



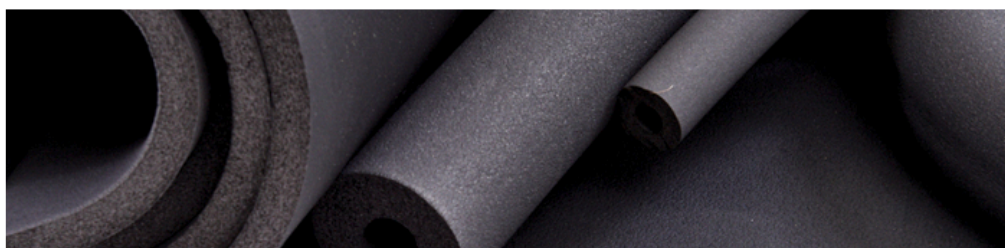
SOLUTIONS FOR ENERGY SAVINGS

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

www.armacell.com.sg



 **armacell**[®]
ArmaFlex[®]

TECHNICAL DATA - AP/ARMAFLEX + AP/ARMAFLEX FS

Brief description AP/ArmaFlex are flexible insulation products that reliably protects against water vapour ingress due to its closed-cell structure. No additional water vapour 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 insulation and pipe insulation in 1 1/2 and 2" wall thicknesses are manufactured using Ethylene Propylene Diene Monomer (EPDM) formulations.
 Available in Tube/Sheet/Roll.

Approvals and compliance

Specification compliance	<ul style="list-style-type: none"> • GREENGUARD® Children & Schools Indoor Air Quality Standard • Manufactured without CFCs, HFCs, HCFCs, PBDEs, or Formaldehyde. • ASTM D1056, 2C1 • NFPA 90A, 90B • ASTM G21/C1338 	<ul style="list-style-type: none"> • Made with EPA registered MICROBAN antimicrobial product protection. • All Armacell facilities in North America are ISO 9001 certified. • ASTM E84, UL723 • MIL-P-15280J, FORM T • Conforms to ASHRAE 90.1 energy standards 	<ul style="list-style-type: none"> • 3rd party certified by FM Approvals through 1 1/2" wall thickness for pipe insulation, 1" thickness for sheet and roll insulation • ASTM C534, Type I – Tube Grade 1 • CAN/ULC S102 • MIL-P-15280J, FORM S 	<ul style="list-style-type: none"> • 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 C534, Type II - Sheet Grade 1 • UL 94 5V-A, V-0, File E55798 • MEA 107-89M
---------------------------------	---	--	---	--

Property	Value / Assessment					Standard / Test method
Temperature range						
Service temperature ^{1,2,3,4}	Range	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					
Thermal conductivity						
Declared thermal conductivity	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	
	Range	3/8" through 2" walls (NBR/PVC products)				
Declared thermal conductivity	θm	50 °F (10 °C)	75 °F (24 °F)	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	
	Range	1 1/2" and 2" Walls (EPDM based)				

Property	Value / Assessment							Standard / Test method
R-Value for tubes ^{5,6}	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 ^{5,6}	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 NBR/PVC formulation up to one-inch thickness: EPDM for 1 1/2" and 2" thickness NBR/PVC formulations in 1 1/2" and 2" thickness are not 25/50 rated						ASTM E84 and UL 723	

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
UL standards					
UL 94 5VA ⁷	Pass at 6 mm (1/4") and thicker.				
UL 94 V-0 ⁷	Pass at 6 mm (1/4") and thicker.				
Resistance to water vapour					
Water vapour 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 feet)				ASTM D1667
Acoustic performance					
Sound absorption average	Thickness (mm)	25	38	50	ASTM C423 ⁸
	Thickness (inches)	1	1.5	2	
	SAA	0.38	0.49	0.51	
Health and environment					
Mould growth	Passed				UL 181
Fungal growth	Passed				ASTM C1338, ASTM G21

¹At 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.

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

³AP/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.

⁴1 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.

⁵These 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.

⁶Please see technical bulletin #1 for more details.

⁷UL File No. E55798.

⁸Type 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.

At Armacell, your trust means everything to us, so we want to let you know your rights and make it easier for you to understand what information we collect and why we collect it. If you would like to find out about our processing of your data, please visit our Data Protection Policy.

Trademarks followed by ® or ™ are trademarks of the Armacell Group. © Armacell, 2024. All rights reserved.

Microban is a registered trademark of Microban Products Company. LEED® stands for Leadership in Energy and Environmental Design™. LEED®, and its related logo, is a trademark owned by the U.S. Green Building Council® is used herein with permission.

USCode12346 | TDS | 032024 | en-SG

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 solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With more than 3,300 employees and 25 production plants in 19 countries, the company 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:
www.armacell.com

