# BEYOND BETTER EXPERTISE

# Training Programme

Sharing our knowledge and experience to help you efficiently achieve best-in-class insulation know-how and reliable, well-installed insulation systems. As your trusted partner, we deliver more than just high quality products.

www.armacell.com.sg

















# SOLUTIONS ENABLING ENERGY SAVINGS.

We are the inventor of flexible foams for equipment insulation and a leading provider of engineered foams. Our lightweight thermal, acoustic and mechanical solutions create sustainable value for our customers. Innovation and entrepreneurship are an integral part of our DNA. We drive industry-leading solutions and aspire to launch new technologies using alternative resources or natural feedstock.

Day in day out, our products significantly contribute to global energy efficiency and make a difference around the world. In meeting the challenges of megatrends, such as energy efficiency, noise control, lightweighting, the globalisation of food supplies, our product solutions stand out in terms of functionality and ease of installation.





3,390
employees worldwide representing over 70 different nationalities

production facilities in 19 countries on 4 continents

350+
active patents in
60 different patent

We create genuine value for our customers, value them as partners and are committed to developing solutions tailored to their requirements. The outcome is added value for our business partners and, most significantly, energy savings and a longer working life for their critical equipment.

Armacell. Making a difference around the world.

# SINGAPORE ARMALIVE



Bucking the post-COVID trend in 2022, we made a conscious decision to invest further in Singapore by establishing a 16,000 sq. ft. facility. Housing our APAC regional headquarters, this expanded location also includes our company's first-of-its kind customer experience centre and dedicated training facility.

Our solutions are often hidden behind covered ceilings and walls or installed to blend seamlessly with the interior aesthetics, and

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#### INTRODUCTION

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so these innovative solutions are overlooked despite the significant benefits they bring. Benefits include energy savings, acoustic comfort and fire protection.

Visitors from the region can see how some of these products are installed and used in Armacell's new office and experience first-hand how these solutions are handled, installed and perform as compared to alternative materials. Dedicated application trainers are also available to conduct installer programmes in ASEAN.

#### 06

#### TRAINING PROGRAMMES

- 06 ArmaFlex® installation for residential buildings
- 08 Insulating HVAC systems in the commercial and industrial processing destinations
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# PROPERLY INSTALLED INSULATION SAVES ENERGY, MONEY AND MORE.

With 67% of the global population to be urbanised by 2040, even higher energy demand will be required year on year. The building sector alone consumes up to 40 percent of global energy use and research has shown that up to 80% of energy required in buildings can be saved by using existing, tried-and-tested technologies such as insulation.















PROTECTION AGAINST MICROORGANISMS



MITIGATES CORROSION UNDER INSULATION



Insulation minimises energy losses. Wherever energy is produced, transported or stored, part of it is lost as heat if the system is not properly insulated. When the right insulation product is correctly installed on heating and cooling systems of buildings, thermal loss can be effectively reduced and this helps to ensure that the total amount of energy used to maintain the thermal comfort within the building is optimised.

Insulation prevents condensation. System engineers typically have two considerations - prevent condensation on the outer surface of the insulation and avoid water vapour intrusion. Surface condensation is undesirable because condensed water dripping from the ceiling not only affects building users, it can also damage surfaces and other assets within the building.

A moist environment is also conducive for mould growth. It is much more difficult for microbes to settle on the smooth, non-porous surface of elastomeric material as compared to conventional open-cell mineral fibre. Armacell is also the world's only manufacturer of flexible technical insulation materials to provide built-in Microban® antimicrobial product protection.

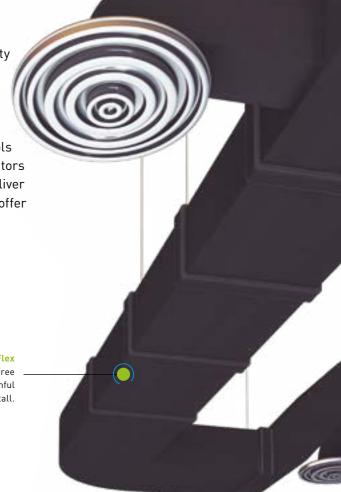
Additionally, water vapour intrusion can have serious cost implications such as thermal performance loss, corrosion under insulation and structural degradation.

## Professional installation avoids the hassle of replacements.

The quality of the installation workmanship can affect the reliability of an insulated system. With guidance from Armacell's in-house application experts, ready access to easy-to-understand installation instructions and complementary tools and products, installers and contractors can achieve the skills required to deliver a professionally installed system to offer long-term peace of mind.



Our closed-cell, dust- and fibre-free insulation does not release harmful particles and is fast and easy to install.





# **ABOUT THE COURSE**

Minimum of 6 people to start a class. Maximum of 12 people in a class.

#### // CERTIFIED ARMAFLEX INSTALLER COURSE

What you will achieve Certified ArmaFlex installer for aircon systems in residential buildings that is valid for 2 years.

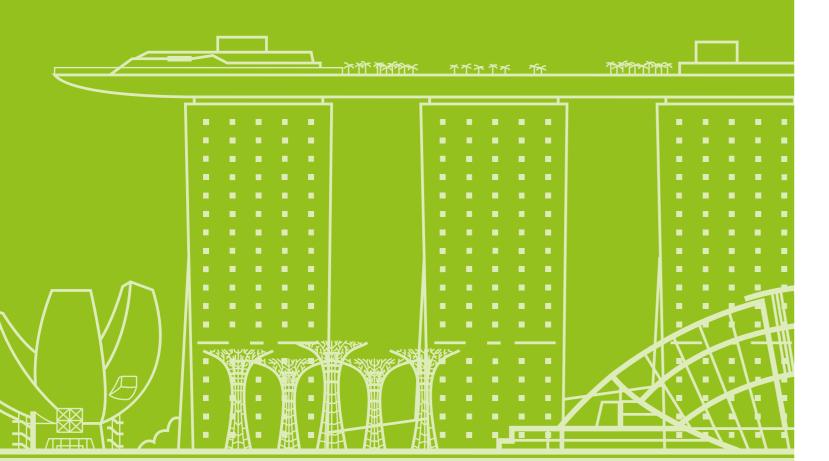
Pre-requisite Non

	а	Introduction to syllabus, a	ims and objectives of the course						
	b	Identifying the right insula	tion thickness						
≿	С	Selecting a suitable trunki	ing						
THEORY	d	Working with ArmaFlex							
Ė	е	Tools for installing ArmaF	lex						
	f	Using ArmaFlex outdoors							
	g	Advice for insulating refrig	geration and aircon equipment						
	а	Tools for installing ArmaFlex							
	b	Correctly using adhesive							
	С	Insulating pipes using ArmaFlex tubes							
ÄL	d	Insulating copper flare fittings							
PRACTICAL	е	Insulating copper elbows							
PRA	f	Insulating PVC drain pipes	5						
	g	Insulating PVC elbow and tees							
	h	Arranging copper tubes, d	rain pipes and wires in trunking						
	i	Practical test / site survey	and quality check						
Your investment:  1 day  Course fee per person (mixed group)  Course fee for an exclusive group  \$\$5\$ 30 per person  \$\$5\$ 300 per group									

#### INSULATING HEATING, VENTILATION AND AIR-CONDITIONING (HVAC) SYSTEMS

# IN COMMERCIAL AND INDUSTRIAL PROCESSING DESTINATIONS

Heating, ventilation and air-conditioning (HVAC) systems play a central role in supporting the comfort and safety of indoor environments. It pushes air through ducts that run through walls, ceilings and floors to circulate air while the chilled water pipe systems help to moderate the temperature conditions. Installing thermal insulation materials on ducting and piping systems of HVAC applications is necessary for optimal energy efficiency. At the same time, the insulation material can either help to defend against or contribute to indoor air-quality problems.



# **ABOUT THE COURSE**

Minimum of 6 people to start a class. Maximum of 12 people in a class.

#### // STANDARD APPLICATIONS

What you will achieve Certified ArmaFlex installer for standard HVAC applications, that is valid for 2 years.

**Pre-requisite** You must have a valid ArmaFlex installer for aircon systems in residential buildings certificate.

#### // ADVANCED APPLICATIONS

What you will achieve Certified ArmaFlex installer for advanced HVAC applications, that is valid for 2 years.

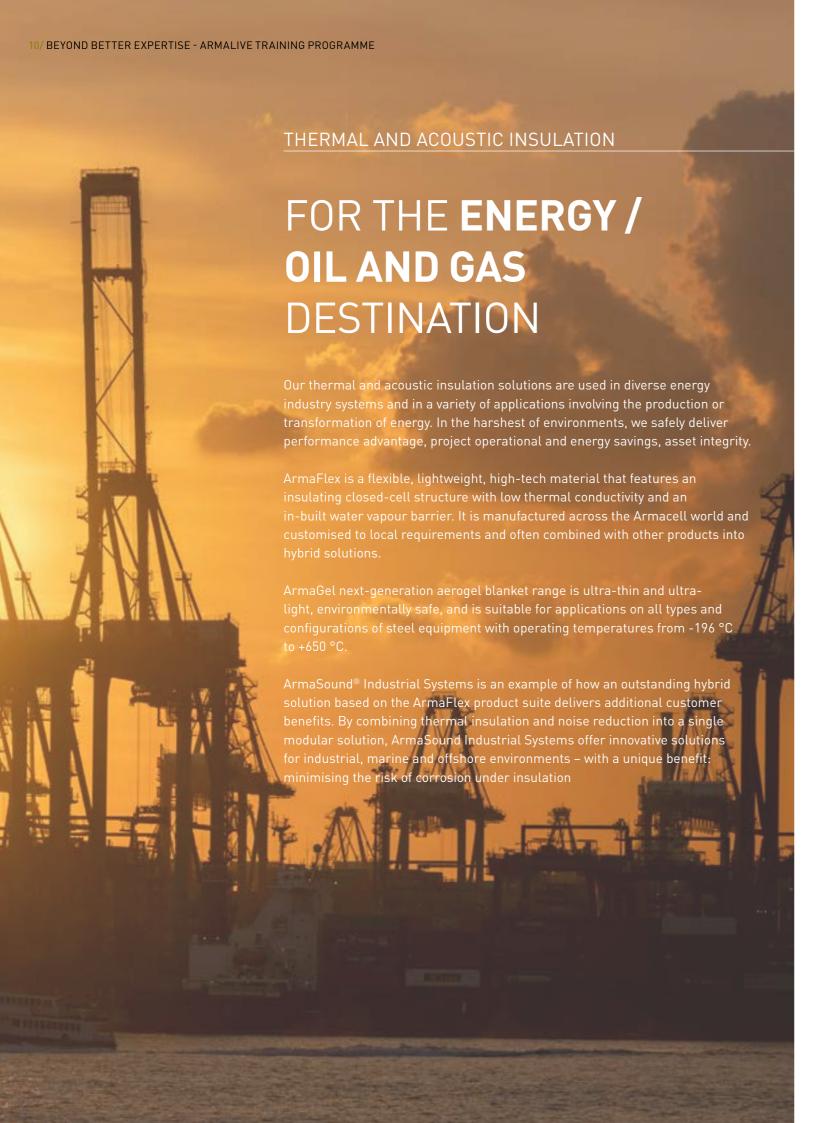
Pre-requisite You must have a valid ArmaFlex installer for standard HVAC applications certificate.

#### // SPECIAL APPLICATIONS

What you will achieve Certified ArmaFlex installer for special HVAC applications, that is valid for 2 years.

Pre-requisite You must have a valid ArmaFlex installer for advanced HVAC applications certificate.

			STANDARD	ADVANCED	SPECIAL
			APPLICATIONS	APPLICATIONS	APPLICATIONS
THEORY	а	Introduction to syllabus, aims and objectives of the course	✓	✓	✓
ES	b	Insulating coupling pipe joints and flanges	✓		
L - A N G	С	Insulating pipe reducers with ArmaFlex insulation sheet	✓		
PRACTICAL - PIPES AND FLANGES	d	Insulating straight pipes with ArmaFlex insulation sheet	✓		
ANE	е	Insulating two-part bends with ArmaFlex insulation sheet	✓		
PES PE	f	Insulating valves made of ArmaFlex insulation sheet	✓		
	g	Insulating flange boxes	✓		
PRACTICAL - DUCTS	h	Insulating rectangular ducts with ArmaFlex insulation sheet	✓		
PRACTICAL - TANKS	i	Insulating small tanks of less than 1.5 m in diameter with ArmaFlex insulation sheet	✓		
≿	j	Installing and fabricating ArmaFlex insulation with metal cladding		✓	
THEORY	k	Insulating accessories along pipes, such as sensor		✓	
F	l	Offset angle and pipework bend angle joints		✓	
PRACTICAL - CLADDINGS, VALVES, REDUCERS	m	Insulating concentric reducer		✓	
PRACT CLADI VALVES, R	n	Multilayer insulation using ArmaFlex sheet		<b>✓</b>	
PRACTICAL - COUPLINGS AND COLD PUMP	0	Insulating couplings with ArmaFlex insulation sheet			✓
PRACTICAL COUPLINGS AND COLD PUMP	р	Insulating cold pump with ArmaFlex insulation sheet			✓
		Your investment	1 day	1 day	1 day
		Course fee per person (mixed group)	S\$ 50	S\$ 70	S\$ 70
		Course fee per exclusive group	S\$ 500	S\$ 700	S\$ 700



## ARMAFLEX

Minimum of 6 people to start a class. Maximum of 12 people in a class.

#### // STANDARD APPLICATIONS

What you will achieve Certified ArmaFlex installer for standard applications in Energy / Oil & Gas, that is valid for 2

years.

Pre-requisite None

#### // ADVANCED APPLICATIONS

What you will achieve Certified ArmaFlex installer for advanced applications in Energy / Oil & Gas, that is valid for 2

years.

**Pre-requisite** You must have a valid ArmaFlex Energy / Oil & Gas installer for standard applications certificate.

#### // SPECIAL APPLICATIONS

What you will achieve Certified ArmaFlex installer for special applications in Energy / Oil & Gas, that is valid for 2 years.

Pre-requisite You must have a valid ArmaFlex Energy / Oil & Gas installer for advanced applications certificate.

			STANDARD APPLICATIONS	ADVANCED APPLICATIONS	SPECIAL APPLICATIONS		
	а	Introduction to syllabus, aims and objectives of the course	✓	✓	✓		
THEORY	b	Using types of tools required for advanced installation processing	✓				
뿓	С	Sealing ArmaFlex terminations at flange fittings above 100 °C	✓				
	d	Using ArmaFlex insulation with rigid claddings	✓				
	е	Installing ArmaFlex tubes ( $\frac{1}{2}$ to 3 inch) through standard application method	✓				
	f	Installing ArmaFlex tubes (1½ to 3 inch) through premium application method	✓				
	g	Sealing ArmaFlex terminations at flange fittings below 100 °C	✓				
	h	Using of ArmaFlex adhesive and ArmaClad® Arma-Chek mastic	✓				
	i	Installing small pipe diameter with a combination of ArmaFlex tubes and sheet insulation	✓				
	j	Handling and cutting different ArmaFlex materials		✓			
	k	Installing ArmaFlex sheet on straight line pipes sizes up to 20 inches		✓			
_	l	Installing ArmaFlex sheet on straight line pipes sizes above 20 inches		✓			
PRACTICAL	m	Fabricating and installing standard flange fitting covers with ArmaFlex sheet insulation		✓			
PR/	n	Installing large pipe diameter with multi-layers of ArmaFlex sheet insulation		✓			
	0	Insulating vertical pipes		✓			
	p	Installing insulation on different pipe support systems (trunnion, shoes, saddles, clamps, elbows)		✓			
	q	Connecting insulated systems with pre-insulated cold support		✓			
	r	Fabricating and installing different valve fitting covers with ArmaFlex sheet insulation			✓		
	t	Insulating removable box enclosure installed at valves and flanges for temperature up to 125 $^{\circ}\text{C}$			✓		
	u	Repairs and inspection			✓		
	٧	Question and answer session			✓		
		Your investment	1 day	1 day	1 day		
		Course fee per person (mixed group)	S\$ 50	S\$ 70	S\$ 70		
		Course fee per exclusive group	S\$ 500	S\$ 700	S\$ 700		

## ARMAGEL DT

Minimum of 6 people to start a class. Maximum of 12 people in a class.

#### // ADVANCED APPLICATIONS

What you will achieve Certified ArmaGel DT installer for advanced applications in Energy / Oil & Gas, that is valid for 2

vears.

Pre-requisite None

#### // SPECIAL APPLICATIONS

 $What you will achieve \quad Certified \ ArmaGel \ DT \ installer \ for \ special \ applications \ in \ Energy \ / \ Oil \ \& \ Gas, \ that \ is \ valid \ for \ 2 \ years.$ 

Pre-requisite You must have a valid ArmaGel DT installer for advanced applications in Energy / Oil & Gas

certificate.

			ADVANCED APPLICATIONS	SPECIAL APPLICATIONS
	а	Introduction to syllabus, aims and objectives of the course	✓	✓
	b	Use of Personal Protective Equipment (PPE)	✓	
THEORY	С	Use of tools, templates and ArmaGel Application Manual	✓	
풀	d	Fabricating and installing on elbow fittings through multi-layering	✓	
	е	Introduction to Energy installation procedures and 2D drawing book for ArmaGel HT and ArmaGel DT for piping, vessels and tanks	✓	
	f	Piping application methods and fixing including 45° angle cutting	✓	
	g	Securing the insulation using filament tape and band plus vapour barrier tapes	✓	
_	h	Demonstrating installation on piping and vessels through PowerPoint®	✓	
PRACTICAL	i	Use of vapour stop, including hands-on work applying mastic and flexible reinforcement membrane		✓
PRA	j	Use of primary vapour barrier - self healing butyl sheet		✓
	k	Application methods on straight pipe, bends, tees, and other pipe fittings using the primary vapour sheet		✓
	l	Question and answer session		✓
		Your investment	1 day	1 day
		Course fee per person (mixed group)	S\$ 90	S\$ 100
		Course fee per exclusive group	S\$ 900	S\$ 1,000

Note: All fees exclude the prevailing goods and services tax.



INSULATION
JUST GOT BETTER.

For -196 °C to +650 °C temperature ranges.







# ARMAGEL HT AND ARMAGEL HTL

Minimum of 6 people to start a class. Maximum of 12 people in a class.

#### // ADVANCED APPLICATIONS

What you will achieve Certified ArmaGel HT and ArmaGel HTL installer for advanced applications in Energy / Oil & Gas,

that is valid for 2 years.

Pre-requisite None

#### // SPECIAL APPLICATIONS

What you will achieve Certified ArmaGel HT and ArmaGel HTL installer for special applications in Energy / Oil & Gas, that

s valid for 2 years.

Pre-requisite You must have a valid ArmaGel HT and ArmaGel HTL installer for advanced applications in

Energy / Oil & Gas certificate.

			ADVANCED APPLICATIONS	SPECIAL APPLICATIONS
	а	Introduction to syllabus, aims and objectives of the course	✓	✓
THEORY	b	Use of Personal Protective Equipment (PPE)	✓	
	С	Use of tools, templates and ArmaGel Application Manual	✓	
	d	Introduction to Energy installation procedures and 2D drawing book for ArmaGel HT and ArmaGel DT for piping, vessels and tanks	✓	
	е	Installing ArmaGel blanket on straight pipes	✓	
	f	Installing ArmaGel blankets on fittings such as elbows, tees and reducers	✓	
	g	Fabricating methods including 45° angle cutting applicable for 15 mm and 20 mm products	✓	
	h	Fabricating, cutting and installing of ArmaGel insulation for pipe fittings such as segmented bends, tees, and reducers	✓	
	i	Demonstrating piping and vessels through PowerPoint®	✓	
	j	Insulating bends with 2-piece ArmaGel fitting covers	✓	
PRACTICAL	k	$\label{lem:multi-layering} \mbox{Multi-layering installations - staggered seams / joints on straight pipe and all fittings}$	✓	
ACTI	l	Insulating small bore piping (½ to 3 inches) using the Spiral Bandaging method	✓	
<b>g</b>	m	Insulating small bore piping ( $\frac{1}{2}$ to 3 inches) using 5 mm and 10 mm thick products on straight lines with / without overlaps using spiral insulation wire fixing methods	✓	
	n	Hybrid insulation piping systems – installing ArmaGel around other material types		✓
	0	Insulating flanges and valves		✓
	р	Insulating large and curved surface areas (vessels/tanks) with welded pins, bands and clips		✓
	q	Using metallic foil to insulate temperature above 400 °C		✓
	r	Question and answer session		✓
		Your investment	1 day	1 day
		Course fee per person (mixed group)	S\$ 90	S\$ 100
		Course fee per exclusive group	S\$ 900	S\$ 1,000

## **ACOUSTIC INSULATION**

Minimum of 6 people to start a class. Maximum of 12 people in a class.

#### // STANDARD APPLICATIONS

What you will achieve Certified ArmaSound Industrial Systems installer for standard Energy / Oil & Gas acoustic

applications, that is valid for 2 years.

Pre-requisite

#### // ADVANCED APPLICATIONS

What you will achieve Certified ArmaSound Industrial Systems installer for advanced Energy / Oil & Gas acoustic

applications, that is valid for 2 years.

You must have a valid Armacell installer for standard Energy / Oil & Gas acoustic applications **Pre-requisite** 

#### // SPECIAL APPLICATIONS

What you will achieve Certified ArmaSound Industrial Systems installer for special Energy / Oil & Gas acoustic

applications, that is valid for 2 years.

**Pre-requisite** You must have a valid Armacell installer for advanced Energy / Oil & Gas acoustic applications

certificate.

			STANDARD APPLICATIONS	ADVANCED APPLICATIONS	SPECIAL APPLICATIONS
THEORY	а	Introduction to syllabus, aims and objectives of the course	✓	✓	✓
뿔	b	Use of tools required for advanced installation processing	✓		
	С	Installing ArmaFlex sheet to piping surfaces	✓		
	d	Fixing and securing ArmaFlex at termination pipes	✓		
	е	Fabrication techniques to create insulation covers for elbow pipes, tees, reducers, shoes and trunnion fittings	✓		
	f	Using ArmaFlex adhesive and mastic sealants with stainless steel bands	✓		
	g	Fixing and securing ArmaSound RD 240 with adhesives, mastic sealants and stainless steel bands	✓		
	h	Fabrication and installation of Armacell vapour at termination	✓		
	i	Fabrication and installation of ArmaSound acoustic barrier material on straight pipes		✓	
CAL	j	Fixing and securing various acoustic material combinations to vertical pipes		✓	
PRACTICAL	k	Fabrication techniques and processing of ArmaSound barrier material for segmented elbows, tees, reducers and metal parts		✓	
<b>△</b>	l	Using stainless steel band for fixing ArmaSound barrier		✓	
	m	Fabrication and application of ArmaClad Arma-Chek covering on straight pipes (1/2 to 20 inches)		✓	
	n	Fabrication and application of ArmaClad Arma-Chek covering on straight pipes (above 20 inches and all vertical piping)		✓	
	0	Overlapping of material for small and large bore straight pipings		✓	
	p	Fabrication and development of templates for bends, elbows, tees, reducers, and cap ends			✓
	q	Installing segmented material to bend fittings			✓
	r	Installing material to tee fittings, reducer fittings and cap ends			✓
	S	Usage and cleaning of ArmaClad Arma-Chek			✓
	t	Fabrication of fitting covers for valves and flanges using different methods			✓
	u	Question and answer session			✓
		Your investment	1 day	1 day	1 day
		Course fee per person (mixed group)	S\$ 60	S\$ 80	S\$ 80
		Course fee per exclusive group	S\$ 600	S\$ 800	S\$ 800
Note: All	fees (	exclude the prevailing goods and services tax.			

TRAINING HELPS YOU ACHIEVE FASTER AND MORE SUPERIOR INSTALLATION QUALITY.

In addition to a variety of application manuals and easy-to-follow videos on our websites and YouTube channel, Armacell also offers a suite of training services to help you achieve high-quality installations.

#### // TRAINING AT YOUR JOB SITE1,2,3,4

On-site training offers realism to the trainees due to exposure to the actual environment in which installation happens. Armacell's experienced trainers are well-poised to offer practical advice to help you resolve these challenges on-site.

Contact us if you have any special requests for training modules beyond our standard offering.

J0	B SITE APPLICATION TRAINING	FEE		
•	Half day	S\$	1,000	
•	Full day	S\$	1,200	

We are pleased to offer job site assessments<sup>2</sup> for a promotional fee of S\$ 200, to advise you on the installation quality of your insulation projects.

#### // TRAINING AT ARMALIVE SINGAPORE3, 4, 5

We recommend attending structured training courses at Armacell's new ArmaLive training centre in Singapore. Theoretical and practical course modules are held in a conducive environment to facilitate your learning experience. Each class will be made up of between 6 to 12 trainees, who can come from one or more organisations. An attractive discount is available if more than 10 trainees from the same company is registered for the same course (refer to course fee for exclusive groups).

COURSE FEE FOR MIXED GROUPS (PER PERSON)			ANDARD ICATIONS	ADVANCED APPLICATIONS		SPECIAL APPLICATIONS		
•	Certified ArmaFlex installer for residential aircon systems	S\$	30					
•	Certified ArmaFlex installer in HVAC buildings	S\$	50	S\$	70	S\$	70	
•	Certified ArmaFlex installer in Energy / Oil & Gas	S\$	50	S\$	70	S\$	70	
•	Certified ArmaGel DT installer in Energy / Oil & Gas			S\$	90	S\$	100	
•	Certified ArmaGel HT and HTL installer in Energy / Oil & Gas			S\$	90	S\$	100	
	Certified ArmaSound Industrial Systems installer	S\$	60	S\$	80	S\$	80	

CO	COURSE FEE FOR EXCLUSIVE GROUPS		STANDARD APPLICATIONS		ADVANCED APPLICATIONS		SPECIAL APPLICATIONS	
٠	Certified ArmaFlex installer for residential aircon systems	S\$	300					
٠	Certified ArmaFlex installer in HVAC buildings	S\$	500	S\$	700	S\$	700	
٠	Certified ArmaFlex installer in Energy / Oil & Gas	S\$	500	S\$	700	S\$	700	
٠	Certified ArmaGel DT installer in Energy / Oil & Gas			S\$	900	S\$	1,000	
٠	Certified ArmaGel HT and HTL installer in Energy / Oil & Gas			S\$	900	S\$	1,000	
<u> </u>	Certified ArmaSound Industrial Systems installer	S\$	600	S\$	800	S\$	800	

<sup>&</sup>lt;sup>1</sup> Materials and tools required for the training sessions are to be prepared and supplied by the trainees' organisation at their cost, before the training.

<sup>2</sup> All travel and miscellaneous expenses are not included. Job site visits outside of Singapore will require 1-2 days of additional charges for travelling at training rate. All travel and accommodation will also be billed according to the actual billing.

<sup>&</sup>lt;sup>3</sup> Names and photographs of all trainees should be submitted before the course for the creation of training certificates.

<sup>&</sup>lt;sup>4</sup> In the event of any delay not caused by Armacell, a full day course fee will be charged.

<sup>5</sup> Materials required for the training sessions will be provided by Armacell only if training is conducted at ArmaLive. Refreshments are provided during break times. Lunch is not included but can be arranged and charged additionally.

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.

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**.

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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. 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.

