




THE MAKERS OF
Armaflex[®]



Tubes


Sheets & Rolls


Pipe Hangers


Insulation Tape


Sundries


NH/Armaflex[®]



PROTECTIVE, HALOGEN-FREE PERFORMANCE

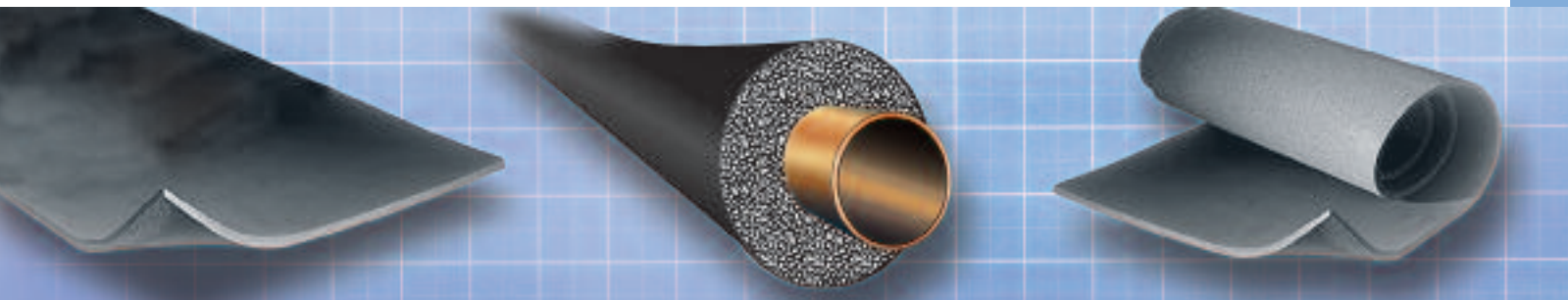
Nonhalogen flexible tubes, sheets & rolls

Protects personnel, equipment

Formulated especially for shipboard use

Special Armaflex technology

ALL ARMACELL FACILITIES IN NORTH AMERICA ARE ISO 9001:2000 CERTIFIED.



NH/Armaflex®

NH Armaflex Protects Personnel and Sensitive Shipboard Electronic Equipment

NH Armaflex is a nonhalogen elastomeric insulation developed for sweat control in environments that require specific protection against smoke containing acid gases. It is the first nonhalogen flexible insulation introduced for shipboard use.

NH Armaflex is an engineered closed-cell material that eliminates the toxic gases that may threaten personnel and sensitive electronic equipment including effects from:

- chlorines
- bromines
- PVC

Available in tube, sheet and roll form, NH Armaflex is easier to install with improved durability over other approved products.

NH Armaflex has been fire tested at the Naval Research Laboratory (NRL) in controlled comparisons with baseline materials. Further testing through DDG-51 and NSSN produced references that NH Armaflex scored better than MIL-P-15280J materials such as AP Armaflex.

Specification Approvals

Armacell technical personnel are proud to have worked in conjunction with the US Navy and Electric Boat Corp. to develop the EB 4013 specification and to ensure dependable performance.

- Electric Boat Corporation Specification EB 4013 Antisweat and Refrigerant Insulation Systems (Sheets and Tubes)
- International Maritime Organization (IMO) SOLAS Requirements
- United States Coast Guard Requirements*
- NH Armaflex is currently specified for use on US Navy vessels.
- UL-V-O and HF-1 File Number E55798
- ASTM C534 Type 1 (Tubular) Grade 3, Type II (Sheet) Grade 3
- ASTM C795
- Nuclear Regulatory Commission Regulatory Guide 1.36

Description

NH Armaflex is a nonhalogen flexible elastomeric thermal insulation, gray in color, supplied as unslit tubing in nominal wall thicknesses of 1/2", 3/4" and 1" (special order) in sizes from 3/8" through 8" IPS. Sheets are supplied 36" x 48" in nominal wall thicknesses of 1/2", 3/4", 1" and 1-1/2" (special order). NH Armaflex was specially developed by Armacell to minimize the density of smoke and eliminate corrosive acid gases from combustion. NH Armaflex will not carry a progressive flame, and is formulated without chlorine, bromines, or PVC.

A closed-cell material, NH Armaflex provides low thermal conductivity, good fire behavior, low-temperature flexibility, and excellent protection against water vapor diffusion. It is manufactured without the use of CFCs, HFC's or HCFC's. It is also formaldehyde free, low VOCs, fiber free, dust free and resists mold and mildew. When installed in the same manner as standard AP Armaflex flexible insulation, NH Armaflex requires no additional vapor retarder under normal conditions (see "Installation of Armaflex Insulations" brochure).



Seawolf Class



Arleigh Burke Class

U.S. Navy Photo

U.S. Navy Photo

* See Armacell for more details.

Resistance to Water Vapor Flow

The closed cell structure of NH Armaflex prevents moisture from wicking and makes it an efficient insulation. For most applications, NH Armaflex requires no supplemental vapor retarder. An additional vapor retarder may be necessary when installed on very cold lines or where exposed to continuous high humidity.

Uses

NH Armaflex is used as insulation and protection for piping, tanks, and air ducts, and to prevent stress corrosion with stainless steel pipes in the following applications:

- US Navy applications
- General shipbuilding
- IMO (International Maritime Organization)
- nuclear power plants
- other areas where nonhalogenated or chlorine-free materials may be required

Installation

Supplied in tube, sheet and roll form, NH Armaflex is easy to snap on or sleeve over pipework for new or existing piping applications. In sheet form, NH Armaflex installs quickly on large flat or curved surfaces using Armaflex 520, 520 Black Adhesive, or where a low V.O.C. adhesive is required, Armaflex 520 BLV or Armaflex Low VOC Spray Contact Adhesive. 520 Adhesives are contact adhesives; therefore, in all cases both surfaces to be joined are coated with adhesive. For pipes and fitting covers, only seams and joints require adhesive. Installation procedures are explained in "Installation of Armaflex Insulations."



NH/Armaflex®

Engineered for New and Existing Pipework in Shipboard Use

Features	Benefits
<ul style="list-style-type: none">• Nonhalogen formulation	<ul style="list-style-type: none">• No measurable chlorines, bromines, or PVC in smoke to harm personnel or sensitive electronic equipment• Eliminates corrosive gases from smoke• Excellent solution for austenitic, stainless steel and other systems
<ul style="list-style-type: none">• Closed-cell structure	<ul style="list-style-type: none">• Excellent protection against water intrusion• No supplemental vapor retarder required
<ul style="list-style-type: none">• Installs in same manner as AP Armaflex insulations (MIL-P-15280J)	<ul style="list-style-type: none">• Easy to apply; no lagging required. Preferred in shipyards around the USA
<ul style="list-style-type: none">• Flexible at low temperatures	<ul style="list-style-type: none">• Durability
<ul style="list-style-type: none">• Gray color	<ul style="list-style-type: none">• Carbon black-free• Mercury-free• Can be used with all approved Naval laggings and coatings• Color consistent with maritime applications

Accessories



NH/Armaflex Insulating Tape

A self-adhesive 2" (50.8 mm) tape, 1/8" (3 mm) minimum thickness with a maximum surface temperature of 180°F (82°C).

Armafix NPH Insulation Pipe Hanger

Insulated pipe support to prevent thickness compression at hanger locations. Single piece construction with NH/Armaflex for exclusive foam-to-foam bond and system integrity, and stainless steel jacket.

Armaflex 520 Adhesive and Armaflex 520 Black Adhesive

Powerful contact adhesive creates a vapor tight seal (QPL-24179, MIL-A-24179 A). For continuous operating temperatures through +250°F (+120°C). Regular 520 is available in half pints, pints, quarts, and gallons. 520 Black is available in quart cans.

Armaflex 520 BLV Adhesive and Armaflex Low VOC Spray Contact Adhesive

Makes a resilient and heat-resistant bond with many materials where the use of a toluene-free, low V.O.C., solvent-based rubber is preferred. Developed to meet SCAQMD for continuous operating temperatures up to 250°F (120°C). 520 BLV is available in pint brush-top cans and gallons. Spray is supplied in 27 pound aerosolized canisters.

Note: Armacell insulation products must be installed according to "Installation of Armaflex Insulations." Proper installation is required to assure Armaflex insulation performance.

Physical Data

Physical Properties*

Test Method

Thermal conductivity, BTU • in./h • ft ² • °F (W/m K) 32°F mean temperature (0°C) 75°F mean temperature (24°C) 104°F mean temperature (40°C)	0.248 (0.036) 0.27 (0.039) 0.282 (0.041)		ASTM C 177 or ASTM C 518
Water Vapor Permeability Perm-inch [Kg/(s m Pa)]	0.05 [7.25 x 10 ⁻¹⁴]		ASTM E 96 Procedure A
Mold Growth Fungi resistance Bacterial resistance	UL 181 ASTM G21/C1338 ASTM G22		Meets requirements Meets requirements Meets requirements
Water Absorption, % by volume	0.2		ASTM C 209
Upper Use Limit	250°F (120°C)		
Lower Use Limit ^①	-297°F (-183°C)		ASTM C 534
Ozone resistance	Excellent		ASTM D 1149
Toxicity	Free from Halogen/Dioxin/CFC/Mercury/ Carbon Black/Heavy Metal		
IMO (International Organization)	Combustion gas concentration Smoke density Heat release rate Flame spread	Pass Pass Pass Pass	Navy Large Maritime Scale pipe insulation room/ corner test
Behavior in Fire	Does not support progressive flaming, will not melt and drip. Meets EB 4013 Meets IMO SOLAS requirements		
Density, typical range, lbs/ft ³ ^②	3.0 – 6.0		ASTM D 1622 or ASTM D 1667

① At temperatures below -20°F (-29°C), elastomeric insulation starts to become less flexible. However, this characteristic does not affect thermal efficiency or water vapor permeability of Armaflex insulation.

② Reference Only

Note: Numerical flammability ratings alone may not define the performance of products under actual fire conditions. They are provided only for use in the selection of products to meet limits specified.

NH Armaflex Tubes

6' (1.8 m) in length

Available in nominal pipe sizes from 3/8" to 8" in nominal wall thicknesses of 1/2", 3/4" and 1" (special order).

NH Armaflex Sheets and Rolls

(1/2", 3/4", 1" and 1-1/2" (special order) nominal wall thicknesses—13mm, 18mm, 25mm and 38mm*)

Sheet	3' x 4' (0.915 m x 1.22 m)	1/2" (13 mm)	3/4" (19 mm)	1" (25 mm)	1-1/2" (38mm)*
Rolls	4' (1.22 m)	1/2" x 70' (13 mm x 21.4 m)	3/4" x 50' (19 mm x 15.2 m)	1" x 35' (25 mm x 10.7 m)	1-1/2" x 25' (38mm x 7.6m)

• Available special order only.



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