SOLUTIONS FOR ENERGY SAVINGS

AP/ArmaFlex + AP/ArmaFlex FS

The original flexible elastomeric pipe insulation for reliable protection against condensation and energy loss.

// Fiber-free, formaldehyde-free, and low VOC
// Closed-cell structure controls condensation
// Ideal for below-ambient piping and equipment

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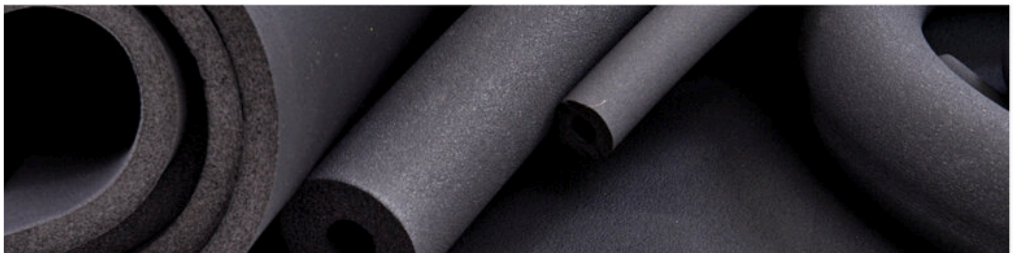

armacell®
ArmaFlex®

TECHNICAL DATA - AP/ARMAFLEX + AP/ARMAFLEX FS

Brief description	AP/ArmaFlex are flexible insulation products that reliably protects against water vapor ingress due to its closed-cell structure. No additional water vapor retarder is required, for most applications. AP/ArmaFlex is manufactured using nitrile rubber and polyvinyl chloride (NBR/PVC) formulations for insulation thickness up to and including one-inch wall thickness. AP/ArmaFlex FS and insulation thickness greater than one-inch wall thickness are manufactured using Ethylene Propylene Diene Monomer (EPDM) formulations. The EPDM formulations are PVC-free. Available in Tube/Sheet/Roll.

Approvals and compliance

Specification compliance	• GREENGUARD Gold Certified • Armacell North America's quality management systems are certified as being in conformity with ISO 9001 by Intertek • ASTM E84, UL723 • MIL-P-15280J, FORM T • Conforms to ASHRAE 90.1 energy standards	• Made with EPA registered MICROBAN® antimicrobial product protection. • ASTM C534, Type I – Tube Grade 1 • CAN/ULC S102 • MIL-P-15280J, FORM S	• 3rd party certified by FM Approvals through 1 1/2" wall thickness for pipe insulation upto 4 IPS, 1" thickness for sheet and roll insulation • ASTM C534, Type II - Sheet Grade 1 • UL 94 File Number E535094 • MEA 107-89M	• Manufactured without CFCs, HFCs, HCFCs, PBDEs, or Formaldehyde • ASTM D1056, 2C1 • Conforms to building codes: International Mechanical Code (IMC), International Energy Conservation Code (IECC), International Residential Code (IRC), Title 24: California Building Energy Efficiency Standards • ASTM G21/C1338

Property	Value / Assessment					Standard / Test method
Temperature range						
Service temperature[1,2,3,4,5]	Range / Item group	Min. °C	Min. °F	Max. °C	Max. °F	ASTM C534
	3/8" through 1" Walls (NBR/PVC-based)	-183	-297	105	220	
	1-1/2" and 2" walls (NBR/PVC based)	-183	-297	105	220	
	1-1/2" and 2" Walls (EPDM-based)	-183	-297	149	300	
	Remarks	82 °C (180 °F) — Full bonding sheet insulation Contact Armacell for applications beyond recommended service temperature range.				
Thermal conductivity						
1 - Declared thermal conductivity W/(m·K)	θm	50 ° F (10 ° C)	75 ° F (24 ° C)	100 ° F (38 ° C)	125 ° F (52 ° C)	ASTM C177, ASTM C518
	λd ≤ [W/(m·K)]	0.034	0.0353	0.037	0.039	
	k ≤ [Btu·in/(h·ft²·°F)]	0.235	0.245	0.257	0.268	
	1 - Range	3/8" through 2" walls (NBR/PVC products)				
2 - Declared thermal conductivity W/(m·K)	θm	50 °F (10 °C)	75 °F (24 °C)	100 °F (38 °C)	125 °F (52 °C)	ASTM C177, ASTM C518
	λd ≤ [W/(m·K)]	0.040	0.040	0.041	0.043	
	k ≤ [Btu·in/(h·ft²·°F)]	0.278	0.28	0.289	0.300	
	2 - Range	1 1/2" and 2" Walls (EPDM based)				

Property	Value / Assessment							Standard / Test method
R-Value for tubes[6,7]	ID / Wall thickness	3/8" (10mm)	1/2" (13mm)	3/4" (19mm)	1" (25mm)	1-1/2" (38mm)	2" (50mm)	
	1/4" (6 mm)	2.8	3.8	6.4	8.3			
	3/8" (10 mm)	2.8	3.3	5.9	7.3	13.7	19.7	
	1/2" (13 mm)	2.6	3.3	5.5	7.2	12.7	18.2	
	5/8" (16 mm)	2.6	3.4	5.6	7.2	12.0	17.2	
	3/4" (19 mm)	2.4	3.3	5.5	7.0	11.3	16.2	
	7/8" (22 mm)	2.4	3.3	5.4	7.0	10.8	15.5	
	1-1/8" (29 mm)	2.3	3.3	5.4	7.2	10.1	14.5	
	1-3/8" (35 mm)	2.2	3.2	5.3	7.2	9.6	13.7	
	1-5/8" (41 mm)	2.5	3.2	5.1	7.2	9.2	13.1	
	1-1/2" IPS (48 mm)	2.4	3.1	4.9	6.9	8.7	12.4	
	2-1/8" (54 mm)	2.4	3.2	4.8	6.8	8.6	12.2	
	2" IPS (60 mm)	2.4	3.2	5.2	7.1	8.8	12.3	
	2-5/8" (67 mm)	2.4	3.2	4.7	6.5	8.2	11.6	
	2-1/2" IPS (73 mm)	2.4	3.2	5.0	6.8	8.4	11.7	
	3-1/8" (79 mm)	2.4	3.2	4.6	6.3	7.9	11.1	
	3" IPS (89 mm)	2.3	3.1	4.9	6.6	8.1	11.2	
	3-5/8" (92 mm)		3.1	4.5	6.2	7.7	10.7	
	4-1/8" (105 mm)		3.1	4.5	6.1	7.5	10.5	
	4" IPS (114 mm)		3.0	4.8	6.4	7.8	10.7	
	5" IPS (141 mm)		3.0	4.7	6.2	7.5	10.2	
	6" IPS (168 mm)		3.0	4.6	6.1	7.3	9.9	
	8" IPS (219 mm)		2.9	4.5	5.9	7.0	9.5	
	10" IPS (273 mm)				5.8	6.8	9.2	
R-Value for sheets and rolls[6,7]	Wall thickness			R-value				
	1/4" (6mm)			1.0				
	3/8" (10mm)			1.5				
	1/2" (13mm)			2.1				
	3/4" (19mm)			3.1				
	1" (25mm)			4.2				
	1-1/2" (38mm)			6				
	2" (50mm)			8				
Fire Performance and Approvals								
Surface burning characteristics	Flame Spread Index less than 25: Smoke Developed Index less than 50. AP/ArmaFlex tube insulation all thicknesses AP/ArmaFlex FS sheet and roll insulation through 2" thickness AP/ArmaFlex sheet and roll insulation through 1" thickness (AP/ArmaFlex sheet and roll insulation 1 1/2" and 2" thickness NOT 25/50 RATED)							ASTM E84 and UL 723, CAN ULC S102[8]

Property	Value / Assessment				Standard / Test method
FM approved	Up to 1-1/2" insulation thickness for tubes and up to 1" insulation thickness for sheets				FM 4924[9]
UL standards					
UL94 5VA[10]	Pass at 6 mm (1/4") and thicker for AP/ArmaFlex Pass at 7.5 mm (0.30") and thicker for AP/ArmaFlex FS				
UL94 V-0[10]	Pass at 6 mm (1/4") and thicker for AP/ArmaFlex Pass at 13 mm (1/2") and thicker for AP/ArmaFlex FS.				
UL94 V-1[10]	Pass at 7.5 mm (0.30") and thicker for AP/ArmaFlex FS				
Fire performance					
Practical fire behavior	Self-extinguishing, does not drip, does not spread flames.				UL 94
Resistance to water vapour					
Water vapor permeability	0.05 perm-inch (0.725 x 10^{-13})Kg/(s m Pa) for NBR/PVC products 0.08 perm-inch (1.16 x 10^{-13})Kg/(s m Pa) for EPDM products				ASTM E96, procedure A
Resistance to water					
Water absorption	0.2% by volume				ASTM C209, ASTM C1763
Physical attributes					
Density	3 to 6 pounds per cubic feet (48 to 96 kilograms per cubic meter)				ASTM D1667
Acoustic performance					
Sound absorption average	Thickness (mm)	25	38	50	ASTM C423[11]
	Thickness (inches)	1	1.5	2	
	SAA	0.38	0.49	0.51	
Health and environment					
Mold growth	Passed				UL 181
Fungal growth	Passed				ASTM C1338, ASTM G21

[1] At temperatures below -20°F (-29°C), elastomeric insulation starts to become less flexible. However, this does not affect the performance of AP/ArmaFlex in terms of thermal efficiency and resistance to water vapour permeability.

[2] For temperatures below -40 °F(-40 °C), please contact our Customer Service Center.

[3] AP/ArmaFlex insulation can withstand temperatures as high as 250 °F (121 °C) when tested according to ASTM C411 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.

[4] 1 1/2" and 2" AP/ArmaFlex tubes are formulated with EPDM rubber giving them a higher upper temperature than AP/ArmaFlex tubes less than 1 1/2" wall thickness.

[5] Recommended exposure limit to 30 minute period at 350 °F (175 °C) over a 24 hours operation for EPDM based products.

[6] These specifications are based on the measurements methods employed by Armacell. Other methods may not result in the same values and cannot be used to determine if the product is within the given tolerance.

[7] Please see technical bulletin #1 for more details.

[8] CAN/ULC S102 up to 1" thickness.

[9] AP ArmaFlex Pipe Insulation is FM Approved for ID sizes up to and including 4 IPS

[10] UL file number E535094

[11] Type A Mounting

All data and technical information are based on results achieved under the specific conditions defined according to the testing standards referenced. Despite taking every precaution to ensure that said data and technical information are up to date, Armacell does not make any representation or warranty, express or implied, as to the accuracy, content or completeness of said data and technical information. Armacell also does not assume any liability towards any person resulting from the use of said data or technical information. Armacell reserves the right to revoke, modify or amend this document at any moment. It is the customer's responsibility to verify if the product is suitable for the intended application. The responsibility for professional and correct installation and compliance with relevant building regulations lies with the customer. This document does not constitute nor is part of a legal offer to sell or to contract.

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ArmaFlex | AP/ArmaFlex (AMERICAS) | USCode12346 | TDS | 122025 | en-US

ABOUT ARMACELL

As the inventor of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal and mechanical insulation solutions that create sustainable value for its customers. Armacell's products significantly contribute to driving energy efficiency worldwide. With more than 3,100 employees and 26 production plants in 20 countries, Armacell operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for acoustic and lightweight applications, recycled PET products, next-generation aerogel technology and passive fire protection systems.

For more information, please visit:
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