

Armaflex® LTD

ARMAFLEX FLEXIBLE INSULATION
MATERIAL FOR CRYOGENIC AND LOW
TEMPERATURE APPLICATIONS



- Stays flexible at low temperatures
- Reduces the risk of crack development and propagation
- Reduces the risk of corrosion under insulation (CUI)
- Protects against mechanical impact and shock

- Low thermal conductivity
- Low glass transition temperature
- Easy installation even to complex shapes
- Less wastage compared to rigid / pre-fabricated pieces

Technical Data - Armaflex LTD

Brief description	Armaflex® LTD is a flexible, high density and mechanically robust, closed cell cryogenic thermal insulation material based on extruded elastomeric foam. The product has been specially developed for use on the import/export pipelines and process areas of LNG facilities.
Material type	Synthetic Diene Terpolymer rubber based foam. Factory made flexible elastomeric foam (FEF) according to EN 14304.
Colour	Blue
Material Special Information	Armaflex® LTD is suitable for a range of operating conditions down to -180 °C including liquefied natural gas (LNG) installations. However, it is not recommended for application to process pipelines and equipment carrying liquid oxygen, or to gaseous oxygen lines and equipment running above 1.5 MPa (218 psi) pressure or running above +60 °C (+140°F) operating temperature. For detailed information or advice please refer to our Customer Service Centre.
Product Range	Tubes, 25 mm thickness, for pipe outer diameters ranging from 18 to 89 mm (¾" to 3" NB). Sheets in rolls, 25 mm thickness.
Applications	Insulation / protection for pipes, tanks, vessels (incl. elbows, flanges etc.) in petrochemical, industrial gas, and agricultural chemical production plants. Product specially designed for use on import/export pipelines and process areas of LNG facilities.
Special Features	A high-performance thermal insulation material designed to meet the demands of cryogenic-temperature environments. Armaflex® LTD is part of Armaflex® Cryogenic Systems, providing low temperature flexibility to the system.
Assembly	For industrial applications it is recommended to consult the relevant Armacell installation instructions and application manuals. Please consult our Customer Service Centre.
Remarks	EN 14304 (harmonized construction product standard for FEF) Lloyds approval

Property	Value/Assessment	Test ¹	Super- vision ²	Special Remarks					
Temperature Range									
Temperature Range	Max. service temperature	+110 °C / + 230 °F		Tested according to EN 14706, EN 14707 and EN 14304					
	Min. service temperature ¹	-180 °C / -292 °F							
Thermal Conductivity									
Thermal Conductivity	ϑ_m	-180 °C	-100 °C	-50 °C	0 °C	+50 °C	$\lambda_d(\theta_m)=0.04+3\times 10^{-5}\times\theta_m+6\times 10^{-7}\times\theta_m-30^2+4\times 10^{-9}\times\theta_m^3$, where θ_m is mean temperature in °C		Declared according to EN ISO 13787 Tested according to EN 12667 EN ISO 8497 (Equivalent methods ASTM C177 and C518)
	Sheets & Tubes (25mm)	λ	≤ 0.031	0.039	0.040	0.040	0.044	[W/(m · K)]	
Water vapour diffusion resistance									
Water vapour diffusion resistance	For details on system performance please contact our Customer Service Centre		EU 6658						
Fire performance									
Reaction to fire	Surface spread of flames	EU 6385		○	Tested acc. to BS 476 Part 7:1997				
	Euroclass E				Classified acc. to EN 13501-1. Tested acc. to EN 11925-2				
Other fire class	BS 476 Part 7	Class 1			BS 476 Class 1 Approved by Lloyds				
	ASTM E84 ²	Class A (< 25 flame spread)							
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames.								
Other technical features									
Density	sheets: 60 to 75 kg/m ³ tubes: 60 to 80 kg/m ³				Tested according to ISO 845, ASTM D1622				
Dimensions and tolerances	According to EN 14304, for detailed values please refer to product range tables.				Tested according to EN 822, EN 823, EN 13467				
UV resistance	In all industrial applications the outer layer of the material must be protected with an adequate covering like Arma-Chek R, metal jacketing or preformed UV-cured GRP (Glass-Reinforced Plastic) cladding. For further information please consult our Customer Service Centre.								
Health aspects	Neutral, MSDS available on request.								
Storage & Shelf life	Material shall be stored indoors, in clean and dry conditions, away from direct sunlight. max. shelf (storage) life: 3 years								
Compression deflection	≥ 10 kPa at 25% deflection				Tested according to ISO 6916-1 (equivalent method ASTM D1056)				
Leachable (water-soluble)chlorides	≤ 80 ppm (mg/kg or µg/g)				Tested according to EN 13468 and ASTM C871				

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PH-value	7 to 9			Tested according to ISO 10523
Water absorption ²	≤ 0.1% by volume (total submersion for 2 hours)			Tested according to ASTM C209
Closed cell content	≥ 90 % declared on the basis of the water absorption test			
Glass transition temperature ²	Below -70 °C / -94 °F			
Application conditions	Ambient temperature: +5 °C to +35 °C Max. relative humidity: 80%			

1. For temperatures above or below those indicated in the "temperature range" above, please contact our Customer Service Centre to request for the corresponding technical information.

2. Based on single test results which are not monitored in regular frequency. Can be used for information only.

*1 Further documents such as test certificates and approvals can be requested using the registration number given.

*2 ●: Official supervision by independent institutes and /or test authorities
○: In-house quality monitoring

All statements and technical information are based on results obtained under typical conditions. It is the responsibility of the recipient to verify with us that the information is appropriate for the specific use intended. Installation instructions are given in our Armaflex installation manual. Please consult our Technical Department before insulating stainless steel. Armaflex 520 or Armaflex HT 625 Adhesive must be used to guarantee proper installation. For outside use, Armaflex should be protected with a suitable outer covering within 3 days of installation. For applications related to the processing or storage of oxygen, please consult our technical services department. Armacell takes every precaution to ensure the accuracy of the data provided in this document and all statements, technical information and recommendations contained within are believed to be correct. However, Armacell cannot guarantee that the data are 100 % accurate. Furthermore, minor deviations in colour, quality and dimensions are unavoidable and in most cases do not influence the performance of the product. Armacell expressly disclaims any and all liability in relation to any results obtained or arising from any use of the product or reliance on such information. No warranty of fitness for any particular purpose, warranty of merchantability or any other warranty, expressed or implied, is made concerning the goods described or the information provided herein. All the statements and technical information within this document should be read in conjunction with the customer's own specification. It is the responsibility of the recipient to inform all involved parties about the content of these documents. The described and recommended methods should be strictly followed. If there is a requirement to deviate from our recommendations, please contact us in advance to discuss possible suitable alternatives. Armacell will not be liable for any claim resulting from a failure to observe our specification or any other agreed solutions and from non-observance of the customer's specification. For temperatures above +110 °C please contact our Customer Service Centre to request the corresponding technical information.

Armaflex LTD tubes



Length 2.0 m, Armaflex LTD insulation maintains flexibility at extreme low temperatures.

Pipe max. Outside-Ø [mm]	Inner Ø min/ max mm (tube)	25 mm insulation insulation thickness		
		Code	m/carton	
18	19.5 - 21.0	LTD-25X018 ●	36	
22	23.5 - 25.0	LTD-25X022 ●	32	
28	29.5 - 31.0	LTD-25X028 ●	24	
35	36.5 - 38.5	LTD-25X035 ●	24	
42	44.0 - 46.0	LTD-25X042 ●	20	
48	50.0 - 52.0	LTD-25X048 ●	18	
60	62.0 - 64.0	LTD-25X060 ●	12	
76	78.0 - 80.0	LTD-25X076 ●	10	
89	91.0 - 93.0	LTD-25X089 ●	8	

Length tolerance for tubes:

± 1.5 %

Remark

Armaflex LTD should only be installed as part of the Armaflex Cryogenic System.

- Not a stock item. Delivery on request.

Armaflex LTD continuous sheets (rolls)



Armaflex LTD flexible insulation maintains flexibility at extreme low temperatures.

Code	Thickness [mm]	Roll length [m]	m ² /carton
LTD-25-99/E ●	25.0	4	4

Remark

Armaflex LTD should only be installed as part of the Armaflex Cryogenic System.

- Not a stock item. Delivery on request.

Armaflex LTD anti-abrasive foil



Colour Silver, Aluminium vapour barrier foil, thickness 12 µ

Code	Width [mm]	Roll length [m]	Rolls/carton	m ² /carton
LTD-1/50-ALU ●	1,000.0	50	1	50

Remark

Rolls of 50m length can be replaced by two 25 m rolls.

- Not a stock item. Delivery on request.

Armaflex LTD accessories



Code	Description	Pieces/carton
ADH-HT625/1,0	Armaflex® HT625 one-component adhesive, 1,0 litre cans	12
CLEANER/1,0	Special cleaner for use with Armaflex® Adhesive 520 and Armaflex® Adhesive HT625.	4