

DEC

179

CONFIDENTIAL

SUPPLY

REF

REF

MATERIALS		THERMAL INSULATION	
MATERIAL SPECIFICATION		STANDARD ENGINEERING SPECIFICATION	
SERIES 100		ISSUED OCT 1954	SN 100 M
PREFORMED BLOCK AND PIPE		REVISED APRIL 1957	Page 1 of 12
Code	101*	102*	103
Material	85% Magnesite	Calcium silicate	Diatomaceous earth
Material Description	Hydrated basic magnesium carbonate 80% by weight minimum	Stable, cellular, calcined fire clay base	Diatomaceous earth, asbestos fiber, with bonding clay and cementing materials
Filler	Asbestos or glass fiber		
Binder	Clay or other cementing materials 5% by weight		
Temperature Range	100°F to 500°F	100°F to 1200°F	500°F to 1800°F
K Factor	500°F - 0.55 max.	500°F - 0.54 max.	500°F - 0.77 max.
Density	11-14 lb. per cu. ft.	11 lb. per cu. ft.	24-27 lb. per cu. ft.
Compressive Strength			
Manufacturing Process	Machine molded or extru. Pipe mach. cut on diameter.	Machine extruded; Pipe mach. cut on diameter.	Machine molded. Pipe mach. cut on diameter.
Resistance to Breakage in Handling	Good	Good	Good
Dimensions	ASTM **	ASTM **	To Specification
Other Qualifications		Good mechanical strength with low shrinkage.	
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.			
* Bands are supplied at extra cost. Order must state "without bands" if not required. For 11" IPS and larger there is an additional charge for 2-oz. canvas cover. Material should be specified "without 2-oz. canvas" to avoid extra charge. ** New Simplified Dimensional System sponsored by ASTM *** Fiber Board Paper Products Corp.	85% Mag. Philip Carey Mfg. Co.	Calcisite The Ruberoid Co.	High Temp. No. 19 Philip Carey Mfg. Co.
	Thermalite 85% Ehret Mag. Mfg. Co., Inc.	Keylo Owens-Illinois Glass Co.	Endure H-Temp. Ehret Mag. Mfg. Co., Inc.
	85% Mag. Johns-Manville Sales Corp.	Thermobestos Johns-Manville Sales Corp.	J/M Superex Johns-Manville Sales Corp.
	Featherweight Keesby & Mattison Co.	Keytherm Keesby & Mattison Co.	High Temp. Keesby & Mattison Co.
	85% Mag. Mündet Cork Corp.	Tricalite Mündet Cork Corp.	
	Precision-molded Pabco Ind. Ins. Div.***	Caltemp Pabco Ind. Ins. Div.***	
			DUP 0960721
Vendors and merchandise designations are given to describe materials and may not include all acceptable products. Substitutions are to be made only on approval of the authority initiating the use of this Specification.			
SUBCOMMITTEE NO 35			

DU 040913

SM 100 M		MATERIAL SPECIFICATION - SERIES 100		OCTOBER 1954	166
Page 2				Rev. Apr. 1957	
Code	104			106	
Material	Inorganic silices			Asbestos and diatomaceous earth molded	
Material Description	Inorganic silices and asbestos fibers			Compressed fluffy asbestos sprayed with sodium silicate and diatomaceous earth sprinkled on the asbestos mat. External finish consists of an integral refractory coating*	
Filler					
Binder					
Temperature Range	100°F to 1600°F			700°F to 1000°F	
K Factor	Pipe covering - 500°F - 0.54 max. Block - 500°F - 0.58 max.			500°F - 0.58 max.	
Density	Pipe covering - 15 lb. per cu. ft. Block - 14 lb. per cu. ft.			14 lbs. per cu. ft.	
Compressive Strength	65 lbs. per sq. in. min. at 5% deformation				
Manufacturing Process	Filter moulding process			Formed and comp. on mandril. Pipe mech. cut on dia.	
Resistance to Breakage in Handling	Good			Good	
Dimensions					
Other Qualifications	Good mechanical strength. Shrinkage less than 2% at 1600°F			Formed on a mandril to a predetermined wt. Pressed to obtain the desired density, and baked.	
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.					
* Available for field mixing to repair joints and seams.	Attemp			Unibestos	
	Phille Carey Co.			Union Asbestos & Rubber Co.	

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MATERIAL SPECIFICATION - SERIES 100

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Code	107	108	109
Material	Asbestos sponge		Corrugated asbestos preshrunk
Material Description	Asbestos sheets separated by finely ground sponged material banded with adhesive strips.		Alternate layers of plain and corrugated asbestos sheets. Outer covering asbestos felt.
Filler			
Binder			
Temperature Range	100°F to 700°F		100°F to 400°F
K Factor	500°F - 0.60 max.		200°F - 0.58 max.
Density	30 lb. max.		
Compressive Strength			
Manufacturing Process	Laminated - 38 to 42 layers per in. of thick.		3-ply laminate
Resistance to Breakage in Handling	Very good		Good
Dimensions	To Specification		
Other Qualifications	Must be a flexible product		Preshrunk
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.			
* Aircell - 4-ply Excel - 6-ply Cavacel - 8-ply	Asbestos Sponge Johns-Manville Sales Corp. Asbestos Sponge Philip Carey Mfg. Co. Sponge Felt The Ruberoid Co. Sponge Felt Ehret Mfg. Mfg. Co., Inc. Sponge Felt Sed. Asbestos Mfg. Co.		Preshrunk Asbestoscel Johns-Manville Sales Corp. Aircell * Philip Carey Mfg. Co. K & H - Aircell Keasby & Harrison Co. B-H Aircell Baldwin Mill Co.
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MATERIAL SPECIFICATION - SERIES 100

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Code	110	111	112
Material	Vegetable cork	Cellular glass	Glass fiber
Material Description	Vegetable cork, granulated and compressed into cork-board or molded forms, from material of vegetable origin for low and medium temperature insulation.	Cellular glass foamed and fused into unicellular form.	See codes 112.01 through 112.81
Filler			
Binder	Natural resin in cork		
Temperature Range	-200°F to 100°F	-200°F to 100°F (+300°F for dual temp.)	
K Factor	100°F - 0.29 max.	100°F - 0.43 max.	
Density		10 - 11 lb. per cu. ft.	
Compressive Strength	15 lb. per sq. in. min.	35 lb. per sq. in. min.	
Manufacturing Process	Machine comp. or molded. Baked at moderate temp.		
Resistance to Breakage in Handling	Good		
Dimensions			
Other Qualifications	Pipe covering shall be coated on the outside with heavy mastic		

The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.

CONFIDENTIAL	Cork Armstrong Cork Co.	Foamglas Pittsburgh Corning Corp.	
	Cork Mundet Cork Co.		

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L M N C F R

OCTOBER 1954		MATERIAL SPECIFICATION - SERIES 100		SM 100 M
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Code	112.01	112.02		
Material	Glass fiber	See Code 112.01		
Material Description	Textile type fine glass fiber pipe insulation, plain, with medium-temperature binder.			
Filler				
Binder	Phenol-formaldehyde or Di-Cy			
Temperature Range	80°F to 350°F			
K Factor	100°F - 0.25			
Density	3" and 6" lb. per cu. ft.			
Compressive Strength				
Manufacturing Process	Machine molded			
Resistance to Breakage in Handling	Very good			
Dimensions				
Other Qualifications	Specify whether for iron pipe or copper tubing			
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.				
CONFIDENTIAL	*Ultrafine Snap-on Gustin-Bacon Mfg. Co.			
	*Monocoover Baldwin-Hill			
	*Thermoglas Phillis Cary Mfg. Co.			
	**Fiberglas PF Pipe Insu. Owens-Corning Corp.			
	**Armoglas PF Pipe Insu. Armstrong Cork Co.			
	*Aerolag Johns-Manville Sales Corp.			
				DUP 0960725

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MATERIAL SPECIFICATION - SERIES 100

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Code	112.11	112.12	
Material	Glass fiber *	Glass fiber	
Material Description	Textile type fine glass fiber bonded pipe insulation with 30-lb. factory-applied roofing felt finish. Sizes 5" OD insulation and below.	Textile type fine glass fiber bonded pipe insulation with 45-lb. factory-applied roofing felt finish. Sizes over 6" OD insulation.	
Filler			
Binder	Phenol-formaldehyde or Di-Cy	Phenol-formaldehyde or Di-Cy	
Temperature Range	80°F to 350°F	80°F to 350°F	
K Factor	100°F - 0.25	100°F - 0.25	
Density	3" and 6" lb. per cu. ft.	3" and 6" lb. per cu. ft.	
Compressive Strength			
Manufacturing Process	Machine molded	Machine molded	
Resistance to Breakage in Handling	Very good	Very good	
Dimensions			
Other Qualifications	Specify whether for iron pipe or copper tubing 30 lb. felt used up to 6" OD of insulation	Specify whether for iron pipe or copper tubing 45 lb. felt used where OD of insulation is 6" or greater	
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.			
* Not manufactured with factory-applied jackets in sizes 2" and below by Owens-Corning and Armstrong Cork Co.	* Ultrafine Snap-on Gustin-Bacon Mfg. Co.	* Ultrafine Snap-on Gustin-Bacon Mfg. Co.	
	* Monocover Baldwin-Hill	* Monocover Baldwin-Hill	
	* Thermoglas Philip Carey Mfg. Co.	* Thermoglas Philip Carey Mfg. Co.	
	** Fiberglas P F Pipe Insu. Owens-Corning Corp.	** Fiberglas P F Pipe Insu. Owens-Corning Corp.	
	** Armoglas P F Pipe Insu. Armstrong Cork Co.	** Armoglas P F Pipe Insu. Armstrong Cork Co.	
	* Aerolag Johns-Manville Sales Corp.	* Aerolag Johns-Manville Sales Corp.	
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MATERIAL SPECIFICATION - SERIES 100

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Code	112.16	112.17	
Material	Glass fiber	Glass fiber	
Material Description	Textile type fine glass fiber bonded pipe insulation with 4-oz. factory-applied canvas finish.	Textile type fine glass fiber bonded pipe insulation with 8-oz. factory-applied canvas finish.	
Filler			
Binder	Phenol-formaldehyde or Di-Cy	Phenol-formaldehyde or Di-Cy	
Temperature Range	80°F to 300°F	80°F to 300°F	
K Factor	100°F - 0.25	100°F - 0.25	
Density	3" and 6" lb. per cu. ft.	3" and 6" lb. per cu. ft.	
Compressive Strength			
Manufacturing Process	Machine molded	Machine molded	
Resistance to Breakage in Handling	Very good	Very good	
Dimensions			
Other Qualifications	Specify whether for iron pipe or copper tubing	Specify whether for iron pipe or copper tubing	
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.			
CONFIDENTIAL	*Ultrafine Snap-on Gustin-Bacon Mfg. Co.	*Ultrafine Snap-on Gustin-Bacon Mfg. Co.	
	*Monocover Baldwin-Hill	*Monocover Baldwin-Hill	
	*Thermoglas Philip Carey Mfg. Co.	*Thermoglas Philip Carey Mfg. Co.	
	**Fiberglas PF Pipe Insu. Owens-Corning Corp.	**Fiberglas PF Pipe Insu. Owens-Corning Corp.	
	**Armoglas PF Pipe Insu. Armstrong Cork Co.	**Armoglas PF Pipe Insu. Armstrong Cork Co.	
	*Aerolag Johns-Manville Sales Corp.	*Aerolag Johns-Manville Sales Corp.	
			

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SH 100 M		MATERIAL SPECIFICATION - SERIES 100		OCTOBER 1954
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Code	112.21	112.22		
Material	Glass fiber	Glass fiber		
Material Description	Textile type fine glass fiber bonded pipe insulation with black factory-applied aluminum laminate vapor-barrier finish.	Textile type fine glass fiber bonded pipe insulation with white factory-applied aluminum laminate vapor-barrier finish.		
Filler				
Binder	Phenol-formaldehyde or Di-Cy	Phenol-formaldehyde or Di-Cy		
Temperature Range	40°F to 200°F	40°F to 200°F		
K Factor	100°F - 0.25	100°F - 0.25		
Density	3" and 6" lb. per cu. ft.	3" and 6" lb. per cu. ft.		
Compressive Strength				
Manufacturing Process	Machine molded	Machine molded		
Resistance to Breakage in Handling	Very good	Very good		
Dimensions				
Other Qualifications	Specify whether for iron pipe or copper tubing. Weather protection is required for outside service.	Specify whether for iron pipe or copper tubing. Weather protection is required for outside service.		
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.				
CONFIDENTIAL	*Ultrafine Snap-on Gustin-Bacon Mfg. Co.	*Ultrafine Snap-on Gustin-Bacon Mfg. Co.		
	*Monocover Baldwin-Hill	*Monocover Baldwin-Hill		
	*Thermoglas Philip Carey Mfg. Co.	*Thermoglas Philip Carey Mfg. Co.		
	**Fiberglas PF Pipe Insu. Owens-Corning Corp.	**Fiberglas PF Pipe Insu. Owens-Corning Corp.		
	**Armoglas PF Pipe Insu. Armstrong Cork Co.	**Armoglas PF Pipe Insu. Armstrong Cork Co.		
	*Aerolag Johns-Manville Sales Corp.	*Aerolag Johns-Manville Sales Corp.		



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Code	112.61		112.66
Material	Glass fiber		Glass fiber
Material Description	Textile type fine glass fiber bonded board insulation.		Textile type fine glass fiber insulation cut to lagging sizes and sanded on one side to form insulation blocks.
Filler			
Binder	Phenol-formaldehyde		Phenol-formaldehyde
Temperature Range	40°F to 350°F		40°F to 350°F
K Factor	100°F - 0.25 to 0.30		100°F - 0.25
Density	2 1/2 to 9 lb. per cu. ft.*		9 lb. per cu. ft.
Compressive Strength			
Manufacturing Process	Machine molded		Machine molded
Resistance to Breakage in Handling	Very good		Very good
Dimensions	Std. 24" x 48"		Length - 36" Width - 6" or 12"
Other Qualifications			

The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.

*Density must be specified.	Fiberglas PF Insulation Owens-Corning Corp.		Fiberglas PF617 Insulation Owens-Corning Corp.
	Armoglas PF Insulation Armstrong Cork Co.		Armoglas PF617 Insulation Armstrong Cork Co.

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Code	112.71		112.81
Material	Glass fiber		Glass fiber
Material Description	Textile type fine glass fiber bonded board insulation with asphalt and kraft paper vapor-barrier finish.		Textile type fine glass fiber bonded acoustical board with fire-resistant coating.
Filler			
Binder	Phenol-formaldehyde		Phenol-formaldehyde
Temperature Range	40°F to 150°F		40°F to 150°F
K Factor	100°F - 0.26		100°F - 0.26
Density	6 lb. per cu. ft.		6 lb. per cu. ft.
Compressive Strength			
Manufacturing Process	Machine molded		Machine molded
Resistance to Breakage Handling	Very good		Very good
Dimensions	24" x 48" boards 3/4" to 2" thickness		24" x 48" boards 5/8" to 2" thickness
Other Qualifications			Neoprene coating on side of board exposed to air flow

The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.

[illegible]

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MATERIAL SPECIFICATION - SERIES 100

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Code	113	114	115
Material	See Code 112.81	Mineral wool (Block only)	Mineral wool - asphalt impregnated
Material Description		Mineral slag wool	Mineral wool fibers homogeneously impregnated with an asphalt binder.
Filler			
Binder		High temp. binder	Asphalt
Temperature Range		500°F to 1700°F	-200°F to 100°F
K Factor		500°F - 0.45 max.	100°F - 0.34 max.
Density		19.2 lb. per cu. ft.	
Compressive Strength		12 lb. per sq. in.	
Manufacturing Process		Machine melted	Machine molded
Resistance to Breakage in Handling		Good	Good
Dimensions			
Other Qualifications			

The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their product meets the above specifications.

CONFIDENTIAL		PV Superemp Eagle-Picher	Rock Cork Johns-Menville Sales Corp.
		Mono-Block Baldwin Hill Co.	Mineral Wool Board Armstrong Cork Co.
		Armtemp Armstrong Cork Co.	Koldboard Baldwin Hill Co.
		M & W Block M. H. Detrick Co.	



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