

## INSULATION JUST GOT COOLER

# ArmaGel<sup>™</sup>DT

Flexible aerogel insulation blanket for cryogenic and dual-temperature applications

// Operating temperatures from -180 °C (-292 °F) to +250 °C (+482 °F)

// More choice: 5, 10, 15 and 20 mm thicknesses

// Integrated zero-perm vapour barrier

// Flexible at cryogenic temperatures











#### **TECHNICAL DATA – ARMAGEL DT**

Property   Value/Assessment   Standard/Test method	Brief description		Gel DT is a f C (+482 °F)	lexible aer	ogel insula	tion blank	et suitable	for applications wi	th operating temperatures betwe	en -180 °C (-292 °F) and	
Special features   ArmaGet DT in intended for use in recycleric and cyclic operating conditions between 180°°C 1942°°F] and -250°°C 1942°°C	Material type	Aerogel insulation blanket with integrated zero-perm vapour barrier									
is suitable for use in multi-layer applications with other inautation products including ArmaSound* industrial Systems.  Product range  Should product range ables at the end of this document. Also available in 0.75 m width 0.27 so in width 0.27	Colour	Grey									
product range tables at the end of this document. Also available in 0.76 m width [29.33 in lupon request.]  Applications   Thermal inquisitant increases and duest including ablower, filtred, stopes and increases and duest including ablowers. There is ovailable in 0.76 m width [29.35 in lupon request.]  Applications   Thermal inquisitant increases are suppressed and duest including ablowers. Internally, stopes are continued to consult the relevant Armacell application manuallel. Please consult out Technical Services for industrial applications in and support.  Property   Yalie/Assessment   Standard/Test method   Temperature range**   Standard/T	Special features	, , , , , , , , , , , , , , , , , , , ,									
Installation   Inst	Product range								details, please refer to the		
Property   Value/Assessment   Standard/Test method	Applications	(typically oil and gas) and process equipment facilities. ArmaGel DT is also used as a component of ArmaSound Industrial Systems to									
Temperature range"   Service temperature   +250 °C   +482 °F   Tested according to ASTM C411	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.									
Max. service temperature	Property	Value/Assessment								Standard/Test method	
ASTM C411   AST	Temperature range*1										
Thermal conductivity	Service temperature	Max. s	ervice tem <sub>l</sub>	perature	+250 °C			+482 °F			
Thermat   Conductivity"   Imperial units   Ad ≤ 0.015 0.018 0.020 0.021 0.022 0.023   IW/ m-K .]		Min. se	ervice temp	erature	-180 °C	;		-292 °F			
Ad s   0.015   0.018   0.020   0.021   0.022   0.023   [W/(m-K]]	Thermal conductivity										
Thermal conductivity" (imperial units)   6m - 200   100   0   475   4100   4200   (°FI   404		θm	-129	-73.3	-17.8	+23.9	+37.8	+93.3	[°C]	3	
Conductivity" (imperial units)  Ad \$ 0.10 0.12 0.14 0.15 0.15 0.16 [Btu-in/(In-ft²-o*F)]  Temperature resistance  Linear shrinkage under soaking heat   ASTM C356  Water absorption  Maximum 8%  ASTM C356  Water absorption  Maximum 8%  ASTM C356  Fire performance & approvals  Surface burning   ASTM C356  Surface burning   ASTM C356  ASTM C303  Mechanical properties  Compressive strength'2  ASTM C303  Mechanical properties  Compressive strength'2  ASTM C303  Mechanical properties  Classifying the flexibility of mineral fibre blankets  Flexible  Flexible  Flexible  Insulation for use over austenitic steel: no cracks, passed  Insulation for use over austenitic steel: no cracks, passed  ASTM C392  Tested according to ASTM C395  Corrosiveness of steel  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Couple output ransmission rate  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  ASTM C1617, procedure A  ASTM C1617, procedure A  ASTM C1617, procedure A	conductivity*1 (metric units)	λd ≤	0.015	0.018	0.020	0.021	0.022	0.023	[W/(m·K)]	ASTM C177	
Temperature resistance    Tested according to ASTM C356   Survival of Compliant to IMO Part 2 (smoke generation and toxicity)   Tested according to Maximum approvat   Compliant to IMO Part 2 (smoke generation and toxicity)   Tested according to Maximum approvat   Tested according to Maximum approvation ap		θm	-200	-100	0	+75	+100	+200	[°F]	_	
Linear shrinkage under soaking heat  Water absorption  Maximum 8%  Fire performance & approvals  Surface burning	conductivity [imperial units]	λd ≤	0.10	0.12	0.14	0.15	0.15	0.16	[Btu·in/(h·ft²·°F)]		
Saking heat  Water absorption  Maximum 8%  Fire performance & approvals  Surface burning characteristics	Temperature resistance										
Fire performance & approvals  Surface burning characteristics < 50 smoke developed index		< 2% in width and length									
Surface burning characteristics < 50 smoke developed index	Water absorption	Maximum 8%									
characteristics < 50 smoke developed index	Fire performance & approvals										
Organisation (IMO)  Marine approval  Compliant to IMO Part 5 (surface flammability)  Compliant with Module B of Directive 2014/90/EU. Certified by Bureau Veritas.  Density  Density  160 to 240 kg/m³ 10 to 15 lb/ft³  Compressive strength*²  5 psi/ 34.5 kPa at 10% compression  Classifying the flexibility of mineral fibre blankets  Corrosion mitigation  Stress corrosion cracking  Insulation for use over austenitic steel: no cracks, passed  Corrosiveness of steel  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Water vapour transmission rate  2010 FTP Code  Tested according to ASTM C303  Tested according to ASTM C105  Tested according to ASTM C1101  Tested according to ASTM C1101  Tested according to ASTM C795  Tested according to ASTM C1617, procedure A ASTM C1617, procedure A ASTM C1617, procedure A Tested according to ASTM C1617, procedure A Tested ACCORDINATION C1617, procedure A Tested ACCORDINATI	5	·									
Density  Density  160 to 240 kg/m³ 10 to 15 lb/ft³  Mechanical properties  Compressive strength¹² >5 psi/ 34.5 kPa at 10% compression  Classifying the flexibility of mineral fibre blankets  Corrosion mitigation  Stress corrosion cracking  Insulation for use over austenitic steel: no cracks, passed  Corrosiveness of steel  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Water vapour transmission rate  O.00 perm  MED 2014/90/EŬ Module Be Med 2014/90/PD Module Be M											
Density 160 to 240 kg/m³ 10 to 15 lb/ft³  Mechanical properties  Compressive strength⁻² >5 psi/ 34.5 kPa at 10% compression  Classifying the flexibility of mineral fibre blankets  Flexible  Stress corrosion cracking  Insulation for use over austenitic steel: no cracks, passed  Tested according to ASTM C101  Corrosiveness of steel  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Coupon  Water vapour transmission rate  Tested according to ASTM C795  Tested according to ASTM C1617, procedure A	Marine approval	·							Tested according to MED 2014/90/EU Module B		
Mechanical properties  Compressive strength** >5 psi/ 34.5 kPa at 10% compression  Classifying the flexibility of mineral fibre blankets  Flexible  Corrosion mitigation  Stress corrosion cracking  Insulation for use over austenitic steel: no cracks, passed  Corrosiveness of steel  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Coupon  ASTM C303  Tested according to ASTM C165  Tested according to ASTM C1101  Tested according to ASTM C692, ASTM C795  Tested according to ASTM C1617, procedure A	Density										
Compressive strength*2 >5 psi/ 34.5 kPa at 10% compression  Classifying the flexibility of mineral fibre blankets  Flexible  Corrosion mitigation  Stress corrosion cracking  Insulation for use over austenitic steel: no cracks, passed  Corrosiveness of steel  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Coupon  Water vapour transmission rate  7 Eested according to ASTM C795  Tested according to ASTM C1617, procedure A  Tested according to ASTM C1617, procedure A  Tested according to ASTM C1617, procedure A	Density	160 to 240 kg/m³ 10 to 15 lb/ft³								3	
Classifying the flexibility of mineral fibre blankets  Flexible  Corrosion mitigation  Stress corrosion cracking  Insulation for use over austenitic steel: no cracks, passed  Corrosiveness of steel  Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Coupon  Water vapour transmission rate  ASTM C165  Tested according to ASTM C1101  Tested according to ASTM C795  Tested according to ASTM C1617, procedure A	Mechanical properties										
Corrosion mitigation     ASTM C1101       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       Water vapour transmission rate     0.00 perm     Tested according to ASTM C1617	Compressive strength*2	>5 psi/ 34.5 kPa at 10% compression									
Stress corrosion cracking Insulation for use over austenitic steel: no cracks, passed  Corrosiveness of steel Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Tested according to ASTM C692, ASTM C795  Tested according to ASTM C1617, procedure A  Water vapour transmission rate 0.00 perm  Tested according to ASTM C1617, procedure A	, ,	Flexibl	.e							3	
Stress corrosion cracking Insulation for use over austenitic steel: no cracks, passed  Corrosiveness of steel Passed, Mass Loss Corrosion Rate (MLCR) not exceeding that of 5 ppm chloride solution on carbon steel  Tested according to ASTM C692, ASTM C795  Tested according to ASTM C1617, procedure A  Water vapour transmission rate 0.00 perm  Tested according to ASTM C1617, procedure A	Corrosion mitigation										
Water vapour transmission rate     coupon       Mater vapour transmission rate     0.00 perm   ASTM C1617, procedure A Tested according to		Insulation for use over austenitic steel: no cracks, passed									
	Corrosiveness of steel	- · · · · · · · · · · · · · · · · · · ·									
		0.00 perm									

#### Other technical features

Weather resistance	In all industrial applications the outer layer of the material must be protected with an adequate covering like meta preformed UV-cured GRP (Glass-Reinforced Plastic) cladding. Please contact Technical Services for guidance on the limitations and specific construction considerations which need to be made for each jacketing system.					
Health aspects	Neutral					
Hydrophobic	Yes					
Water vapour sorption	≤ 5% by weight	Tested according to ASTM C1104				
-ungal 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*3	Max. 3 years					

- For temperatures below or above those published please contact Technical Services to request the corresponding technical information.
   Test performed with a preload of 2 psi.
   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	AGD-05-00/150S	5	1.50	13.00	19.50	0.20	59.00	42.65	209.90
	AGD-10-00/150S	10	1.50	8.00	12.00	0.39	59.00	26.25	129.17
	AGD-15-00/150S	15	1.50	5.20	7.80	0.59	59.00	17.06	83.96
	AGD-20-00/150S	20	1.50	4.00	6.00	0.79	59.00	13.13	64.59
Jumbo Rolls	AGD-05-00/150P	5	1.50	65.00	97.50	0.20	59.00	213.26	1049.48
	AGD-10-00/150P	10	1.50	40.00	60.00	0.39	59.00	131.24	645.84
	AGD-15-00/150P	15	1.50	26.00	39.00	0.59	59.00	85.31	419.80
	AGD-20-00/150P	20	1.50	20.00	30.00	0.79	59.00	65.62	322.92
Tolerances According to ASTM C1728	Thickness tolerances			10 mm (0.39 15 mm (0.59	in) nominal th in) nominal th in) nominal th in) nominal th	ickness 10 ickness 15	5.0 - 7.0 mm 0.0 -12.5 mm 5.0 - 17.5 mm 0.0 - 22.5 mm		
	Width tolerances						± 3%		
	Length tolerances						± 5%		

<sup>\*</sup> Rolls of 0.75 m (29.53 in) width are available upon request.

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### ABOUT ARMACELL

As the inventors of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal, acoustic 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 3,135 employees and 24 production plants in 16 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for high-tech and lightweight applications and next generation aerogel blanket technology.

