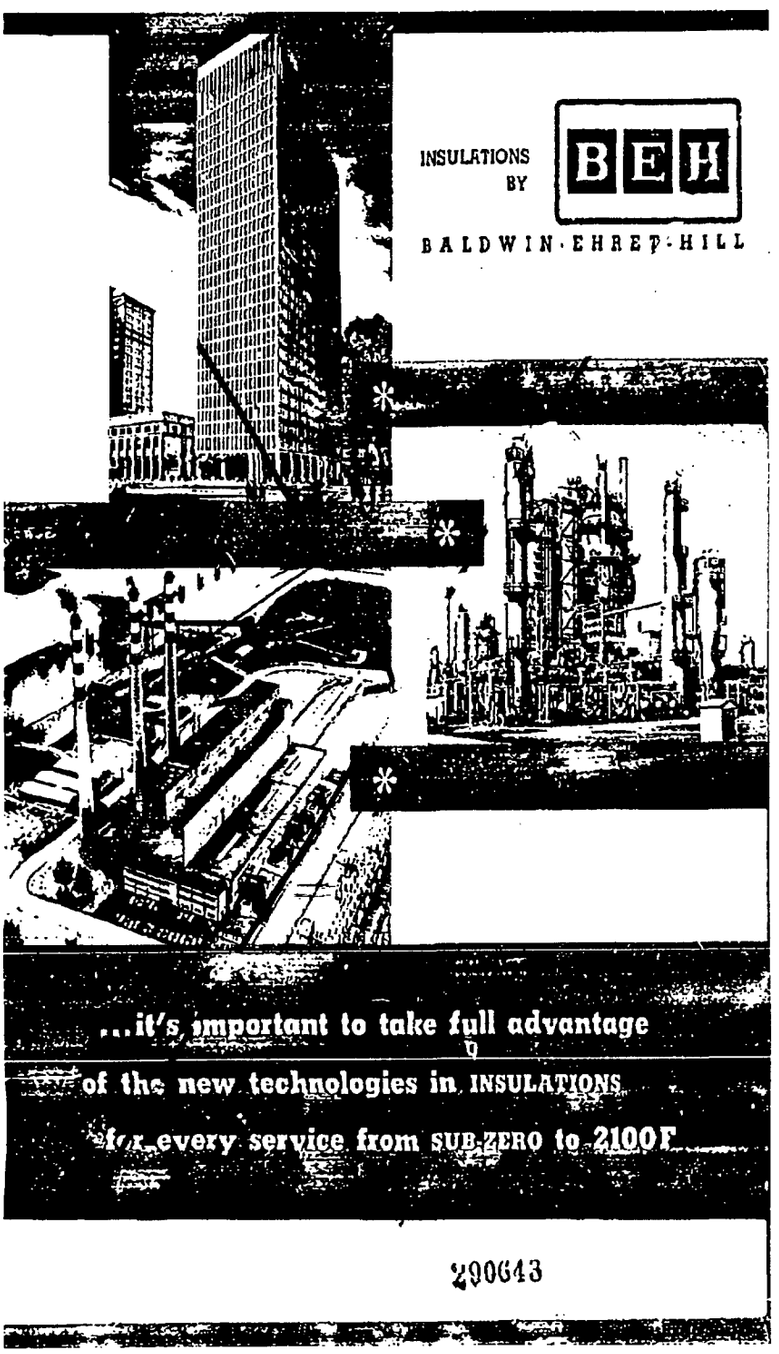
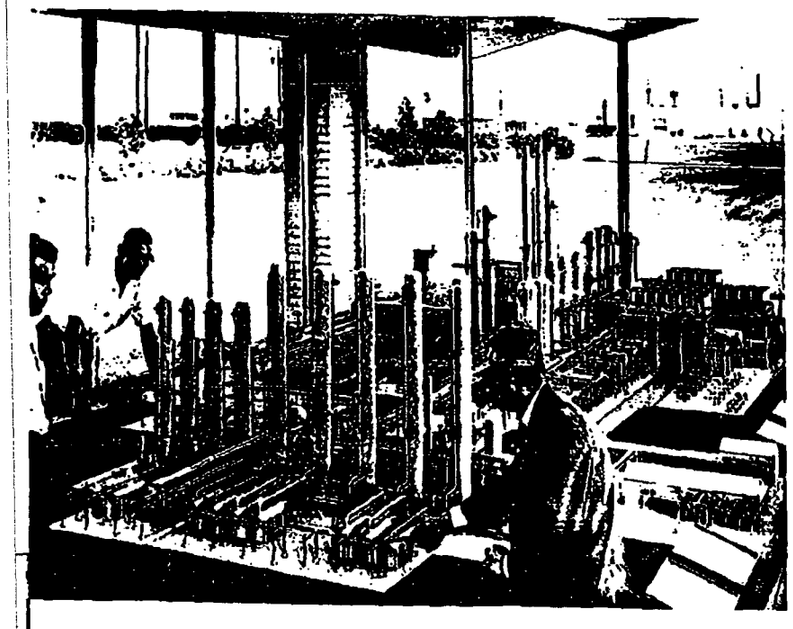
PLAINTIFF'S
EXHIBIT
KN-418



290643

B-E-H industrial insulating products are subjected to constant research and development to keep pace with tomorrow's technologies of power generating, manufacturing and petro-chemical processing. To service these divergent fields, B-E-H takes pride in its ability to furnish a complete line of insulating products for temperature applications ranging from subzero to 2100°F.



The above model is that of a recently completed high speed, high performance petroleum refinery for which many B-E-H industrial insulation products were specified. This refinery typifies Baldwin-Ehret-Hill leadership in furnishing high performance insulations to meet severe service requirements. B-E-H products are manufactured to close production controls and installed by a network of contract branches and franchise distributors who represent Baldwin-Ehret-Hill through the United States.

overseas operations

During the past 25 years, Baldwin-Ehret-Hill, Inc. has set up technical assistance agreements in many countries for the manufacture of thermal insulation and acoustical products. These overseas manufacturing operations are equipped with modern and efficient machinery to produce quality products to American standards.

Baldwin-Ehret-Hill invites requests from American and European engineering and equipment companies to quote on their insulation requirements for overseas projects, all or part of the material to be furnished from the Baldwin-Ehret-Hill licensee nearest the job site. This will not only effect substantial savings in ocean freight, but will result in improved scheduling and delivery of materials. To service overseas sales, Baldwin-Ehret-Hill has available a directory of contractor-applicators who are competent to handle large-scale insulation projects.

Baldwin-Ehret-Hill licensees or associates are manufacturing in Argentina, Canada, Denmark, England, Finland, Germany, India, Italy, Japan, Mexico, Netherlands, Norway and Sweden. Negotiations are being conducted currently to establish licensees in several additional countries. Inquiries with respect to supplying insulation from manufacturers in any of these countries should be directed to Export Sales Department, Baldwin-Ehret-Hill, Inc., 500 Bloomfield Avenue, Trenton 2, New Jersey.

INSULATIONS BY B-E-H

the B-E-H family of insulations

			page
high temperature—industrial			
750 to 1800 F	Mono-Block®	to 1800 F	4
	Mono-Spray	to 1200 F	5
	Thermaxil®	to 1200 F	6-7
	Endure-It	to 1600 F	7
	B-E-H Blanket	to 1200 F	8
	Blanket Pipe Insulations #101 #100	to 1200 F	9
medium temperature—industrial			
300 to 750 F	Spun-Felt	to 450 F	10
	Therma-K	to 750 F	11
low temperature—industrial			
—300 to +250 F	Mono-Foam	—300 to +250 F	12-13
	pipe insulation, block		12-13
	pour-in-place		13
plumbing—heating —air conditioning			
—30 to +450 F	Mono-Kover®	to 370 F	14-15
	Fire-Fyber Blanket®	to 450 F	15
	Fibrous glass board	to 450 F	11
	Fibrefix®	to 450 F	17
finishing—weatherproofing			
	Super Powerhouse®	to 1200 F	18
	#1 plus	to 2100 F	18
	Fibrehote	to 350 F	18
	Asphalt Cutback	to 350 F	18
other products			
	loose and granulated wool	to 1200 F	18-19
	Bead-Tite		18-19
	Asbestos cement		18-19

290645

MONO-BLOCK

spun mineral fiber block for service to 1800 F



Mono-Block is fabricated from high temperature resisting minerals and is effective up to 1800 F. This can eliminate the old-fashioned method of using two blocks, one low and one high temperature to cover the full temperature range. Mono-Block is composed of spun mineral fibers and inorganic binders. A patented B-E-H process interlocks the long, mineral fibers to form a rigid, strong, resilient block. As a result, Mono-Block is light and 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 or high heat.

PHYSICAL PROPERTIES

density—15 lb/cu ft

compressive strength—10 lb/sq in. @ 5% deformation.

flexural strength—40 lb/sq in.

linear shrinkage after heating at 1800 F—less than 4%

sizes—length—18, 36 inches.
width—6, 12, 24 inches.

thicknesses—1, 1½, 2, 2½, 3, 3½ and 4 inches.

RECOMMENDED THICKNESSES

hot face temp. degrees F.	thickness inches	hot face temp. degrees F.	thickness inches
up to 300	1 to 1½	850 to 1000	4
300 to 450	2	1000 to 1200	4½
450 to 600	3	1200 to 1400	5
600 to 850	3½	1400 to 1800	6

SPECIFICATIONS

recommended standard: CS117, block, class A, C, D.

federal: HH-I-564, form 1, types A, B, C, D.

ASTM: C 592

SUGGESTED SPECIFICATIONS

1. insulating material

All heated surfaces shall be insulated with _____thick Mono-Block, a rigid mineral fiber block insulation manufactured by Baldwin-Ehret-Hill, Inc.

2. application

On flat surfaces, Mono-Block shall be impaled over welded studs or pins on suitable centers and held in place with washers or clips. Joints and corners shall be pointed with Super Powerhouse Cement, before finishing.

On curved surfaces, block insulation shall be held in place with ½ inch bands on cylinders up to 6 feet in diameter and ¾ inch bands on larger cylinders. Bands shall be spaced on 12 to 18 inch centers. Joints and corners shall be pointed with Super Powerhouse Cement, before finishing.

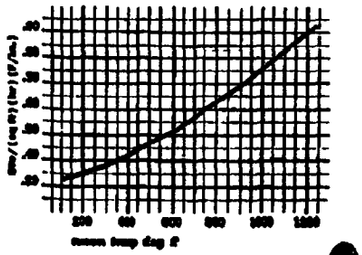
On irregular surfaces, depressions shall be filled with a trowel coat of B-E-H No. 1 Fire insulating cement, then block insulation applied as on flat surfaces.

3. finishing

On large areas over 4 feet square, and on surfaces subject to vibration or movement from thermal expansion, woven wire mesh shall be applied over Mono-Block insulation and fastened to pins or studs. Super Powerhouse Cement ½ inch thick shall then be applied, filling all cracks and bringing it to a true level surface. It shall then be smoothed with a steel trowel.

For outdoor service, after the Super Powerhouse Cement has dried, woven wire mesh shall be stretched tightly over it, fastened securely, and ¼ inch thick Fibrelate weatherproofing shall be applied over all.

THERMAL CONDUCTIVITY



290616

MONO-SPRAY

spun mineral wool monolithic thermal insulation for heated surfaces to 1800 F.



Mono-Spray is a combination of spun mineral wool fibers and asbestos with an inorganic binder, plus rust and stainless inhibitors. The ingredients are combined by a B-E-H developed combing process, which prepares the product specifically for application by pneumatic spray to form a mono-lithic thermal insulation. A Mono-Spray application offers the combination of thermal insulation and condensation control in one fast, inexpensive operation. Mono-Spray also offers large area coverage, without joints, in a wide range of thicknesses. It has fast drying action, negligible shrinkage and is completely incombustible.

PHYSICAL PROPERTIES

density (dry) 11-13 lb/cu ft

linear shrinkage — 0.65 % after heating at 1200 F. for 24 hours.

RECOMMENDED THICKNESSES

An estimated thickness table would be:
at a hot surface temperature of 400° 600° 800° 1000° 1200°

Thickness	A cold face temperature would be				
1"	126	170	210	-	-
1½"	122	146	174	204	-
2"	116	132	148	165	208
2½"	114	126	140	156	198
3"	-	119	130	145	174
3½"	-	-	122	133	162
4"	-	-	-	140	165
4½"	-	-	-	-	160

SUGGESTED SPECIFICATIONS

1. insulating material

All surfaces as indicated on job specification shall be insulated with _____thick Mono-Spray, as manufactured by Baldwin-Ehret-Hill, Inc.

2. application

Mono-Spray shall be applied by a B-E-H approved Industrial Insulation Contractor using an approved blowing machine and spray nozzle. Electric power and fresh water shall be made available at the job site.

Before being covered, surfaces shall be clean and free from loose particles, grease etc. Mono-Spray shall then be placed in the feed hopper of the machine, conveyed with air through the blowing hose, mixed with a small amount of clean water as it emerges from the spray nozzle and discharged on to the surface. The spray nozzle shall be held about two feet away from the surface and moved in a plane parallel with it as necessary to apply the specified thickness. Immediately after application, the Mono-Spray shall be troweled with a flat board or board to smooth the surface, then allowed to dry.

3. finishing

(a) Specified

Set Indicated Factory weave wire netting over the surface and apply a ½ inch coat of Super Powerhouse Cement.

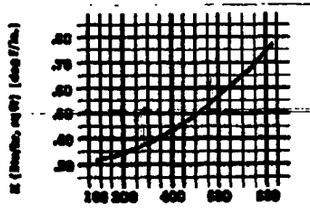
(b) outdoors

(1) Apply wire netting and cement as for "Indoors", then an additional layer of wire netting. When cement has dried apply a ¼ inch (min) trowel coat of Fibrelate or a ¼ inch (min) spray coat of Mono-Mastic.

(2) If leveling cement is not required, apply woven wire netting directly over the Mono-Spray, then a trowel of Fibrelate or spray coat of Mono-Mastic as in (1).

(3) Cover with galvanized or aluminum metal sheets, mechanically fastened. (Fastener supports should extend through to the base surface and must be attached before Mono-Spray is applied).

THERMAL CONDUCTIVITY



290617

THERMASIL

calcium silicate pipe and block insulation for service to 1200 F



Thermasil block or pipe insulation is a molded, hydrous calcium silicate insulation—a blend of special inorganic ingredients reinforced with selected long asbestos fibers, especially formulated for temperatures up to 1200 F.

B-E-H Thermasil is chemically converted under carefully controlled conditions into a strong, hard, light, chemically-stable insulation material. Molded on modern equipment in a new, process controlled plant, the inside and outside surfaces of Thermasil are tough, smooth and dust-free.

PHYSICAL PROPERTIES

density—11.5 lb/cu ft
compressive strength—105 lb/sq in @ 5% deformation
flexural strength—65 lb/sq in
linear shrinkage after
heating @ 1200 F—1.8%

RECOMMENDED THICKNESS

pipe insulation

(Temperature Ranges 100 to 600 F

temp. range F	Pipe Size (inches) ½-3½	4-6	7-10	12 and over
100-199	1	1	1½	1½
200-299	1	1½	1½	2
300-399	1½	2	2	2½
400-499	2	2	2½	3
500-600	2	2½	3	3½

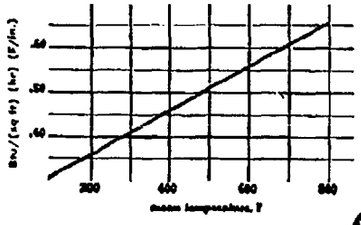
(Temperature Ranges 600 to 1200 F)

range F temp.	Pipe Size (inches) up to 1½	2-3	3½	4	4½	5-10	12 and over
600-699	2½	2½	2½	2½	2½	3	3½
700-799	2½	3	3	3	3	3½	4
800-899	2½	3	3	3	3½	4	4
900-999	3	3	3½	3½	3½	4½	4½
1000-1099	3	3½	3½	4	4	5	5
1100-1200	3	3½	3½	4	4	5	5

block insulation

temp. range F	Thickness (nominal, inches)
100-199	1½
200-299	2
300-399	2½
400-499	3
500-699	3½
700-899	4
900-999	4½
1000-1200	5

THERMAL CONDUCTIVITY



SPECIFICATIONS

federal: HH-I-523a Class 1 Block
Class 2 Pipe Insulation

military: MIL-I-2781D, Pipe Insulation
Grade II class b
Grade II class d
Grade III class c, type I and II

MIL-I-2819D, Block, Classes 1 and 2

ASTM: C 344 Block Insulation
C 345 Pipe Insulation

SUGGESTED SPECIFICATIONS

1. insulating material

All heated pipes and surfaces shall be insulated with_____thick Thermasil calcium silicate insulation, as manufactured by Baldwin-Ehret-Hill, Inc.

2. application

On pipes up to 12-inch, Thermasil pipe insulation shall be secured with factory-applied canvas jackets pasted in place. When specified, bands shall be applied over the canvas. On larger pipes, and for the inner layer of double-layer covering, the insulation shall be wired in place on 9-inch centers. Fittings, etc. shall be insulated with Super Powerhouse cement or covered with prefabricated forms finished with Super Powerhouse.

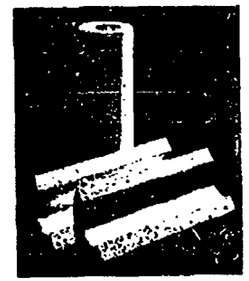
On flat and large radius cylindrical surfaces, Thermasil block insulation shall be held in place with wires stretched over the face of the blocks and anchored to studs, clips, etc. welded to the face of the surface to be insulated. Joints and corners shall be pointed with Super Powerhouse cement. On cylinders and ducts up to 12 feet around, encircling bands on 12-18 inch centers shall be used to hold blocks in place.

3. finishing

1. Pipe insulation shall be covered with canvas sewn in place and pasted, or with aluminum jacketing.
2. Pipe insulation outdoors shall be weatherproofed with asphalt-coated roofing felt, aluminum or galvanized steel jackets, as specified.
3. Block insulation shall be finished with Super Powerhouse cement applied over wire mesh.
4. Block insulation outdoors shall be finished with Super Powerhouse cement then weatherproofed with B-E-H Fibrelastic.

ENDURO M

block and pipe insulation for use between 1200 F and 1600 F



Enduro M is a product specifically manufactured for use on heated surfaces above 1200 F when such a product is necessary. Enduro M is a strong stable lightweight, efficient high temperature insulation easy to apply and with good appearance.

PHYSICAL PROPERTIES

density— 21 lb/cu ft
flexural strength—90 lb/sq in.
compressive strength—70 lb/sq in at 5% deformation
lineal shrinkage (24 hrs. at 1600 F)—2%

SPECIFICATIONS

pipe insulation

Military: MIL-I-2781D Grade III class E type II

block insulation

MIL-I-2819D class 2 and 3

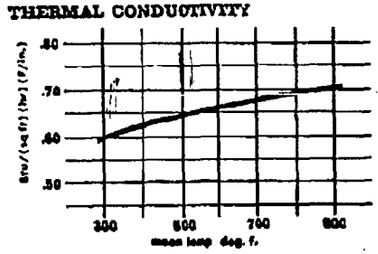
SUGGESTED SPECIFICATIONS

See Thermasil

RECOMMENDED THICKNESSES

See Thermasil

THERMAL CONDUCTIVITY

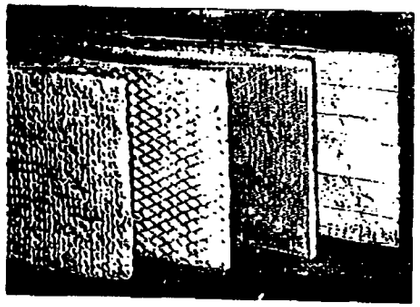


290648

290648

B-E-H BLANKET INSULATION

flexible mineral fiber blanket
metal fabric covered
for service to 1200 F



B-E-H Blanket Insulation consists of flexible blankets manufactured by felting high temperature, moisture resistant, spun mineral fibers in large flat sheets between different styles of metal fabrics.
Effective up to 1200 F, it is unexcelled in its insulating efficiency and economy of application. 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 the blanket is flexible, it can be applied to curved or irregular surfaces without breaking. If the equipment does not have a casing, and a cement finish is desired, style 2-A blanket, which has expanded metal lath on one side, makes a good surface for adhering cement. This eliminates the need for other metal fabric before application of the finishing cement.

PHYSICAL PROPERTIES and SIZES

density—10 lb/cu ft
sizes—length—48, 96 inches
width—24 inches
thickness—1 to 8 inches

FACING STYLES

1. 1" Wire Mesh both sides.
2. 1" Wire Mesh and Stucco Lath
2-A 1" Wire Mesh and Expanded Metal Lath
2-B 1" Wire Mesh and ¼" Rib Lath turned in.
3. Stucco lath both sides.
3-A Expanded Metal lath both sides.
3-B Stucco lath one side, Expanded Metal lath other side.
4 Stucco lath and ¼" Rib lath (rib turned in)
4-A Stucco lath and ¼" Rib lath (rib turned out)

Other facings available on request

RECOMMENDED THICKNESSES

hot surface temp., deg. F.	thickness (inches)
100 to 300	1½
300 to 500	2
500 to 700	3
700 to 850	4
850 to 1000	5
1000 to 1200	6

SPECIFICATIONS

federal: HH-I-563 type I Classes A, B, C
military: MIL-I-2818A
ASTM- C 263

SUGGESTED SPECIFICATIONS

1. insulating material

All heated surfaces shall be insulated with _____ thick metal fabric encased spun mineral fiber blankets as manufactured by Baldwin-Ehret-Hill, Inc.

2. application

For vessels and tanks over 36 inches diameter—Angles or clip angles shall be welded circumferentially around the vessel at intervals of 4 or 8 feet, depending on the length of blankets specified, and the upper end of each blanket wired to them. As an alternate, pins or bent wires shall be welded to the vessel surface and the blankets impaled over them.

On large vessels operating at 600 F or higher, expansion joints shall be installed to avoid gaps in the insulation.

The blankets shall be secured by ½ inch wide circumferential bands on 12"—18" centers. The abutting edges of the outer metal fabric shall be laced together with soft annealed iron wire.

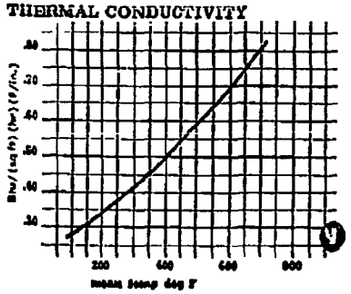
For large flat surfaces—Blankets shall be impaled over pins, studs or bent wires welded to the surface with adjoining edges butted firmly and laced together.

3. finishing

Indoor use—A ½ to ¾ inch thickness of Super Powerhouse Cement shall be applied and finished smoothly using a steel trowel. After drying, the surface may be painted or covered with canvas applied with lagging adhesive.

Outdoor use—Over a cement finish applied as for indoor use, 1 inch cotton woven wire netting shall be applied, followed by ½ inch thick B-E-H Fibrelate asphaltic weatherproofing.

THERMAL CONDUCTIVITY

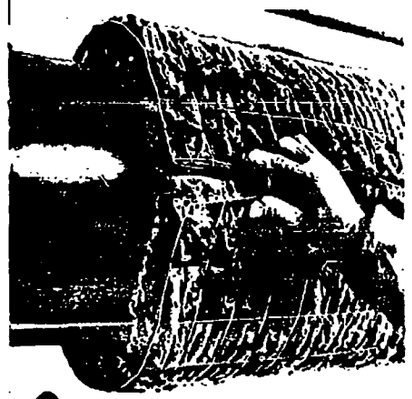


290650

HIGH TEMPERATURE INDUSTRIAL INSULATIONS BY B E H

BLANKET TYPE PIPE INSULATION

for service to 1200 F



#101 for fast application



#100 for cement finish

Pipe insulation consists of high temperature and moisture resistant long fibred spun mineral wool formed into flat rectangular units.

#101 is reinforced on one side with welded 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.

#100 is reinforced on one side with expanded metal lath and held together with metal tie wires extending through to strips of lath on the opposite side. Designed for runs where insulating or finishing cement is to be used.

SIZES

	#101	#100
for pipes	4"-30" inclusive	2"-30" inclusive
length per section	24"	24"
thicknesses	1½, 2, 3, 4	1, 1½, 2, 2½, 3, 4

RECOMMENDED THICKNESSES

hot surface temp., deg. F.	#101 and #100
100-200	1½
200-300	2
300-500	3
500 up	4

THERMAL CONDUCTIVITY

Same as for B-E-H blanket, see page 8.

SPECIFICATIONS (#100 only)

federal: HH-I-552 Type II
ASTM: C 263

SUGGESTED SPECIFICATIONS

1. insulating material

All heated pipes shall be insulated with #101 or #100 metal fabric encased spun mineral fiber pipe insulation as manufactured by Baldwin-Ehret-Hill, Incorporated.

2. application

Metal fabric-encased pipe insulation shall be applied in a neat and uniform manner around pipes, with the mating ends of each piece brought firmly together and secured as follows.

For #101, by threading the lead wire ends of the metal fabric under and around the stay-wires of the opposite end.

For #100, by lacing together the adjoining edges of the outer metal fabric with 18 gauge annealed iron wire.

Adjoining sections along a pipe shall be butted firmly together. Valves and fittings shall be covered with cut pieces of blanket-type pipe insulation, with all edges laced together and finished with Super Powerhouse Cement troweled smooth.

3. finishing

Indoors—Pipe insulation shall be covered with sheet metal jackets of aluminum or galvanized steel

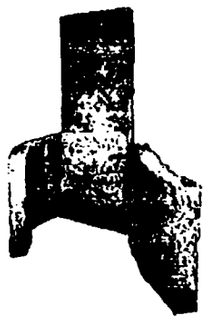
When specified, #100 pipe insulation shall be covered with Super Powerhouse Cement troweled to a smooth finish. After drying, it shall be painted or covered with canvas sewn in place.

Outdoors—Pipe insulation shall be weatherproofed with aluminum, galvanized steel, or roofing felt jackets, banded or wired in place. Fittings shall be either jacketed with prefabricated metal covers, or weatherproofed with Fibrelate asphaltic finish.

290651

SPUN FELT

mineral fiber felt for service to 450 F



B-E-H Spun Felt insulation is fabricated from long, fine, felted mineral fibers and is highly effective when applied to equipment with surface temperatures ranging from —150 to 450 F. When mechanically supported the insulation is effective to 600 F.

Spun Felt is a highly resilient material in flexible or semi-rigid form and made in standard densities from 3 to 8 pounds. Its high temperature resistant, moisture repellent and incombustible fibers are felted and bonded together with a phenolic resin and uniformly distributed to provide a uniform structure with extremely low thermal conductivity.

B-E-H Spun Felt is available with a variety of facings, making this a highly versatile insulation. The facings also add rigidity to the felts, permitting easier and faster application. densities—3, 3½, 4, 5, 6, 8 lb/cu ft.

PHYSICAL PROPERTIES and SIZES

densities—3, 3½, 4, 5, 6, 8 lb/cu ft.
sizes—lengths: 24", 48"
widths: 24"
thickness: 1" thru 4" by ½" increments

FACINGS AVAILABLE

Vapor barrier
Foil-Scrim-Kraft,
Vinyl film, aluminum-pigmented
Asbestos paper

RECOMMENDED THICKNESSES

(Consult B-E-H representatives.)

SPECIFICATIONS

federal: HH-I-542 Type II
HH-I-562 Type I class2
HH-I-563 Type II class D
HH-I-564 Forms 1 and 2, classes A and B

military: MIL-I-16648C
ASTM: C 392 (for elevated temperatures)
C 764 (for low temperatures)

SUGGESTED SPECIFICATIONS

1. insulating material

All _____ surfaces shall be insulated with _____ thick Spun Felt mineral wool insulation as supplied by Baldwin-Ehret-Hill, Inc.

2. application

On flat and curved surfaces Spun Felt shall be impaled on welded or cemented pins or studs on suitable centers and secured with washers or clips. Insulation shall be cut to fit neatly around surface projections and adjoining edges shall be butted tightly together.

On cylindrical vessels ½ inch galvanized bands shall be used to supplement pins and to obtain a more uniform surface.

On rectangular ducts Spun Felt shall be applied with adhesive and encircling bands or tapes, except that on underneath horizontal surfaces 30 inches or more in width, pins or clips shall be used to supplement the adhesive.

On round ducts, flexible type felts shall be fitted around the circumference and held in place with bands or tapes.

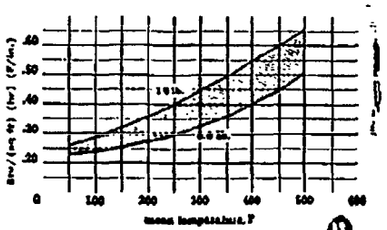
When specified for vapor barrier or other reasons, faced felts shall be applied with the facing exposed and secured with supplementary tapes or bands. Seams and joints shall be sealed with suitable vapor barrier strips. If the facing is penetrated by pins, protrusions or bars, a vapor barrier cement shall be used to seal the openings.

3. finishing

When a cement finish is specified, metal mesh reinforcing shall be securely fastened over the felt surface, then ½ inch thick Super Powerhouse Cement shall be applied and troweled to a smooth finish.

For outdoor service, the finish shall be
1. Insulating cement, over which shall be applied woven wire netting and ¼-inch thick Fibrelate weatherproofing, or
2. Galvanized or aluminum metal sheets, mechanically fastened.

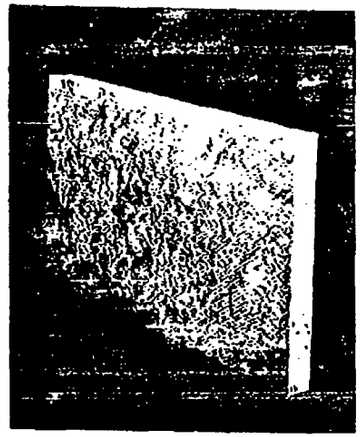
THERMAL CONDUCTIVITY



290652

THERMA-K

MINERAL FIBER BLOCK for service to 750 F



Therma-K is a semi-rigid mineral fiber block insulation; lighter in weight and available in larger sheets than rigid-type block insulation. Note: Under service conditions in excess of 450 F, the binder nearest the hot side will carbonize to a depth dependent on actual temperature and time. The material will maintain its insulating values and remain in place if properly supported.

PHYSICAL PROPERTIES

density—8 lb/cu ft
flexural strength—25 lb/sq in.
compressive strength—150 lb/sq ft @ 10% deformation
linear shrinkage after heating @ 750 F—Negligible

SIZES

Length—48"
Width—24"
Thicknesses—1", 1½", 2", 2½", 3"

RECOMMENDED THICKNESSES

100-200 F	1"
200-300	1½
300-400	2
400-500	3

SPECIFICATIONS

federal: HH-I-564 forms I and II, Types A and B.

ASTM: C 302 611, Type II Class F-2
C 592 Class I

SUGGESTED SPECIFICATIONS

1. insulating material

Specified heated surfaces shall be insulated with _____ thick Therma-K mineral fiber block as manufactured by Baldwin-Ehret-Hill, Incorporated.

2. application

On flat or large-radius cylindrical surfaces, Therma-K shall be fastened over welded studs, pins or wires on suitable centers and secured with washers or clips.

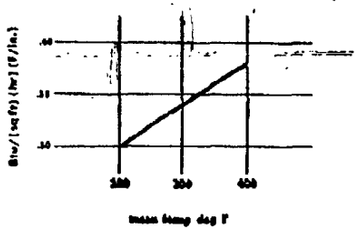
On rectangular ducts, Therma-K blocks shall be held on with encircling metal bands, except that on vertical or horizontal underneath surfaces 33 inches or more wide, pins or clips shall be used to supplement the bands.

3. finishing

When specified, metal sheets of galvanized steel or aluminum fastened with suitable mechanical supports shall be used to cover Therma-K insulation.

When a cement finish is specified, expanded metal lath shall be fastened to the face of the Therma-K, then a ½ inch thick coat of Super Powerhouse cement applied.

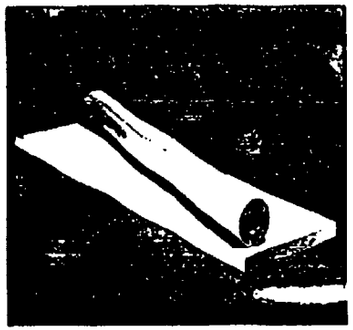
THERMAL CONDUCTIVITY



290653

MONO-FOAM

foamed urethane insulation for service from 230 F to –300 F



A new answer to maintaining low process temperatures, B-E-H Mono-Foam provides a more efficient, less costly method of insulating lines and vessels operating from 230 F to –300 F.

Composed of a cmplex polyurethane, Mono-Foam has a structure of closed cells containing inert gas. Molded as 36" long pipe half sections Mono-Foam has low permeability, excellent compressive strength and an outstanding resistance to thermal shock over its full temperature range. Flame retardant and self-extinguishing Mono-Foam will not contribute to the spread of flame.

Due to its excellent thermal efficiency less than half the usual thickness will provide satisfactory thermal resistance. This means savings in labor, mastics and covering materials. Light weight, non-abrasive, easy to cut and handle, Mono-Foam assures fast, trouble-free installation.

Mono-Foam is also available in flat blocks and boards for vessel insulation.

PHYSICAL PROPERTIES

density, nominal–1.9 lb/cu ft

compressive yield strength–20 lb/sq in.

water vapor permeability–1–2 perms

thermal conductivity (at 75° F–0.15 BTU/hr, sq ft (°F/in.)

"non-burning" by ASTM Method D1692-59T

FACING

Factory-applied: White flame-resistant, Vapor barrier

STANDARD SIZES

pipe insulation

3-foot long sections to fit standard iron pipe and copper tubing—nominal thicknesses of ½", ¾", 1", 1½", 2", 3". Greater thicknesses may be obtained by combining two standard thicknesses.

block and board

Length	24, 48 inches
Width	12, 18, 24 inches
Thickness	1" thru 6", by ½" increments

RECOMMENDED THICKNESSES

(To avoid condensation at 70°F and 80% R. H.)

general—for flat surfaces

90 to 35°F	½"	–55 to –90°F	2½"
35 to 15°F	1"	–90 to –140°F	3"
15 to 35°F	1½"	–140 to –210°F	4"
–30 to –55°F	2"	–210 to –273°F	5"
		–273 to –330°F	6½"

AVAILABLE SIZES and THICKNESSES

nominal size	pipe O.D.	wall thickness—nominal inches ½	¾	1	1½	2	2½	3
iron pipe—overall diameter (nominal inches)								
½	.84	1.90	2.38	2.88	4.00	5.00	6.63	
¾	1.05	2.38	2.38	2.88	4.00	5.00	6.63	
1	1.32	2.38	2.88	2.88	4.00	5.56	6.63	7.63
1¼	1.66	2.88	2.88	2.88	4.00	5.56	6.63	7.63
1½	1.90	2.88	2.88	4.00	5.00	6.63	7.63	8.63
2	2.38	2.88	4.00	4.00	5.56	6.63	7.63	8.63
2½	2.88	4.00	4.00	5.00	6.63	7.63	7.63	8.63
3	3.50	4.00	4.00	5.56	6.63	7.63	8.63	9.63
3½	4.00	5.00	5.56	6.63	7.63	8.63	9.63	10.75
4	4.50	5.56	6.63	6.63	7.63	8.63	9.63	10.75
4½	5.00	6.63	6.63	7.63	8.63	9.63	10.75	11.75
5	5.56	6.63	7.63	7.63	8.63	9.63	10.75	11.75
6	6.63	7.63	8.63	8.63	9.63	10.75	11.75	12.75
7	7.63			9.63	10.75	11.75	12.75	14.00
8	8.63			10.75	11.75	12.75	14.00	15.00
9	9.63			11.75	12.75	14.00	15.00	16.00
10	10.75			12.75	14.00	15.00	16.00	17.00
11	11.75			14.00	15.00	16.00	17.00	18.00
12	12.75			15.00	16.00	17.00	18.00	19.00
14	14.00			16.00	17.00	18.00	19.00	20.00
16	16.00			18.00	19.00	20.00	21.00	22.00
18	18.00			20.00	21.00	22.00	23.00	24.00
20	20.00			22.00	23.00	24.00	25.00	26.00
22	22.00			24.00	25.00	26.00	27.00	28.00
24	24.00			26.00	27.00	28.00	29.00	30.00

29065

AVAILABLE SIZES and THICKNESSES cont.

nominal size	tube O.D.	wall thickness—nominal inches ½	¾	1	1½	2
copper tube		overall diameter (IPS dimensions)				
½	.38	1.90	1.90	2.38	2.38	4.50
¾	.38	1.90	1.90	2.38	2.38	4.50
1	.43	1.90	2.38	2.88	4.50	4.50
1¼	.51	1.90	2.38	2.88	4.50	4.50
1½	.58	1.90	2.38	2.88	4.50	4.50
2	1.13	2.38	2.88	2.88	4.50	4.50
2½	1.38	2.88	2.88	2.88	4.50	4.50
3	1.63	2.88	2.88	2.88	4.50	4.50
3½	2.13	2.88	4.00	4.00	4.50	4.50
4	2.63	4.00	4.00	4.00	4.50	4.50
5	3.13	4.50	4.00	4.00	4.50	7.63
6	3.63	5.00	5.00	5.00	5.00	7.63
4	4.13		5.56	6.63	7.63	8.63
5	5.13		6.63	7.63	8.63	9.63
6	6.13		6.63	7.63	8.63	9.63

SUGGESTED SPECIFICATIONS

1. Insulating material

Specified pipes and surfaces shall be insulated with_____thick Mono-Foam rigid foamed polyurethane insulation as supplied by Baldwin-Ehret-Hill, Incorporated.

2. application

On pipes, Mono-Foam pipe insulation shall be laid in place with copper wires or metal bands with all longitudinal and circumferential joint surfaces covered with a suitable adhesive immediately prior to joining. All joints shall be staggered. Valves and fittings shall be covered with foamed-in-place Mono-Foam, or with prefabricated covers equal in thickness to the adjacent insulation.

Pipe hangers preferably shall be attached outside the insulation with sheet metal protective saddles at points of support. Hangers in direct contact with the pipe shall be covered with at least 2-inch thick insulation around the support for at least 12 inches distance from the adjacent pipe insulation.

On flat and large diameter curved surfaces, Mono-Foam blocks and boards shall be installed with suitable adhesive. Additional layers after the first shall be secured with plastic or treated wood skewers in addition to adhesive. Where feasible, encircling bands or other mechanical support shall be added outside the insulation.

3. finishing

When specified, pipe insulation with factory-applied vapor barrier jackets shall be installed with all longitudinal overlaps sealed with adhesive. Circumferential joints shall be covered with 4-inch wide vapor barrier strips and sealed.

When specified, pipe insulation shall be covered first with a tack coat of vapor seal mastic. While wet, a layer of reinforcing glass fabric shall be pressed into the mastic and smoothed free of wrinkles. A second coat of mastic shall then be applied over the fabric and allowed to dry. Compatible finishes in light colors may be applied when desired. Over block and board insulation, one of the three types, as specified, of mastic shall be applied:

1) Breather
2) Medium Permeance
3) Vapor Barrier

For outdoor use on tanks and vessels, an additional weather-protecting finish coat in a specified color shall be applied.

29065

MONO-FOAM

foamed in place insulation for valves and fittings for service from 230 F to –300 F



Designed for the efficient insulation of low-temperature valves and fittings, foamed-in-place Mono-Foam is an ideal companion product to Mono-Foam pipe and block insulation. It is packaged as a base and a separate catalyst. When mixed on-the-job, these foam immediately to form a rigid polyurethane insulation. The only equipment required is a small electric motor with a stirrer, a mixing bowl and a form which can be made from cardboard, plywood or the finished metal casing, when this is specified.

Mono-Foam should be built up to the same thickness as the adjoining insulation.

Mono-Foam is supplied in capped cans.

SPECIFICATIONS

1. Insulating material

All fittings, valves, flanges or other highly complex shapes are to be insulated with foamed-in-place Mono-Foam as supplied by Baldwin-Ehret-Hill, Inc. with a nominal density of 2 lbs. per cubic foot. All thicknesses are to be equal to or greater than adjacent pipe insulation.

2. application

All fittings, valves, flanges and other complex shapes shall be tested prior to application of insulation and shall be free of defects, free of dirt and foreign matter and shall be thoroughly dry.

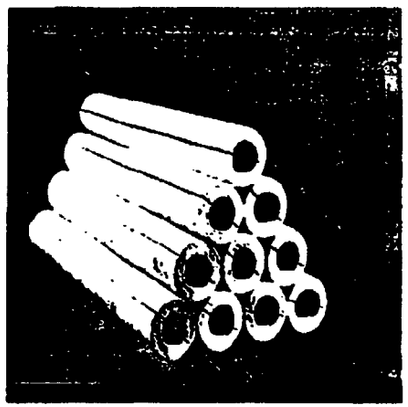
A form shall be made to contain the foam while being foamed and until it has been hardened. This form may be of a permanent nature such as sheet steel or aluminum to serve as a protection to the insulation or a temporary back-up to be removed when Mono-Foam has hardened in place. An estimate should be made of the volume of Mono-Foam to be required. The resin and catalyst should be placed in a container in the proper quantity, mixed according to the instructions on the containers and quickly poured into the form. Excess material may be removed after it is hardened prior to finishing.

3. finishing

If a permanent sheet metal form was used it will require no additional finishing other than placing a cover over the top. If a temporary form was used it should be removed and the surface protected in the same manner as adjacent insulation.

MONO-KOVER

one-piece glass fiber pipe insulation for service to 370 F



B-E-H Mono-Kover is a featherweight pipe insulation composed of incombustible, moisture-resistant glass fiber, bonded with phenolic resin and molded into 3-ft long, one-piece sections.

B-E-H Mono-Kover is highly flexible and resilient. It is outstanding in its resistance to damage or breakage from handling during application. It springs back to its original shape after sections are spread apart to apply on piping. The insulation is intended for application on standard sizes of pipe for temperatures up to 370 F. and, with proper vapor barriers, for low temperature lines down to subzero temperatures.

Because of its light weight, extra length, resilience and ease of handling, B-E-H Mono-Kover costs less to apply than other forms of pipe insulation.

AVAILABLE FACINGS

Mono-Kover is available with the following facings already applied to the pipe insulation in three-foot lengths to meet practically any installation specification.

canvas—Standard weight, 4 oz., 6 oz., and 8 oz.

weatherproof roofing jacket—35 lb., 45 lb. and 55 lb. universal

white vapor barrier, flame-resistant

Four-inch wide strips of facing material are furnished to cover end joints at all jacketing except canvas.

RECOMMENDED THICKNESSES

pipe surface temp. F.	150	200	250	300	350
pipe size (Inches)	wall thickness (nominal, inches)				
for general piping					
½	½	½	½	1	1½
¾	½	½	½	1	1½
1	½	½	1	1	1½
1¼, 1½, 2	½	½	1	1	1½
2½, 3, 3½, 4, 4½	½	½	1	1½	2
5, 6	½	1	1	1½	2
7, 8	½	1	1	1½	2
9, 10	1	1	1½	2	2
11	1	1	1½	2	2
12, 14, 15, 16, 17, 18	1	1	1½	2	2
19, 20, 21, 22, 23, 24	1	1	1½	2	2
sizes 25 through 32 made to special order.					
for hot water and low pressure steam					
½, ¾, 1, 1¼	½	½	½	½	½
1½, 2, 2½	½	½	½	½	½
3, 3½, 4, 4½, 5, 6	½	½	½	½	½
7	½	½	1	1	1
8, 9, 10	½	½	1	1	1
11, 12	1	1	1	1	1

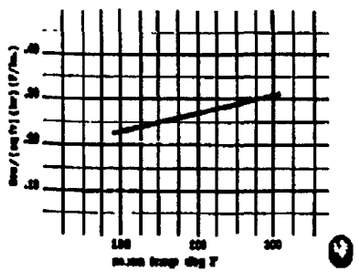
for cold piping and dual temperature service*

service	temperature F.	insulation thickness, (inches) by range of nominal pipe sizes					
		½ to 1½	1½ to 3	3½ to 5	6 to 10	11 to 24	25 to 36
light—Type 1	50 to ambient	½	½	½	1	1	1
light—Type 2 standard	50 to 35	½	1	1	1½	1½	1½
heavy	35 to 0	1½	1½	2	2	2½	2½
special	0 to −20	1½	2	2½	2½	3	3
	below −20						

In most damp conditions

*When appropriate vapor-barrier facings are applied.

THERMAL CONDUCTIVITY



AVAILABLE SIZES and THICKNESSES

nom. size	pipe O.D.	wall thickness (nominal, inches) ½"	¾"	1"	1½"	2"	2½"	3"
iron pipe	overall diameter (nominal, inches)							
½	.84	1.68	2.10	2.26	4.00	5.00		
¾	1.05	2.10	2.52	2.68	4.00	5.00		
1	1.32	2.36	2.78	3.20	4.26	5.26		
1¼	1.66	2.52	3.12	3.28	5.00	5.26		
1½	1.90	2.52	3.36	4.00	5.00	5.63		
2	2.38	3.26	4.00	4.00	5.26	6.63	7.63	8.63
2½	2.88	4.00	4.00	4.00	5.26	6.63	7.63	8.63
3	3.50	4.00	5.00	5.26	6.63	7.63	8.63	9.63
3½	4.00	5.13	5.26	6.63	6.63	7.63	8.63	9.63
4	4.50	5.26	6.00	6.63	7.63	8.63	9.63	10.75
4½	5.00	6.00	6.50	7.63	7.63	8.63	9.63	10.75
5	5.56	6.63	7.26	7.63	8.63	9.63	10.75	11.75
6	6.63	7.63	8.13	8.63	9.63	10.75	11.75	12.75
7	7.63	8.63	9.13	9.63	10.75	11.75	12.75	14.00
8	8.63	9.63	10.13	10.75	11.26	12.75	13.25	15.00
9	9.65	10.63		11.75	12.75	14.00	15.00	16.00
10	10.75	11.75		12.75	14.00	15.00	16.00	17.00
11	11.75	12.75		14.00	15.00	16.00	17.00	18.00
12	12.75	13.75		15.00	16.00	17.00	18.00	19.00
14				16.00	17.00	18.00	19.00	20.00
15				17.00	18.00	19.00	20.00	21.00
16				18.00	19.00	20.00	21.00	22.00
17				19.00	20.00	21.00	22.00	23.00
18				20.00	21.00	22.00	23.00	24.00

nom. size	tube O.D.	wall thickness (nominal, inches) ½"	¾"	1"	1½"	2"
copper tube	overall diameter (nominal, inches)					
⅜	½	1.63	2.13	2.88	3.50	5.00
½	⅝	1.88	2.38	2.88	4.00	5.00
¾	⅞	2.13	2.63	2.88	4.00	5.00
1	1⅛	2.38	2.88	3.50	4.00	5.26
1¼	1⅜	2.63	3.13	3.50	5.00	5.26
2	2⅛	3.13	3.63	4.00	5.26	6.63
2½	2⅝	3.63	4.13	4.50	5.26	
3	3⅛	4.13	4.50	5.26	6.63	
3½	3⅝	4.50	5.13	5.26	6.63	
4	4⅛	5.13	5.26	6.63	7.63	
5	5⅛	6.13	6.63	7.63	8.63	
6	6⅛	7.26	7.63	8.63	9.63	

SPECIFICATIONS

federal HH-I-533 Type I, Class A, B
HH-I-563 Type II, Classes 1, 2, 3

military MIL-I-22344A

ASTM- C 201 (for elevated temperatures)
C 209 (for low temperatures)

SUGGESTED SPECIFICATIONS

1. insulating material

Piping shall be insulated with _____ thick Mono-Kover pipe insulation as specified with or without jacket, for below or outdoor service, as supplied by Baldwin-Ehret-Hill, Inc.

2. application

Mono-Kover pipe insulation shall be securely held on pipes by fasteners united to the insulation surface and to the intended service (hot or cold).

On heated pipes, insulation shall be held in place by stapling joint sections together or by encircling bands or tapes. Canvas jackets and joint laps shall be carefully and evenly pasted down with lapping adhesive. Fittings on lines smaller than 4-inch shall be insulated with Super Powerhouse Cement. On larger lines, fitting covers shall be fabricated from pipe insulation.

On cold and dual-temperature lines requiring vapor barrier protection, all longitudinal lap joints in facings shall be sealed with vapor barrier adhesive. Circumferential joints shall be sealed with cemented-on vapor barrier strips. Insulation shall be held in place with encircling bands or tapes. Fittings shall be insulated with covers fabricated from pipe insulation or else wrapped with glass fiber blanket and the entire vapor-sealed.

3. finishing

(not required on jacketed materials unless specified)

Indoors—insulation shall be covered with canvas sewn or pasted neatly in place with lapping adhesive. Canvas may be painted if desired.

Outdoors (field applied)—

Alternates

1) Insulation shall be covered with asphalt-saturated and coated sealing felt jackets with longitudinal and circumferential joints lapped and cemented.

2) Insulation shall be covered with galvanized or aluminum sheet metal jackets.

easy to apply



Simply spread each one-piece section at the seam and slip one end over the pipe. Run knife along the Mono-Kover seal 3 ranges apart into place. Form the seam together and apply any standard type of fastening.



Firm, tough and resilient—but not hard—Mono-Kover is cut easily with a knife. No sawing is necessary and there is less handling because of its one-piece construction.



B-E-H Mono-Kover can be painted or dusted for appearance and to conform to surroundings.

290656

290657

SUPER-POWERHOUSE

white insulating-finishing cement for service to 1200 F.



Baldwin-Ehret-Hill Super Powerhouse Cement is a dry mixture of high temperature-resisting spun mineral fiber, a hydraulic-setting binder and other ingredients. Mixed with water it can be troweled on any surface with a minimum of effort. It sets quickly to form a smooth, white, glazed surface. After drying, it may be painted without further treatment. Weatherproofing may be applied directly for outdoor service.

Baldwin-Ehret-Hill Super Powerhouse Cement incorporates the qualities of extremely easy troweling, application of finish in one coat, quick hydraulic set and freedom from drying shrinkage cracks. The excellent adhesive qualities of this B-E-H Super Powerhouse Cement make it popular with workers since it does not fall off during application.

PHYSICAL PROPERTIES

physical properties (after molding and drying)
recommended water ratio—1:1 (6½ gals. 50 lb bag)
coverage—36 sq ft per 100 lb at 1 inch thickness

RECOMMENDED THICKNESSES

for insulating irregular areas—same as adjacent insulation
for finishing—single coat ½ inch thick

SPECIFICATIONS

military: MIL-C-2908A Type II
ASTM: C 447-60T

SUGGESTED SPECIFICATIONS

1. insulating—finishing material

All insulating finishing cement shall be Super Powerhouse hydraulic-setting cement as manufactured by Baldwin-Ehret-Hill, Inc.

2. application

hard surface finish—all insulating block, metal-mesh blankets and insulating cement shall be finished with ½ inch thick Super Powerhouse cement applied in one coat and troweled to a smooth finish.

pipe fittings—Fittings, valves, etc., in pipe lines smaller than 4 in IPS shall be covered with Super Powerhouse cement built up to the same thickness as adjacent pipe insulations and troweled smooth.

3. finishing (alternates)

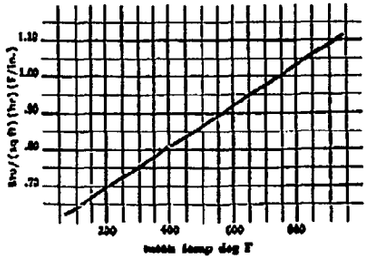
a) No further finish to be applied.

b) canvas (on pipe lines)—After drying the cement shall be covered with 6 or 8 oz. canvas, cemented or sewed in place and painted as specified.

c) paint—After drying the cement surface shall be painted as specified.

d) outdoors—The cement shall be covered with woven wire mesh securely fastened, then with ½ inch thick B-E-H Fibrekote Weatherproofing.

THERMAL CONDUCTIVITY



OTHER PRODUCTS

Fibrekote

Fibrekote weatherproofs insulated surfaces and is made of an asphalt emulsion and long asbestos fibers. Applied by trowel, Fibrekote, when dried, resists abrasion, prevents water entry and is sufficiently elastic to accommodate normal expansion and contraction without cracking. Flame retardant and self-extinguishing.

Asphalt Cutback

A mixture of asphalts, asbestos fiber, mineral fillers and petroleum-base solvent for protective coating of insulating materials and metallic surfaces. Available in a standard grade for surfaces which may receive 400 F and a high temperature grade for surfaces which may reach 700 F.

Designed to protect block, cement and blanket-type insulation and adjacent metal surfaces from moisture, corrosion, and weather generally. Also resists abrasive and mechanical damage. Dried film remains flexible, without sagging or running due to high temperatures. Available in spray or trowel grades.

B-E-H #1 PLUS

insulating cement for service to 2100 F



B-E-H #1 Plus Insulating Cement is a dry mix composed of spun mineral wool granules, bentonite clay and asbestos fiber. The resilient fibers and special binder produce a whiter finish that looks better, handles easier and sets faster.

Easily applied by trowel after mixing with water, it forms a rust-inhibiting, non-corrosive insulation for heated surfaces. It may be used as a leveling material over insulating blocks; as a complete insulation on irregular surfaces; as patching or repair material; or for general insulating and maintenance work.

PHYSICAL PROPERTIES

(after molding and drying)
recommended water ratio—2.1
coverage, dry—55 sq ft, 1 in. thick/100 lb
linear shrinkage after 24 hrs. at 2100 F—3%

RECOMMENDED THICKNESSES

hot surface temperature	thickness (inches)	hot surface temperature	thickness (inches)
100 to 175 F.	1	950 to 1100 F.	4
175 to 325 F.	1½	1100 to 1200 F.	5
325 to 550 F.	2	1300 to 1600 F.	5½
550 to 750 F.	2½	1650 to 1800 F.	6½
750 to 950 F.	3		

SPECIFICATIONS

federal: HH-C-168
military: MIL-C-2841 C
ASTM: C 195

SUGGESTED SPECIFICATIONS

1. insulating material

All mineral wool insulating cement, shall be B-E-H #1 Plus as manufactured by Baldwin-Ehret-Hill, Inc.

2. application

B-E-H #1 Plus insulating cement shall be applied by spacing on a first coat. After this has dried the next coat shall be roughed on or troweled smooth, depending on total thickness specified. Each coat shall be not over 4½ inches thick. Thicknesses of 1½ inches and more shall be reinforced with woven wire mesh before applying the final coat of cement. Final coat shall be troweled level.

3. finishing (alternates)

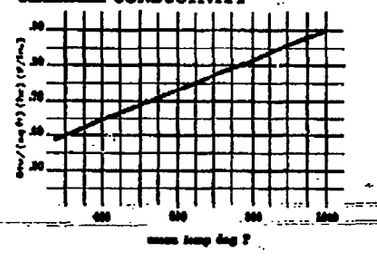
hard surface—A ½" to ½" coat of Super Powerhouse Cement shall be applied and troweled smooth with a steel trowel. When specified, the surface shall be painted after drying.

canvas—After drying the cement shall be covered with 6 or 8 oz. canvas applied with lagging adhesive.

outdoor—After drying, the cement shall be covered with woven wire mesh securely fastened, then with ½ inch thick B-E-H Fibrekote weatherproofing.

B-E-H #1 PLUS

THERMAL CONDUCTIVITY



Loose and Granulated Wool

Spun mineral wool fill insulation consisting of long fibered wool, available in loose form as it comes from the fiber-forming machine or rolled into granules approximately ½ to 1½ inch in diameter.

The loose wool form is used as a hand-packed fill insulation for spaces or irregular shapes, dimensions and contours. Granulated wool may be poured or applied pneumatically using special blowing machines.

Suitable for heated surfaces up to 1200 F and with suitable vapor barriers for low temperature service to —350 F or lower.

Bond-Tite

A highly adhesive material that can be easily troweled or sprayed to the surface of block insulation. Bond-Tite is particularly adaptable to temporarily securing block insulation prior to application of reinforcing wire.

#200 Asbestos Cement

A standard quality cement for troweling over blocks, blankets and all types of insulations where a smooth finish is desired. Dries to a hard white, strong surface.

B E H



products are available through . . .

A national network of contract branches and franchised distributors. These groups offer broad experience, engineering know-how and are fully qualified to install B-E-H insulation products on all types of piping and equipment. In addition, Baldwin-Ehret-Hill's own highly skilled engineers can provide technical guidance and assistance for all insulation problems, large or small.

For the name of the contract branch closest to your job site, contact the Trenton home office.

manufacturers of a complete line of
HEAT AND COLD INSULATIONS

BALDWIN-EHRET-HILL, INC.
Home Office
500 Bromley Avenue, Trenton 2, N. J.
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