

165

CONFIDENTIAL

NOTE - THIS DOCUMENT IS THE PROPERTY OF E. I. DUPONT DE NEMOURS AND COMPANY. THE TECHNICAL
INFORMATION CONTAINED HEREIN IS UNCLASSIFIED DATE 10/1/83 BY 6032 UC/ML/STP

MATERIALS		THERMAL INSULATION STANDARD ENGINEERING SPECIFICATION	
MATERIAL SPECIFICATION SERIES 100 PREFORMED BLOCK AND PIPE		ISSUED OCT 1954	SN 100 M Page 1 of 14
		REVISED MARCH 1959	
Code	101*	102*	103
Material	85% Magnesia	Calcium silicate	Diatomaceous earth
Material Description	Hydrated basic magnesium carbonate 80% by weight minimum	Staple, 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	1200°F = 0.4, 500°F = 0.3	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.			
*Bonds are supplied at extra cost. Order must state "with-out bonds" if not required. For 11" IPS and larger there is an additional charge for 2-as convex cover. Material should be specified "without 2-as convex" to avoid extra charge. **New Simplified Dimensional System sponsored by ASTM ***Fiber Board Paper Products Corp † Codes 104 and 106 are acceptable alternatives unless noted on the Project Specifications.	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	Kaylo Owens-Illinois Glass Co	Enduro Hi-Temp. Ehret Mag Mfg Co, Inc
	85% Mag. Johns-Manville Sales Corp	Thermobestos Johns-Manville Sales Corp	J/M Superex Johns-Manville Sales Corp
		Keytherm Keesby & Mattison Co	High Temp. Keesby & Mattison Co
	Featherweight Keesby & Mattison Co	Tricalite Mundt Clark Corp	
	85% Mag Mundt Clark Corp	Caltemp Pebco Ind Ins Div ***	
	Prestress-molded Pebco Ind Ins Div ***		
DUP 0960817			
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 authorizing the use of this Specification.			
SUBCOMMITTEE NO. 32			

DU 041009

Code	104	106
Material	Inorganic silicates	Asbestos and diatomaceous earth mixed
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**	200°F to 1200°F
K Factor	Pipe covering - 500°F - 0.64 max Block - 500°F - 0.58 max	500°F - 0.54 max
Density	Pipe covering - 15 lb per cu ft Block - 14 lb per cu ft	18 lbs per cu ft
Compressive Strength	65 lbs per sq in. min at 5% deformation	11 PSI at 5% deformation - Dry
Manufacturing Process	Filter moulding process	Formed and comp. on mandril. Pipe mach. cut on die
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. ** Max temp of Karylo 20 is 1800°F	Altemp Philip Carey Co	Unibestos Union Asbestos & Rubber Co
	Karylo 20 Owens-Illinois Glass Co	

CONFIDENTIAL

T O R N Y Z 1 7 E

145

OCTOBER 1954		MATERIAL SPECIFICATION - SERIES 100		SN 100 M
Rev. Sept 1953				Page 3
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 thickness		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.				
• Airell -4-ply Excel -6-ply Caucel-8-ply	Asbestos Sponge Johns-Manville Sales Corp		Preshrunk Asbestocel Johns-Manville Sales Corp	
	Asbestos Sponge Philip Carey Mfg Co		Airell • Philip Carey Mfg Co	
	Sponge Felt The Ruberoid Co		K & M - Airell Keesbey & Mattison Co	
	Sponge Felt Ehret Mfg Mfg Co, Inc		B-H Airell Baldwin-Hill Co	
	Sponge Felt Smith and Kensler Corp			
DUP 0960819				

CONFIDENTIAL

V V X Y Z A B C

97

OCTOBER 1954		MATERIAL SPECIFICATION - SERIES 100		SN 100 M
Rev Dec 1958				Page 5
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 5" 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			
	*Mono-Kover Baldwin-Hill			
	*Thermoglas Phillip Cary Mfg Co			
	**Fiberglas Owens-Corning Corp			
	**Armoglas PF Pipe Insu Armstrong Cork Co			
	*Aerogel Johns-Manville Sales Corp			
				DUP 0960821



WXY

SH 100 M		MATERIAL SPECIFICATION - SERIES 100		OCTOBER 1954
Page 6				Rev March 1959

Code	112.11	112.12	
Material	Glass fiber	See 112.11	
Material Description	Textile type fine glass fiber bonded pipe insulation with 30-lb factory-applied roofing felt finish on sizes 6" and smaller and 45-lb felt on sizes above 6" outside diameter.		
Filler			
Binder	Phenol-formaldehyde or Di-Cy		
Temperature Range	80°F to 350°F		
K Factor	100°F - 0.25		
Density	3" and 6" 1b 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, 30-lb felt used up to 6" OD of insulation		
The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their products meet the above specifications.			
• Order must specify finish noted under Material Description.	• Ultrafine Snap-on Gustin-Bacon Mfg Co		
	• Veno-Kover Baldwin-Hill		
	• Thermoglas Phillips Carey Mfg Co		
	• Fiberglas Owens-Corning Corp		
	• Armoglas PF Pipe Ins Armstrong Cork Co		
	• Aerogel Johns-Manville Sales Corp		
	• PPG Glass Fiber Pitts Plate Glass Co		
	• Micro-Lok LOF Glass Fibers Co		

DUP 0960822

187

CONFIDENTIAL
MAY 1959

OCTOBER 1954		MATERIAL SPECIFICATION - SERIES 100		SN 100 M
Rev. Dec 1958				Page 7
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		
	*Vesco-Kover Baldwin-Hill	*Vesco-Kover Baldwin-Hill		
	*Thermoglas Philip Carey Mfg Co	*Thermoglas Philip Carey Mfg Co		
	**Fiberglas Owens-Corning Corp	**Fiberglas 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		
	*PPG Glass Fiber Pitts Plate Glass Co	*PPG Glass Fiber Pitts Plate Glass Co		
	*Micro-Lok LOF Glass Fibers Co	*Micro-Lok LOF Glass Fibers Co		

DUP 0960823

DU 041015

SH 100 M

OCTOBER 1954

MATERIAL SPECIFICATION - SERIES 100

Page 8

Rev Dec 1958

Code	112.21	112.22	112.23
Material	Glass fiber	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.	Textile type fine glass fiber bonded pipe insulation with factory-applied white bleached kraft paper, laminated to the outer face of aluminum foil.
Filler			
Binder	Phenol-formaldehyde or Di-Cy	Phenol-formaldehyde or Di-Cy	Phenol-formaldehyde
Temperature Range	40°F to 200°F	40°F to 200°F	100°F to 250°F
K Factor	100°F - 0.25	100°F - 0.25	100°F - 0.25
Density	3" and 6" lb per cu ft	3" and 6" lb per cu ft	3 lb per cu ft min
Compressive Strength			Very low
Manufacturing Process	Machine molded	Machine molded	Machine molded
Resistance to Breakage in Handling	Very good	Very good	Very good
Dimensions			1/2 and 3/4 thick 3 ft sections
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.	Low cost insulation for limited services such as hot water.
The following materials have proven satisfactory in field tests and steel 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	Universal Jacket Owens-Corning Corp
	* Vono-Kover Baldwin-Hill	* Vono-Kover Baldwin-Hill	
	* Thermoglas Phillip Carey Mfg Co	* Thermoglas Phillip Carey Mfg Co	
	** Fiberglas Owens-Corning Corp.	** Fiberglas 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	
	* PPG Glass Fiber Pitts Plate Glass Co	* PPG Glass Fiber Pitts Plate Glass Co	
	* Micro-Lok LOF Glass Fibers Co	* Micro-Lok LOF Glass Fibers Co	

DUP 0

DUP 0960824

DU 041016

OCTOBER 1954		MATERIAL SPECIFICATION - SERIES 100		SN 100 M
Rev. Dec. 1954				Page 9
Code	112.61		112.66	
Material	Glass fiber		Glass fiber	
Material Description	Plain semi-rigid board, formed from fibrous glass or mineral fibers.		Short, coarse steam-blown glass fibers preformed into semi-rigid board, sanded on one side and cut into logging sizes for ease of application to curved surfaces.	
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	6 and 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	Srd 24" x 48" Thickness PF615 (6-lb density) 1/2" through 3". PF617 (9-lb density), 1/2" through 2 1/4".		Length - 36" Width - 6" or 12" Thickness - 3/4", 1", 1 1/4", 1 1/2", and 2".	
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	Fiberglas PF615 or 617 Insulation Owens-Corning Corp		Fiberglas Block Insulation Owens-Corning Corp	
	Armoglas PF615 or 617 Insulation Armstrong Cork Co		Armoglas Block Insulation Armstrong Cork Co	
	Spintex No. 414 or 415 Johns-Manville Co			
	Spunduct Baldwin-Hill Co			
				DUP 0960825

V.V.Y.

SN 100 M		MATERIAL SPECIFICATION - SERIES 100		OCTOBER 1954	
Page 10				Rev Dec 1953 190	
Code	112.71				112.81
Material	Glass fiber				Glass fiber
Material Description	Bonded board insulation formed from fibrous glass or mineral fibers, with asphalt and kraft paper vapor-barrier finish.				Bonded acoustical board formed from fibrous glass or mineral fibers with a thin neoprene compound on one surface.
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 3/8" 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.					
CONFIDENTIAL	Fiberglas Vapor Seal Duct Ins. Owens-Corning Corp				Fiberglas Coated Duct Ins. Owens-Corning Corp
	Armoglas Vapor Seal Duct Ins. Armstrong Cork Co				Armoglas Coated Duct Ins. Armstrong Cork Co
	Spintex No. 414 VS Johns-Manville Co				Coated Duct Insulation Baldwin-Hill Co
	Spanduct Baldwin-Hill Co				
				DUP 0960826	



OCTOBER 1954

MATERIAL SPECIFICATION - SERIES 100

SN 100 M

Rev. Oct. 1956

Page 11

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 molded	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 Supertemp Eagle-Picher	Rock Cork Johns-Manville Sales Corp.
		Mono-Block Baldwin Hill Co.	Mineral Wool Board Armstrong Cork Co.
		Armtemp Armstrong Cork Co.	Koldboard Baldwin Hill Co.
		M & B Block M. H. Detrick Co.	



DUP 0960827

DU 041019

SN 100 M

OCTOBER 1954

MATERIAL SPECIFICATION - SERIES 100

Page 12

Rev March 1959

Code	116	117	117.1
Material	Flexible foamed plastic	Urethane Foam Resilient	Urethane Foam Resilient
Material Description	Flexible aerated resin with a closed cellular structure. Pipe and tubing only.	See Codes 117.1 through 117.5.	Preformed resilient urethane foam pipe insulation manufactured from polyether resin and du Pont "Hylene" with a fire-retardant additive.
Filler			
Binder			
Temperature Range	32°F to 200°F		-100°F to +250°F
K Factor	0.28 at 75°F		0.30 max at 75°F
Density			3 to 3 1/4 lb per cu ft
Compressive Strength			
Manufacturing Process	Medium molded		Molded "snap-on" pipe and fitting covers
Resistance to Breakage in Handling	Nonbreakable		Good
Dimensions			
Other Qualifications	Chemically inert and nontoxic		Cell structure not less than 40 per inch, not more than 60 per inch.
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			Flexfoam Delaware Ins Co
			Thermax Am Cellular Products, Inc


 DUP 0

DUP 0960828

DU 041020

99)

OCTOBER 1954

Rev March 1959

MATERIAL SPECIFICATION - SERIES 100

SN 100 M

Page 13

Code	117.2	117.3	117.4
Material	Urethane Foam Resilient	Urethane Foam Resilient	Urethane Foam Resilient
Material Description	Preformed resilient urethane foam pipe insulation manufactured from polyether resin and du Pont "Hylene" with a fire retardant additive and 8-oz factory-applied canvas finish.	Preformed resilient urethane foam pipe insulation manufactured from polyether resin and du Pont "Hylene" with a fire retardant additive and kraft-aluminum factory-applied vapor barrier.	Preformed resilient urethane foam pipe insulation manufactured from polyether resin and du Pont "Hylene" with a fire retardant additive and 30-lb factory-applied roofing felt.
Filler			
Binder			
Temperature Range	-100°F to +250°F	-100°F to +250°F	-100°F to +250°F
K Factor	0.3 max at 75°F	0.3 max at 75°F	0.3 max at 75°F
Density	3 to 3 1/4 lb per cu ft	3 to 3 1/4 lb per cu ft	3 to 3 1/4 lb per cu ft
Compressive Strength			
Manufacturing Process	Molded "snap-on" pipe and fitting covers	Molded "snap-on" pipe and fitting covers	Molded "snap-on" pipe and fitting covers
Resistance to Breakage in Handling	Good	Good	Good
Dimensions			
Other Qualifications	Cell structure not less than 40 per inch, not more than 60 per inch.		

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	Flexfoam Delaware Ins Co		Thermax Am Cellular Products, Inc
	Thermax Am Cellular Products, Inc		

DUP 0960829



DU 041021

VJY V

SN 100 M	MATERIAL SPECIFICATION - SERIES 100		OCTOBER 1954
Page 14			Rev. March 1959 170
Code	117.5	118	
Material	Urethane Foam Resilient	Urethane Foam Rigid	
Material Description	Preformed resilient urethane foam pipe insulation manufactured from polyether resin and du Pont "Hylene" with a fire retardant additive and 45-lb factory-applied roofing felt.	Preformed rigid urethane foam block and pipe insulation manufactured with du Pont "Hylene" and containing a fire retardant additive.	
Filler			
Binder			
Temperature Range	-100°F to +250°F	-200°F to +200°F	
K Factor	0.3 max at 75°F	0.17 max at 75°F	
Density	3 to 3 1/4 lb per cu ft	2 to 2 1/4 lb per cu ft	
Compressive Strength			
Manufacturing Process	Molded "snap-on" pipe and fitting covers	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	Flexfoam Delaware Ins Co	Gemfoam Texas Foam Plastics	
	Thermax Am Cellular Products, Inc		

DUP 0960830

