSTRONG 520 ADHESIVE

PROPERTIES

Color

Light tan

Net Weight

5.9 lb per gallon

Composition

Synthetic rubber base with synthetic resins and fillers added; hydrocarbon- and ketone-type solvents

Solids Content

Approximately 25% by weight

Coverage

200 sq ft per gallon max. (depending upon porosity of materials bonded)

Shelf Life

1 year in original sealed container

Minimum Drying Time

3-5 minutes under normal conditions

Temperature Limits

220 F—pipe insulation seams and joints

180 F—full-bonding sheet insulation

Container Sizes

Half-pint and pint brush top cans and half-pint, pint, quart, and gallon containers

Flammability

Wet: Flash point below 20 F (TOC)

Dry:

ASTM E162 Method

National Bureau of Standards

Radiant Panel

Applied on Asbestos Cement Board

Flame Spread Index <5

Optical Density of

Deposited Smoke 0

APPLICATION INSTRUCTIONS

Be sure to use adequate ventilation; extinguish all flames; avoid heat and sparks; avoid prolonged breathing of vapor and prolonged contact with skin; keep lid tightly closed whenever possible during application. Agitate contents of the container and apply only to clean, dry, oil-free surfaces. For best results, the adhesive should be brush-applied in a thin, uniform coat to both bonding surfaces. Allow the adhesive to dry until dry to the touch but tacky under slight pressure before joining surfaces. Open time of more than 20 minutes should be avoided. 520 Adhesive bonds instantly, so pieces must be positioned accurately as contact is made. Moderate pressure should then be applied to the entire bonding area to insure complete contact.

It is recommended that the adhesive be applied at temperatures above 40 F and not on heated surfaces. Where application between 32 F and 40 F cannot be avoided, exercise more care in applying the adhesive and closing the joint. Applications below 32 F are not recommended. When heated lines are involved, allow a minimum of 36 hours before releasing heat into insulated lines having slit seams.

Adhesive-bonded seams and joints of Armatflex 22 Pipe Insulation must cure before solvent-base finishes are applied. Where the insulation is installed by adhering seams and butt joints, the adhesive must cure 24 to 36 hours.

Adhesive-bonded seams and joints of Armatflex 22 Sheet must cure before solvent-base finishes are applied. Where the insulation is installed by adhering seams and butt joints only, the adhesive must cure 24 to 36 hours. Where the insulation is installed against surfaces with full adhesive coverage, requiring wet adhesive at joints, the adhesive must cure seven days.

Where it is necessary to reduce viscosity, 520 Adhesive may be thinned by slowly adding methyl ethyl ketone with thorough mixing. Lacquer thinners should not be used for this purpose. Thinning is not recommended to recover 520 Adhesive that has become thick due to solvent evaporation.

Either methyl ethyl ketone or most lacquer thinners can be used to clean residue from tools and workpieces, however.

Armstrong
CORK COMPANY
Lancaster, Pennsylvania

206301



ARMAFLEX FINISH

DESCRIPTION

Armaflex Finish is a vinyl lacquer-type coating for use over Armstrong Armaflex® Pipe and Sheet Insulation. This coating provides a high-gloss protective and decorative finish for both indoor and outdoor installations. It brushes on easily and may also be airless-sprayed or roller-coated. Chemically acceptable to USDA Consumer and Marketing Service.

COLORS

Armaflex Finish is available in white and gray standard colors. In situations where a custom pastel shade is desired, white Armaflex Finish can be tinted with selected pigment pastes recommended for shading or coloring commercial paints. Suggested pigment suppliers can be obtained from the nearest Armstrong district office. Standard colors are shipped in quart, gallon, and 5-gallon containers.

ADVANTAGES

Excellent Adhesion

Armaflex Finish dries to a durable film which adheres tightly to clean Armaflex Insulation surfaces.

High Flexibility

The dried finish has approximately the same degree of flexibility as Armaflex. In both indoor and outdoor applications, it will deform with the Armaflex without cracking. Armaflex Finish maintains this flexibility upon aging and at exposure to low temperatures.

Self-Extinguishing

Armaflex Finish has the same self-extinguishing properties as Armaflex insulation. It in no way detracts from the fire-safety features offered by Armaflex.





ARMSTRONG
INSULCOLOR®



203304

DESCRIPTION

Armstrong Insulcolor is a flexible, fire-retardant, protective coating for thermal insulations both indoors and outdoors. It can be applied quickly and easily with brush, roller, or spray gun. Its non-drip characteristics make application quick and clean. During application, it spreads readily and uniformly, resulting in excellent coverage.

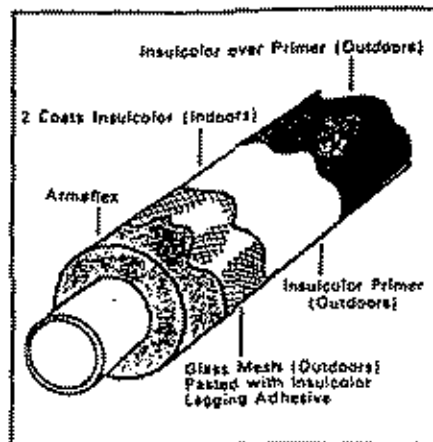
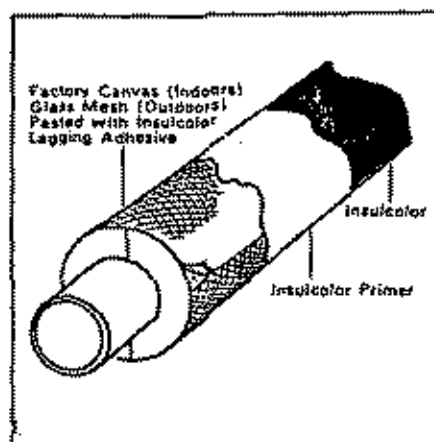
Formulated for durability, flexibility, and resistance to water, Insulcolor will withstand a wide range of temperatures without cracking or crazing. On the low-temperature side, its use is limited only by the ability of the base over which it is applied to hold up under the temperature involved. On the high side, it can be applied to surfaces that will operate as hot as 160 F. It resists low temperatures outdoors, or in freezer rooms, without deteriorating, cracking, or crazing. In both indoor and outdoor applications, the tough Insulcolor film is highly resistant to damage by bumping and abrasion.

Insulcolor is fire resistant, containing no flammable solvents that create a hazard during application. Wet or dry, it exhibits excellent fire-resistant characteristics and contributes very little to spread flame across any surface to which it is applied. It should be remembered, however, that Insulcolor will not fireproof a flammable surface.

Insulcolor is easy to maintain. Dust, dirt, grease, oil, and soot can be readily washed from the smooth Insulcolor surface. And, although Insulcolor produces a strong, tough finish, the surface film maintains its "life" and flexibility for many years, requiring little maintenance. Insulcolor is chemically acceptable to USDA Consumer and Marketing Service.

COLORS

Armstrong Insulcolor is available in eight colors: buff, gray, light green, dark green, yellow, light blue, dark blue, and white. Where custom colors are desired, Insulcolor can be custom-tinted on special order. This wide range of colors makes



possible easy coding and identification of insulated service lines. In addition, on exposed insulated lines or ductwork in schools, hospitals, office buildings, or factories, the softer hues of Insulcolor harmonize with the colors usually used on walls and ceilings.

USES

Armstrong Insulcolor is primarily formulated for use as a tough, flexible, fire-retardant, protective coating for insulated hot or cold lines, tanks and equipment, cold rooms, and air-conditioning ducts. It has a "breathing" finish ideal for use on insulated hot lines. On insulated cold lines it is used in conjunction with a vapor barrier.

Insulcolor may be diluted and used as a lagging adhesive for pasting down canvas, asbestos, and other lagging cloths. The recommended dilution is one part water to four parts Insulcolor.

Insulcolor may also be used as a primer. Diluted in the proportion of one part water to four parts Insulcolor, it can be used as a prime coat over canvas, asbestos, portland cement plaster, and other porous surfaces.

PROPERTIES

Net Weight

10.3 lb per gallon.

Composition

Polyvinyl acetate copolymer emul-

sion with pigment and inorganic fillers.

Viscosity

Thixotropic; no-drip consistency, easy brushing.

Application

Brush, roller, spray.

Coverage

150 sq ft per gallon, depending on surface.

Drying Time

Approximately 1 to 2 hours, depending on temperature, humidity, and surface.

Upper Service Temperature Limits (coated surface)

160 F.

Container Sizes

3½-gallon pails containing 3 gallons base white liquid. Head space allowed for adding color tint and mixing. Color tint packaged separately and job-mixed.

Flammability

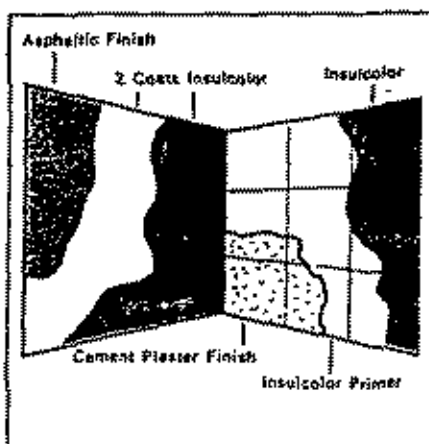
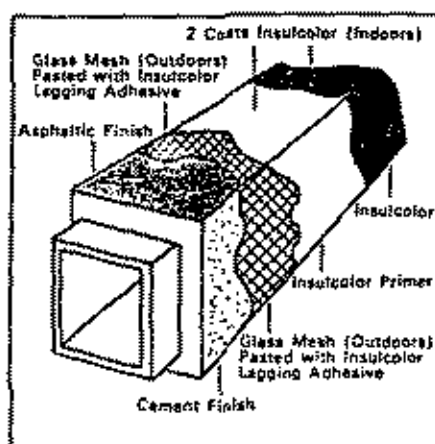
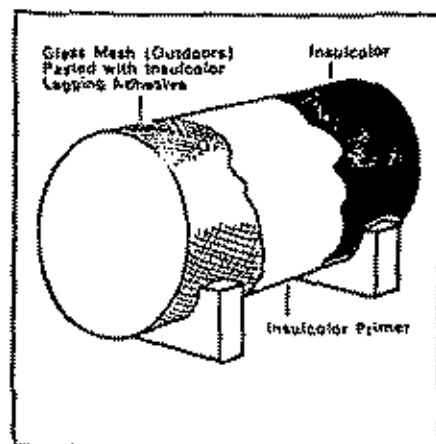
ASTM E162 Method
National Bureau of Standards
Radiant Panel

Applied on Asbestos Cement Board
Flame Spread Index <5
Optical Density of
Deposited Smoke 0

Colors

Buff, gray, light green, dark green, light blue, dark blue, yellow, and white, and custom colors on special order.

206305



APPLICATION

General Information

When used over wheat paste, glue size, or similar materials, the Insulcolor primer (first coat) may craze. However, the final coat will cover the crazing and provide a smooth surface. When lapping canvas, apply Insulcolor over lapped edge to keep it smooth and prevent unraveling. Armstrong Insulcolor can be applied over oil-base paints and over firmly adhered water-base paints. Insulcolor should not be applied when air temperatures are lower than 40 F. In cold rooms, for example, the room should be taken out of service and allowed to reach 40 F before the interior is finished with Insulcolor. When the Insulcolor film has dried thoroughly, it can be subjected to any low temperature that the base over which it is applied is able to withstand.

Over Pipe Covering

INDOOR—Apply over factory canvas jackets. First paste down with Insulcolor used as a lagging adhesive; i.e., Insulcolor diluted in the proportion of one part water to four parts Insulcolor. Apply Insulcolor as a primer; i.e., Insulcolor diluted in the proportion of one part water to four parts Insulcolor, then apply full-strength Insulcolor. For application to paper surfaces, paste lightweight canvas strips over end and longitudinal joints with Insulcolor lagging adhesive. Apply Insulcolor primer, then full-strength Insulcolor. For indoor use over Armstrong Armaflex® insulation, apply two coats of full-strength Insulcolor.

OUTDOOR—Paste factory canvas jacket with Insulcolor lagging adhesive. Covering without factory jacket should be wired in place and joints pointed with asbestos cement. Over canvas or plain covering, paste glass mesh (10 x 20 weave per inch) with Insulcolor lagging adhesive. Apply Insulcolor primer, then full-strength Insulcolor. For outdoor use over Armstrong Armaflex insulation, follow illustration. The application order is one coat of Insulcolor lagging adhesive, glass mesh, Insulcolor primer coat, and finish coat of full-strength Insulcolor.

Over Asbestos Cement

INDOOR—On fittings, paste on lightweight canvas with Insulcolor lagging adhesive. Apply Insulcolor primer, then full-strength Insulcolor. Over tanks and other large equipment, patch all cracks, then apply Insulcolor primer and full-strength Insulcolor directly to cement.

OUTDOOR—Over both fittings and large equipment, patch all cracks, paste glass mesh (10 x 20 weave per inch) with Insulcolor lagging adhesive. Apply Insulcolor primer and full-strength Insulcolor.

Over Asphaltic Finishes

INDOOR—Apply two full-strength coats of Insulcolor over SP Emulsion, Armstrong Weatherproof Plastic, and Armstrong Insulmastic.

OUTDOOR—Over Armstrong Weatherproof Plastic and Armstrong Insulmastic, paste on glass mesh

(10 x 20 weave per inch) with Insulcolor lagging adhesive. Apply Insulcolor primer and full-strength Insulcolor.

Over Duct Insulation

INDOOR—Over SP Emulsion, Weatherproof Plastic, or other conventional asphaltic finishes, apply two full-strength coats of Insulcolor. This two-coat application applies also to Armaflex insulation when used indoors on ductwork. Over cement finishes apply Insulcolor primer, then one coat full-strength Insulcolor.

OUTDOOR—Over cement finishes, Weatherproof Plastic, Insulmastic, or Armaflex, paste on glass mesh (10 x 20 weave per inch) with Insulcolor lagging adhesive. Apply Insulcolor primer and full-strength Insulcolor.

In Cold Rooms

Over portland cement plaster, apply Insulcolor primer and full-strength Insulcolor. Over conventional asphaltic finishes, apply two full-strength coats of Insulcolor.

Typical Airtight Spray Equipment—Graco Bulldog 226176 unit with 30:1 pump; 205904 gun with 205723 bail tip; 70 lb air to pump; 25 ft 1/2" nylon hose.

Typical Air Spray Equipment—DeVilbiss MBC 510 gun; #24 air cap and E tip and needle; 40 to 50 psi atomizing pressure; 15 psi tank pressure. (The air-sprayed film will have slight "orange peel" appearance due to thixotropic nature of Insulcolor.)

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Charlotte, N. C. 28204
1341 E. Morehead Street

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Saddle Brook, N. J. 07662

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222 South Meramec Avenue

San Francisco, Calif.
1814 Ogden Drive
Burlingame, Calif. 94010



INDUSTRY PRODUCTS DIVISION, LANCASTER, PA. 17604

Armstrong

**ARMSTRONG
MONOPLAST**
White, Trowelled-on
Finish for Cold Rooms

206310

BALTIMORE DISTRICT AND BRANCH OFFICE
TERRITORIAL COMPONENTS

BALTIMORE

Mail Address: 114 South Street
Baltimore 2, Maryland

Warehouse Address: Same

- Maryland - Entire state with the exception of Cecil, Kent, Garrett, Montgomery, Prince Georges, Calvert, Charles and St. Marys counties and that portion of Allegany county west of and including the city of Cumberland.
- West Virginia - Counties of Jefferson, Berkeley, and Morgan.

Richmond

Mail Address: 1708 MacTavish Avenue
Richmond 30, Virginia

Warehouse Address: Same

- North Carolina - HEAT INSULATION ONLY - North of and including counties of Hertford, Bertie, Martin, Beaufort, and Hyde.
- Virginia - South of and including Rockingham, Greene, Orange, Spotsylvania, Caroline, King George, Westmoreland, Northumberland and Accomack counties. Except those counties of Buchanan, Russell, Washington, Dickenson, Scott, Wise and Lee.

Washington

Mail Address: 2321 Wisconsin Avenue, N. W.
Washington 7, D. C.

- District of Columbia - Entire district.
- Maryland - Counties of Montgomery, Prince Georges, Calvert, Charles and St. Marys.
- Virginia - North of and including Shenandoah, Page, Madison, Culpeper and Stafford counties.
- West Virginia - Hampshire county only.

* * * * *

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