FIRE PROTECTION JUST GOT SMARTER

ArmaGel® HTF

Flexible aerogel blanket for passive fire protection

// Achieves 120 minutes of fire protection according to UL1709
// Achieves 90 minutes of fire protection according to jet fire (ISO 22899-1)
// Fire tested configurations are representative of the intended applications
// ASTM C1728 compliant
// Up to five times better thermal performance than competing insulation materials
// Mitigates the risk of corrosion under insulation (CUI)

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TECHNICAL DATA – ARMAGEL HTF

Brief description	ArmaGel HTF is a flexible aerogel blanket designed for passive fire protection meeting UL 1709 standard. Jet fire tested according ISO 22899-1. ArmaGel HTF is compliant with ASTM C1728, Type III, Grade 1A.
Material type	Aerogel blanket
Colour	Grey
Special features	ArmaGel HTF provides excellent passive fire protection and superior thermal performance with maximum operational use temperature up to 650 °C (1200 °F).
Product range	Sheets in rolls in 10 mm (0.4 in) thickness and width of 1.5 m (59 in). For further details, please refer to the product range tables at the end of this document.
Applications	Passive fire protection and thermal insulation of pipework and equipment in Energy and industrial process facilities.
Installation	For industrial applications, it is recommended to consult the relevant Armacell application manual(s). Please consult our Technical Services for further information and support.

Property	Value/Assessment										Standard/Test method
Temperature range[*1/2/3]											
Max. service temperature	+650 °C			+1200 °F							Tested according to ASTM C411 and ASTM C447
Thermal conductivity											
Thermal conductivity[*4] (metric units)	θm	+24	+38	+93	+149	+204	+260	+316	+371	[°C]	Tested according to ASTM C177[4]
	λd ≤	0.021	0.022	0.023	0.025	0.029	0.032	0.036	0.043	[W/(m·K)]	
Thermal conductivity[*4] (imperial units)	θm	+75	+100	+200	+300	+400	+500	+600	+700	[°F]	
	λd ≤	0.14	0.15	0.16	0.18	0.20	0.22	0.25	0.30	[Btu·in/(h·ft²·°F)]	
Temperature resistance											
Hot surface performance[*2]	Pass										Tested according to ASTM C411
Linear shrinkage under soaking heat	< 2% in width and length // Pass										Tested according to ASTM C356
Water absorption	Pass										Tested according to ASTM C1763
Fire performance & approvals											
Surface burning characteristics	≤ 5 flame spread index ≤ 10 smoke development										Tested according to ASTM E84
Fire resistance	Tested configurations for UL1709 compliance[5]:										Officially tested at UL according to UL1709

Tested configuration	Fire rating	Outer diameter [min.]	Wall thickness [mm]	Hp/A Value [m⁻¹]	ArmaGel® HTF [mm]
Pipe 8"	120	219.1	3.68	276.4	10 x 10mm
Pipe 8"	120	219.1	6.3	163.4	7 x 10mm
Pipe 8"	120	219.1	14.2	74.8	4 x 10mm
Pipe 8"	90	219.1	6.3	163.4	5 x 10mm
Standard steel beam W10x49 (in x lb/ft)	120	-	-	177.3	3 x 10mm[6]

Tested configurations for jet fire compliance (ISO 22899-1)[7]: — Officially tested at Efectis/France according to ISO 22899-1

Tested configuration	Fire rating	Outer diameter [min.]	Wall thickness [mm]	Hp/A Value [m⁻¹]	ArmaGel® HTF [mm]
Pipe 8"	90	219.1	6.3	163.4	5 x 10mm

Density			
Nominal density	180 kg/m³	11 lb/ft³	Tested according to ASTM C303
Mechanical properties			
Compressive strength[*8]	>3 psi/ 20.7 kPa	at 10% compression	Tested according to ASTM C165
Classifying the flexibility of mineral fibre blankets	Flexible		Tested according to ASTM C1101
Corrosion mitigation			
Stress corrosion cracking	Insulation for use over austenitic steel: no cracks, passed		Tested according to ASTM C692, ASTM C795
Corrosiveness of steel	Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel coupon		Tested according to ASTM C1617, procedure A
Other technical features			
Weather resistance	In all industrial applications the outer layer of the material must be protected with an adequate covering like metal jacketing, or preformed UV-cured GRP (Glass-Reinforced Plastic) cladding. Please contact Technical Services for guidance on the temperature limitations and specific construction considerations which need to be made for each jacketing system.		
Passive fire protection	In passive fire protection applications the outer layer of the material must be protected with an adequate metal jacketing. Please contact Technical Services for guidance.		
Health aspects	Neutral, asbestos free.		
Hydrophobic	Yes		
Water vapour sorption	≤ 5% by weight		Tested according to ASTM C1104
Fungal resistance	No growth		Tested according to ASTM C1338
Storage	Material shall be stored indoors, in clean and dry conditions, away from direct sunlight.		
Shelf (storage) life[*9]	Max. 3 years		

1. For temperatures below or above those published please contact Technical Services to request the corresponding technical information.
2. For operating temperatures above 400 °C (752 °F) a metallic foil barrier with 0.05 mm (0.002 inch) thickness must be additionally installed between the two outmost layers of ArmaGel HTF. For details please contact Technical Services.
3. For live line installations please refer to the ArmaGel HTF application guide.
4. Thermal conductivity tested under a load of 1.5 kPa (0.22 psi).
5. All fire tests have been officially conducted at a UL laboratory under full witnessing by UL.
6. For the installation procedure please contact Technical Services for guidance.
7. The fire test has been officially conducted at a Efectis /France laboratory under full witnessing by Efectis and UL. Fire rating for test criteria (temperature increase on steel pipe below <538°K) was 90 minutes. No integrity failure was noticed during the full test period of 180 minutes.
8. Test performed with a preload of 2 psi.
9. Shelf life (maximum storage time) is limited in order to make sure that only currently manufactured products are applied on projects. This limitation is restricted solely to storage of the product and does not affect the lifetime of product after it has been installed.

Sheets

		Metric sizes				Imperial sizes			
		Nominal thickness	**Width**	**Length**	**Content per roll**	**Nominal thickness**	**Width**	**Length**	**Content per roll**
		[mm]	**[m]**	**[m]**	**[sqm]**	**[in]**	**[in]**	**[ft]**	**[sq ft]**
Standard Rolls	**AGF-10-00/150S**	10	1.5	8	12	0.4	59	26.3	129.2
Jumbo Rolls	**AGF-10-00/150P**	10	1.5	40	60	0.4	59	131.2	645.8
Tolerances	**Thickness tolerances**			10 mm (0.4 in) nominal thickness			± 2.5 mm		
	Width tolerances						± 3%		
	Length tolerances						± 5%		

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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 27 production plants in 19 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams, and generated net sales of EUR 806 million and an adjusted EBITDA of EUR 121 million in 2022. 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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