

ARMACELL SOLUTIONS

Education

At 12% of all nonresidential construction, schools and universities are a significant portion of all building done in the US each year. Whether the students are K-12 or part of our institutes of higher learning, all educational buildings need to have high-performing HVAC systems. Insulation that saves energy and preserves indoor air quality is a must. Armacell's innovative insulation solutions for schools and universities make us first in our class.

www.armacell.us



 **armacell**[®]
MAKING A DIFFERENCE AROUND THE WORLD



NEW AIR PLENUM SOLUTION

ArmaFlex[®] Ultra

with FlameDefense[™] technology — the first elastomeric insulation Classified by UL to UL 723 at 25/50. In an emergency, **it gives you time.**

www.armacell.us



 **armacell[®]**
MAKING A DIFFERENCE AROUND THE WORLD



QUICK LINKS

Click on
the chapter
sections to
jump quickly
to that page



TO
TOC

Click on
this icon to
return to the
TABLE OF
CONTENTS

TABLE OF CONTENTS

1	About Armacell
3	Education Solutions – Armacell in Action
6	Project List Smart Solutions for your business
7	Microban Product Protection
8	Stakeholder: Engineer Systems Solution Packages
9	Stakeholder: Contractor Systems Solution Packages
10	Stakeholder: Distributor Systems Solution Packages
11	At Your Service AQIP Training / Job Site Support Proper Sizing Specification Team Technical Manager Support
13	Quick Reference Iron/Copper Pipe Size Chart
14	Solutions Products
16	Education Solutions Packages
17	Armacell Solutions Warranty

ABOUT

ARMACELL

We are the inventors 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. Day in and day out, our products significantly contribute to global energy efficiency, urbanization, lightweighting, the globalization of food supplies and acoustic comfort. Our product solutions stand out in terms of functionality and ease of installation.

// Passionate

Dedicated and professionally-minded employees with an entrepreneurial spirit are our greatest asset. They share a common set of core values: customer experience, commitment, empowerment and accountability, integrity and sustainability.

Armacell.

Making a difference around the world.

300+

active patents

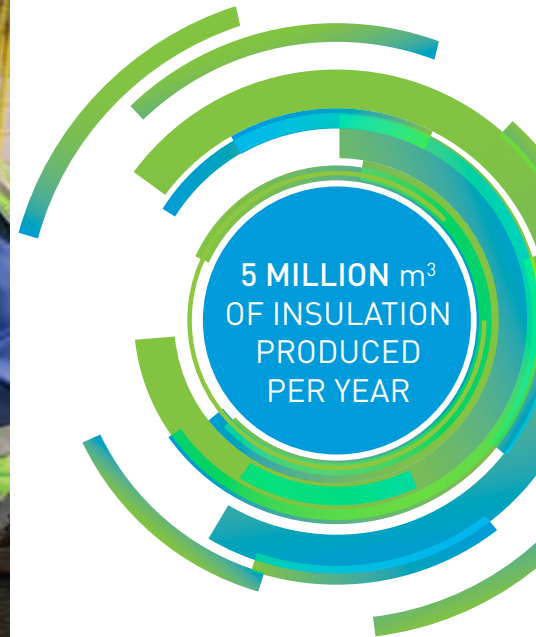
24production facilities
in 16 countries on
4 continents**3,100**employees worldwide
representing
70 different
nationalities

SOLUTIONS

ENABLING ENERGY SAVINGS

// Innovative

We develop new technologies and focus on products that deliver superior technical performance. Now in its seventh generation, ArmaFlex® is the original flexible elastomeric foam insulation material for superior condensation control and thermal performance. Our most recent product launches include ArmaFlex Ultra, the first elastomeric insulation Classified by UL to UL 723 at 25/50.



// Consumer-centric

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.



140 x MORE
ENERGY
SAVED

// Sustainable

We dedicate our business activities to advancing and optimizing energy efficiency for equipment and to closing the loop to achieve a more sustainable use of resources. Our ArmaFlex insulation saves 140 times more energy than is required for its production and prevents the emission of several million tons of CO₂ per year.



EDUCATION SOLUTIONS

If you ask a college or high school student what matters to them, chances are you will get a nontraditional answer. This is because the students of today are exceedingly nontraditional when compared to just a decade ago. Students today are unyieldingly passionate and forward thinking, but steady themselves on securing education and evolving through their relationships. For a nontraditional student, only a nontraditional school will do.

Growth is a cornerstone tenant in education. Growing minds seek growth-enabling technologies which in turn demand growth-enabling resources. Utilizing this concept as a reference point in education building construction design will help round out envelope management considerations and secure long term reliability. If you know where you're growing, you have a better chance of preparing for the journey.

Educational construction is the third largest sector of nonresidential building and has been steadily growing. As such, system designers and specifiers are looking for innovative solutions to meet the demands of their HVAC systems.

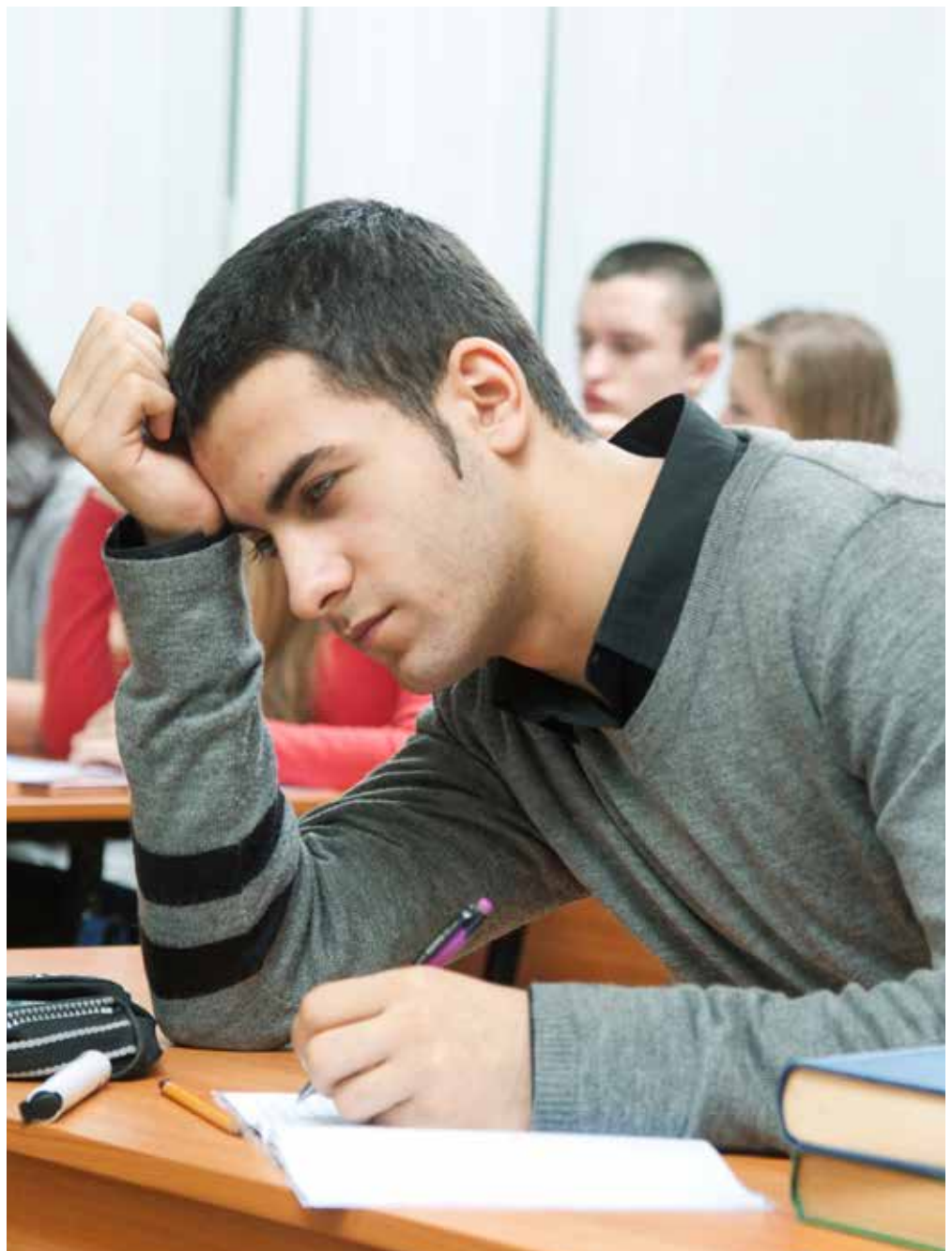
POPULARITY AND TRENDS

Codes and regulations will be primary guides in designing educational facilities. This is great news considering the complexity of need found through planning and preparing to construct these spaces.

70 %

Of college students are non-traditional. They are not right out of high school anymore.¹

¹ Click this link to Source Information



Although codes and standards provide guidelines and parameters in which an agile designer can operate, it helps to trust the systems and technologies you incorporate on a deeper level.

Adoption of newer HVAC and plumbing technologies to the education facility construction project environment can be slow due to confidence in reliability, or simple budget constraints. More traditional builds may include an AHU that mixes air in return airstreams for office space, dedicated units for large classrooms, and student unions or common areas that utilize a dedicated outdoor air system just for return air. However, strategic planning of a dedicated outdoor air system could provide the means to capture lost energy while also supporting the increased usage of VRF and chilled-beam systems.

As codes and standard requirements change, or the list of needs in an education facility project grow throughout a design period, it's comforting to know that there are basic processes and systems supporting the complex functions of each room. Air and water must be contained; gas and heat must be distributed. Seemingly simple resources like these still power the demand for new technology, increased comfort in learning spaces, and cutting edge research laboratories: life-changing elements inherent to an educational environment. Properly securing and insulating these core



elements is the first step in supporting the growth of our educators and the students of tomorrow.

HEATING/COOLING METHODS

Heating and cooling challenges within education buildings are numerous. A new construction elementary school gym will

pose different challenges than a college dormitory renovation. Envelope requirements will vary per design but the end-goal of meeting efficiency and space requirements, while promoting the highest learning environment experience possible, is paramount. More and more each year, schools and universities pose significant challenges in occupational loads and building efficiency to meet the needs of future students.

School and university buildings could require a number of heating and cooling solutions operating as an integrated system. In particular, renovations force the marriage of old and new in a progressive environment. New construction should require planned renovation far in the future. If the equipment and insulation design isn't installed in a system, collaboration towards achieving maximum comfort and efficiency is difficult to produce. A top priority for school building design is management and efficiency of HVAC and plumbing systems. Simplicity in design, ease of installation, and immediate access for operational maintenance remain areas of particular importance.

Given the increased usage of varied ducting and plumbing across an education facility campus, issues of moisture intrusion reach





unmanageable levels during operation if not properly accounted for. If, for instance, insulation gets wet then that moisture could lead to mold problems that may go undetected for months or even years simply as a result of the physical constraints of construction envelope. Additionally, refrigerant piping is a constant culprit for condensation build up and even refrigerant leaks over time. As this piping traverses the inner workings of an auditorium or classroom hallway, the risk of moisture damage increases exponentially. Designing a system with the most protective insulation barrier is insurance any designer can afford.

As school buildings are filled with scores of different air-conditioning technologies, it is safe to assume that the noise from the fans and blowers inherent to these technologies will bring along unpleasant noises and acoustic ailments. While insulation can be used to preserve air quality and temperature, the acoustic benefits should not be taken for granted in designs promoting worthwhile learning environments. For example, air-handling units cooling a cafeteria require specific acoustic conditioning to maintain the acoustic comfort of occupants in an adjoining classroom hallway. Lining and wrapping ductwork with closed cell insulation helps manage audio frequencies specific to air-handlers and potential microbial growth common to open-cell insulation types.

INNOVATIONS

Topics like passive fire control, acoustic comfort, and increased integration of dissimilar technologies already present opportunities for innovation in the education facility design of today. As custom HVAC and plumbing solutions become increasingly sought after, designer reliability and consistency will become an increasingly important standard by which these facilities are developed.

LEED® certification is also increasingly popular. While it is a benefit for building owners and tenants, demanding limitations will be placed on technology selection and implementation. Appropriate selection of materials and equipment that may help qualify buildings for LEED certification is necessary if an owner wishes to achieve long-term durability and lower maintenance costs. Insulation systems should provide both of these things. Armacell's solutions are a master class in innovation.

INSULATION DEVELOPED FOR THE LEARNING ENVIRONMENT

The one thing aligning all design variables presented by educational facility construction, and renovation, is the need for proper insulation. Armacell's insulation systems are ideal for insulating chilled water piping, chillers, cooling tanks and air handlers. Insulating pipes, refrigeration

lines or cooling systems not only promotes energy efficiency, but it also prevents condensation on below-ambient temperature surfaces—a critical issue for schools and universities.

Specifying Armacell Systems for educational facilities construction and renovation is a PhD-level move. Armacell uses a fiber-free, formaldehyde-free, low VOC formulation for its foam insulation, which makes it an excellent option for any environment, eliminating particulate that can jeopardize air quality and equipment. Its closed-cell structure also prevents moisture ingress and naturally resists the growth of mold and mildew. Most importantly, the flexible nature of Armacell's insulation means it installs easily in tight spaces in floors, walls or ceilings. You can count on Armacell insulation retaining its thermal integrity over time, lasting well into your future. ■





EDUCATIONAL FACILITIES RELY ON OUR PROVEN SOLUTIONS

PROJECTS WON

- **Austin Community College** - Highland Mall Campus – Austin, TX
- **Bellevue East High School HVAC Renovation** – Bellevue, NE
- **Boiling Springs High School** – Spartanburg, SC
- **Catawba Ridge High School** – Fort Mill, SC
- **Duke University - Hollows Residence Hall** – Durham, NC
- **Iowa State University Biosciences Facilities - Advanced Teaching and Research Building Program** – Ames, IA
- **Miramichi East K-5 School** – Miramichi, NB, Canada
- **New Camden High School** – Camden, NJ
- **New Crofton Area High School** – Crofton, VA
- **Ohio State University** - Wexner Medical Center – Columbus, OH
- **Skidmore College** - Science Building Renovations – Saratoga Springs, NY
- **Springfield Technical Community College, Building 19 Renovation** – Springfield, MA
- **Temple University - College of Public Health Building** – Philadelphia, PA
- **Towson University New Science Facility** – Towson, MD
- **University of Alabama - Freshman Residence Hall** – Tuscaloosa, AL
- **University of Connecticut - Edward V Gant Building Renovations** – Storrs, CT
- **University of Delaware Biopharmaceutical Innovation Building** – Newark, DE
- **University of Michigan - North Campus Recreation Building Renovation** – Ann Arbor, MI
- **University of Washington** - South Lake Union Lab – Seattle, WA
- **Virginia Commonwealth University - School of Allied Health** – Richmond, VA
- **Washington University- Behavioral Science Building** – St Louis, MO
- **Weaver High School** – Hartford, CT

SMART SOLUTIONS FOR YOUR BUSINESS

Enjoy the benefits of our excellent customer service

All over the world, our customers rely on sales representatives, technical consultants and applications engineers

Your project demands more. You deserve the best solution.

Get the original, closed cell thermal and acoustic solutions from Armacell.



>> Antimicrobial technologies minimize the presence of bacteria mold and fungi to offer a greater level of product protection. >>



THE EXCLUSIVE INSULATION MATERIAL WITH MICROBAN ANTIMICROBIAL PRODUCT PROTECTION

// How does it work?

Microban antimicrobial chemistries are continuously working within the molecular structure of AP ArmaFlex products, creating an inhospitable environment for microbes to grow and multiply. Product protection begins to work as soon as a microorganism comes into contact with a product surface. Microban antimicrobial protection penetrates the cell wall of the microorganism, disrupting the cell and making the microorganism unable to grow and reproduce. The antimicrobial protection then works continuously to maintain a consistently lower bio-burden than would be expected on a product without Microban protection.

Microban antimicrobial technologies have undergone extensive independent laboratory testing and have a long history of safe use. The biocidal active components of Microban antimicrobial additives are notified with the Biocidal Products Regulation and approved for use by the Environmental Protection Agency of the United States.

// Microban in practice: simulated petri dish images.

Under the right conditions, microbes on an untreated surface can double every 20 minutes. The image on the left shows an unprotected surface (figure 1) as compared to a surface protected with Microban antimicrobial additive 24 hours after exposure (figure 2).

AP ArmaFlex is infused with Microban to inhibit the growth of bacteria such as as E-coli and Staphylococcus, as well as stain and odor-causing mold and mildew from growing on any surface of the insulation. Unlike disinfectants which provide a limited residual activity once the treated surface dries, the integrated antimicrobial technology works to continuously reduce the growth of microbes throughout the entire lifecycle of a product. Built into the insulation material, it will not wash off or wear away, making it the ideal option for specification into cleanliness-critical environments such as schools and universities.



Figure 1:
Unprotected surface



Figure 2:
Surface protected with Microban



STAKEHOLDER: MECHANICAL ENGINEERS

Specifiers Hold the Keys to Project Success

At Armacell, we know that the specifier is the key to a successful mechanical insulation system. We believe that providing the mechanical engineer or system designer with the knowledge and tools to make the right selection in the design phase is fundamental to the durability and energy efficiency of any HVAC or plumbing project. Mechanical system designers can have a significant impact on occupant health and must take steps during the design and

construction phases to ensure efficient system performance, condensation control, long-lasting thermal protection, acoustic benefits and healthier indoor air quality. Armacell's Specification team is here to help Mechanical Engineers and Specifiers with any insulation project. Their full-time job is to support you in any way that helps simplify the HVAC-R and acoustic specification process.

Engineer USP / Value Proposition

- Tailored Solutions for Code Compliance, Performance and Budget
- Trusted Protection for System and Design
- Simple, Safe and Efficient System Integrity
- Drag & Drop Specification Package by Division
- Backed by an Industry Leader with over 60 years' industry experience and a 15-year warranty*

Armacell has a comprehensive Solutions Portfolio designed to meet the needs of your application challenges.

Choose the Education Solutions Package that best meets the performance level and budget of your equipment system.

Application / System Type	ED1 Solution Package	ED2 Solution Package	ED3 Solution Package
Core Performance Requirements	Superior Performance	High Performance	Standard Performance
Specification	ED1 Project Specification Link	ED2 Project Specification Link	ED3 Project Specification Link
Air Plenum Piping and Duct Insulation	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings
HVAC/R & Mechanical Piping	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • AP ArmaFlex Pipe Insulation • AP ArmaFlex Lap Seal Insulation • AP ArmaFlex Sheet/Roll Insulation • AP ArmaFlex Fittings 	<ul style="list-style-type: none"> • ProFlex Pipe Insulation • ProFlex Lap Seal Insulation • ProFlex Sheet/Roll Insulation • ProFlex Fittings
Central Utility Plant Operations Chilled Water and Hydronic Heating	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • AP ArmaFlex Pipe Insulation • AP ArmaFlex Lap Seal Insulation • AP ArmaFlex Sheet/Roll Insulation • AP ArmaFlex Fittings 	<ul style="list-style-type: none"> • ProFlex Pipe Insulation • ProFlex Lap Seal Insulation • ProFlex Sheet/Roll Insulation • ProFlex Fittings
Plumbing	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • Tundra Insulation (Canada) • IMCOA SS Insulation or Tubolit SS Insulation • PE Fittings 	<ul style="list-style-type: none"> • Tundra Insulation (Canada) • IMCOA SS Insulation or Tubolit SS Insulation • PE Fittings
Accessories & Supports	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • Insuguard Multi Saddles & Shields • ArmaFix Ecolight Pipe Supports • Armacell Insulation Tape • Armacell 520 Adhesives 	<ul style="list-style-type: none"> • Insuguard Multi Saddles & Shields • ArmaFix Ecolight Pipe Supports • Armacell Insulation Tape • Armacell 520 Adhesives
Warranty	• 15-Year Limited Warranty	• 10-Year Limited Warranty	• 5-Year Limited Warranty
Support Documents	ED1 Solution Package - Document Link	ED2 Solution Package - Document Link	ED3 Solution Package - Document Link



STAKEHOLDER: CONTRACTOR

Installers Make it Happen

Armacell understands the importance of the insulation contractor in the selection and proper installation of mechanical insulation products for equipment, pipes and ducts. Insulation contractors routinely make critical decisions that can – for better or for worse – affect the outcome of the project. These decisions must take into account a variety of factors, including building codes, specific application challenges, insulation capability, as well as time and budget constraints.

We strive to help insulation contractors rise to the challenge of their job in a couple of ways. First, our Technical Managers and Installation Specialists, all of whom are experts in the selection and application of all our foam materials, are fully prepared to respond to any technical questions that may arise. Second, we work closely with an extensive network of distributors so that they can provide a quick response on pricing and availability of our products.

Contractor USP / Value Proposition

- Tailored Solutions for Code Compliance, Performance and Budget
- System and Performance Integrity - Virtually maintenance free
- One system to Support, Insulate and Protect
- Backed by an Industry Leader and a 15-year warranty*
- AQIP Factory Training, Field Support and On-Call Technical Support
- National Distribution Network

Armacell has a comprehensive Solutions Portfolio designed to meet the needs of your application challenges.

Choose the Education Solutions Package that best meets the performance level and budget of your equipment system.

Application / System Type	Core Performance Requirements	ED1 Solution Package	ED2 Solution Package	ED3 Solution Package
Specification	Master Specification Link	ED1 Project Specification Link	ED2 Project Specification Link	ED3 Project Specification Link
Air Plenum Piping and Duct Insulation	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 50 • UL Classified to UL 723 (Listed and Labeled) • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings
HVAC/R & Mechanical Piping	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings • ArmaFlex Shield Pipe Insulation 	<ul style="list-style-type: none"> • AP ArmaFlex Pipe Insulation • AP ArmaFlex Lap Seal Insulation • AP ArmaFlex Sheet/Roll Insulation • AP ArmaFlex Fittings 	<ul style="list-style-type: none"> • ProFlex Pipe Insulation • ProFlex Lap Seal Insulation • ProFlex Sheet/Roll Insulation • ProFlex Fittings
Central Utility Plant Operations Chilled Water and Hydronic Heating	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> • AP ArmaFlex Pipe Insulation • AP ArmaFlex Lap Seal Insulation • AP ArmaFlex Sheet/Roll Insulation • AP ArmaFlex Fittings 	<ul style="list-style-type: none"> • ProFlex Pipe Insulation • ProFlex Lap Seal Insulation • ProFlex Sheet/Roll Insulation • ProFlex Fittings
Plumbing	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • Tundra Insulation (Canada) • IMCOA SS Insulation or Tubolit SS Insulation • PE Fittings 	<ul style="list-style-type: none"> • Tundra Insulation (Canada) • IMCOA SS Insulation or Tubolit SS Insulation • PE Fittings 	<ul style="list-style-type: none"> • Tundra Insulation (Canada) • IMCOA SS Insulation or Tubolit SS Insulation • PE Fittings
Accessories & Supports	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • Insuguard Multi Saddles & Shields • ArmaFix Ecolight Pipe Supports • Armacell Insulation Tape • Armacell 520 Adhesives 	<ul style="list-style-type: none"> • Insuguard Multi Saddles & Shields • ArmaFix Ecolight Pipe Supports • Armacell Insulation Tape • Armacell 520 Adhesives 	<ul style="list-style-type: none"> • Insuguard Multi Saddles & Shields • ArmaFix Ecolight Pipe Supports • Armacell Insulation Tape • Armacell 520 Adhesives
Warranty		• 15-Year Limited Warranty	• 10-Year Limited Warranty	• 5-Year Limited Warranty
Support Documents		ED1 Solution Package - Document Link	ED2 Solution Package - Document Link	ED3 Solution Package - Document Link



STAKEHOLDER: DISTRIBUTORS

Committed to your Success

Distributors and Wholesalers want and need suppliers who are willing to work with them as partners. As a partner, a supplier should be able to provide both the goods and services that enhance the distributorship's growth and helps it adapt as the business climate changes. It's this partnership that inspires confidence and trust in the supplier.

That's what Armacell brings to each one of its distributor/wholesaler relationships. It is a business philosophy that dates back

to 1954 with the introduction of ArmaFlex. Today with six manufacturing operations in the North America, and 24 manufacturing facilities worldwide, Armacell has the capacity and logistics network to reliably meet the inventory demands of distributors. Our product knowledge, innovation and research continue to make us the global leader in elastomeric foam production. We are experts in the industry and are poised to support our distributors in their success.

Distributor USP / Value Proposition

- Tailored Solutions for Code Compliance, Performance and Budget
- Single Sourced Solution
- Job-site Direct Shipping
- Broadest Insulation and Accessory Portfolio
- AQIP Factory Training, Field Support and On-Call Technical Support provided
- Backed by a Leader with over 60 years' industry experience and a 15-year warranty*
- Dedicated Support Teams to support your staff and customers

Armacell has a comprehensive Solutions Portfolio designed to meet the needs of your application challenges.

Choose the Education Solutions Package that best meets the performance level and budget of your equipment system.

Application / System Type	ED1 Solution Package	ED2 Solution Package	ED3 Solution Package
Core Performance Requirements	Superior Performance	High Performance	Standard Performance
Specification	ED1 Project Specification Link	ED2 Project Specification Link	ED3 Project Specification Link
Air Plenum Piping and Duct Insulation	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> • ArmaFlex Ultra Pipe Insulation • ArmaFlex Ultra Lap Seal Insulation • ArmaFlex Ultra Sheet/Roll Insulation • ArmaFlex Ultra Fittings
HVAC/R & Mechanical Piping	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • AP ArmaFlex Pipe Insulation • AP ArmaFlex Lap Seal Insulation • AP ArmaFlex Sheet/Roll Insulation • AP ArmaFlex Fittings 	<ul style="list-style-type: none"> • ProFlex Pipe Insulation • ProFlex Lap Seal Insulation • ProFlex Sheet/Roll Insulation • ProFlex Fittings
Central Utility Plant Operations Chilled Water and Hydronic Heating	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • AP ArmaFlex Pipe Insulation • AP ArmaFlex Lap Seal Insulation • AP ArmaFlex Sheet/Roll Insulation • AP ArmaFlex Fittings 	<ul style="list-style-type: none"> • ProFlex Pipe Insulation • ProFlex Lap Seal Insulation • ProFlex Sheet/Roll Insulation • ProFlex Fittings
Plumbing	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • Tundra Insulation (Canada) • IMCOA SS Insulation or Tubolit SS Insulation • PE Fittings 	<ul style="list-style-type: none"> • Tundra Insulation (Canada) • IMCOA SS Insulation or Tubolit SS Insulation • PE Fittings
Accessories & Supports	<ul style="list-style-type: none"> • Class A - Flame-spread 0-25, smoke developed 0-450 • Energy Efficient & Low Total Install Costs • Low Dust or Fiber Emitting Properties • Mold and Mildew Resistance • Tough & Durable • Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> • Insuguard Multi Saddles & Shields • ArmaFix Ecolight Pipe Supports • Armacell Insulation Tape • Armacell 520 Adhesives 	<ul style="list-style-type: none"> • Insuguard Multi Saddles & Shields • ArmaFix Ecolight Pipe Supports • Armacell Insulation Tape • Armacell 520 Adhesives
Warranty	• 15-Year Limited Warranty	• 10-Year Limited Warranty	• 5-Year Limited Warranty
Support Documents	ED1 Solution Package - Document Link	ED2 Solution Package - Document Link	ED3 Solution Package - Document Link

AT YOUR SERVICE

At Armacell, we are committed to creating an exceptional customer experience. We understand today's Education trends and challenges and share know-how based on our extensive experience to help you implement your project successfully. We do all we can to give you peace of mind while managing your projects.



ARMAFLEX APPLICATION TRAININGS

To ensure that our insulation materials are installed properly, Armacell has trained thousands of installers around the world. Special training centers have been set up at many locations and we also provide valuable support on site. Several thousand insulators attend courses on installing Armacell products every year and are awarded the Armacell Qualified Installer Program (AQIP) application certificate.

Valuable tips and tricks

Learn to install ArmaFlex more reliably and faster than you do today.

ARMWIN – PROFESSIONAL INSULATION CALCULATIONS

With our powerful ArmWin software, you can carry out all common technical calculations in HVAC applications. You can easily determine the minimum insulation thickness required for condensation control, as well as surface temperature, heat flow, temperature changes in flowing and stationary media, freezing times for water pipes and the most economical insulation thickness.

ArmWin

All-in-one technical
insulation calculations tool.



AT YOUR SERVICE



SPECIFICATION SUPPORT

It is challenging to keep up with changing building codes and evolving materials technology. Armacell employs a team of full-time specification experts dedicated to providing Engineers and Specifiers solutions for complex mechanical systems. They can review and update your specs, advise on new innovations and recommend the best insulation solution for your project.

Lunch & Learn

Providing PDH credits for onsite seminars

EXPERT TECHNICAL SUPPORT

Have a question? We have the most experienced Technical support in the industry and they are ready to take your call. Speak to experts with decades of experience who can answer your technical concerns or offer product advice.

On call

Give our Technical Manager a call if you have questions.



You'll find a wealth of information on our website www.armacell.us. Access our KNOWLEDGE CENTER for document downloads, installation videos, FAQ's and more. Visit the RESOURCES section for content tailored especially to Mechanical Engineers, Insulation Contractors, Distributor / Wholesalers and much more.

QUICK REFERENCE

Quick links to the Technical Data Sheet for the products offered in this e-book. If you need other products or information visit www.armacell.us.



Click on the product names to jump quickly to the data sheet.

- ArmaFlex Ultra
- AP ArmaFlex Tubes
- AP ArmaFlex Black LapSeal
- AP ArmaFlex Sheet/Roll
- AP ArmaFlex Duct
- ArmaFlex Shield
- ArmaFlex Fittings
- ArmaFlex Tape
- ArmaFlex 520 Adhesive
- ProFlex Tube Sheet and Roll
- Tubolit Tube Sheet and Roll
- Tundra Tube Sheet and Roll
- ImcoaTube Sheet and Roll
- Insuguard Multi Pipe Hangers
- ArmaFix EcoLight Pipe Supports



IRON / COPPER PIPE SIZE CHART

Choose sheet and roll insulation for pipes larger than 10", mechanical systems, chillers, larger surfaces, tanks and fittings. Available in regular and self-adhering for both interior and exterior applications.

Nominal Insulation ID	Fits Pipe Size				Actual Insulation ID ^{1,2}			
	Copper Nom Size & ID (Types K,L,M)	Copper Nom Size & OD (ACR)	Iron / PVC IPS	DN ³	Min ID (in)	Max ID (in)	Min ID (mm)	Max ID (mm)
1/4"	-	1/4"	-		0.293	0.355	7.4	9.0
3/8"	1/4"	3/8"	1/8"	6	0.420	0.500	10.7	12.7
1/2"	3/8"	1/2"	1/4"	8	0.560	0.640	14.2	16.3
5/8"	1/2"	5/8"	3/8"	10	0.710	0.790	18.0	20.1
3/4"	5/8"	3/4"	-	-	0.810	0.910	20.6	23.1
7/8"	3/4"	7/8"	1/2"	15	0.940	1.050	23.9	26.7
1-1/8"	1"	1 1/8"	3/4"	20	1.200	1.310	30.5	33.3
1-3/8"	1-1/4"	1 3/8"	1"	25	1.450	1.570	36.8	39.9
1-5/8"	1-1/2"	1 5/8"	1-1/4"	32	1.710	1.830	43.4	46.5
1-1/2"	-	-	1-1/2"	40	1.970	2.090	50.0	53.1
2-1/8"	2"	2 1/8"	-	-	2.220	2.340	56.4	59.4
2"	-	-	2"	50	2.580	2.780	65.5	70.6
2-5/8"	2-1/2"	2 5/8"	-	-	2.720	2.880	69.1	73.2
2-1/2"	-	-	2-1/2"	65	3.080	3.280	78.2	83.3
3-1/8"	3"	3 1/8"	-	-	3.230	3.390	82.0	86.1
3"	-	-	3"	80	3.700	3.900	94.0	99.1
3-5/8"	3-1/2"	3 5/8"	-	-	3.740	3.880	95.0	98.6
4-1/8"	4"	4 1/8"	3-1/2"	90	4.250	4.420	108.0	112.3
4"	-	-	4"	100	4.750	4.950	120.7	125.7
5"	-	-	5"	125	5.810	6.010	147.6	152.7
6"	-	-	6"	150	6.880	7.080	174.8	179.8
8"	-	-	8"	200	8.880	9.080	225.6	230.6
10"	-	-	10"	250	11.005	11.205	279.5	284.6

1. ID tolerances are typical values and may differ depending on the product and wall thickness.

2. Insulation ID is sized larger than the pipe OD to fit over copper pipe couplings. When properly installed, a gap between the insulation and pipe will not adversely effect the insulation performance.

3. DN, diametre nominel, is equivalent to NPS sizes in metric dimensions.

NOTE: See installation guide for proper installation instructions.

WEB: www.armacell.us > Knowledge Center > Document Downloads > Mechanical Insulation > Installation Manuals

SOLUTIONS PRODUCTS

Tubes



AP ArmaFlex® White and Black Tubes

Original flexible, closed cell elastomeric tubes in black and white



ArmaFlex® Shield

Continuous coil pipe insulation with durable, protective coating



Imcoa®, Tubolit®, Tundra®

Economical polyethylene insulation for plumbing lines, in semi-slit and self-seal closure



AP ArmaFlex® Black LapSeal

Self-sealing tube insulation with reinforced lap seal



ArmaFlex® Ultra & LapSeal

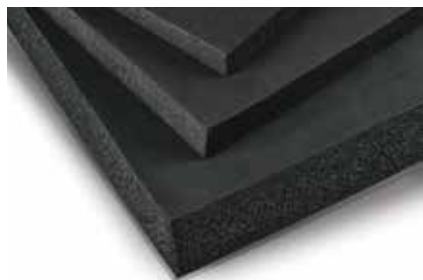
The first elastomeric pipe insulation Classified by UL to UL 723 at 25/50



ProFlex® Tubes & LapSeal

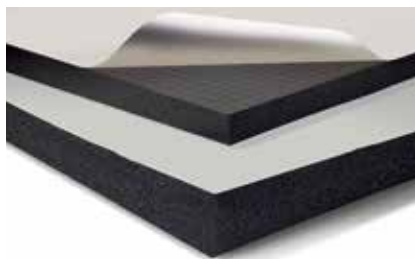
Economical flexible foam insulation for HVAC/R applications

Sheet and Roll



AP ArmaFlex® & AP ArmaFlex® FS

Original fiber-free insulation for thermal applications



AP ArmaFlex® SA & AP ArmaFlex® FS SA

Fiber-free insulation for thermal applications in self-adhering format



ArmaFlex® Ultra

The first elastomeric insulation Classified by UL to UL 723 at 25/50



ProFlex®

Economical flexible foam insulation for HVAC/R applications

Duct Liner and Wrap



ArmaFlex® Ultra Duct Liner

The first elastomeric duct liner Classified by UL to UL 723 at 25/50



ArmaFlex® Ultra Duct Wrap

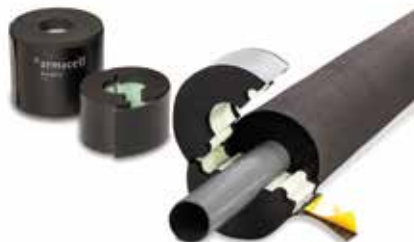
The first elastomeric duct wrap Classified by UL to UL 723 at 25/50

SOLUTIONS PRODUCTS

15/SOLUTIONS PRODUCTS



Accessories



Armafix® EcoLight Pipe Support

Insulated pipe support with self-adhesive closure



AP ArmaFlex® Insulation Tape

Pressure sensitive foam tape for insulating pipes and fittings



Insuguard® Multi

Tool-free pipe hanger system with adapters for all common mountings



ArmaFlex® Pre-fabricated Fittings

Made to order fittings for T's, Elbows, P Traps and more



ArmaFlex® Black LapSeal Tape

Low profile tape for AP ArmaFlex Black LapSeal end seams



PE Fittings

Pre-fabricated T's and Elbows made of polyethylene

Adhesives and Coatings



520 Adhesive & 520 Black

Recommended adhesive specially formulated for ArmaFlex insulation



520 BLV & Low VOC Spray Adhesive

Low VOC adhesive alternatives



WB Finish

Latex-based, indoor/outdoor, UV-resistant coating for ArmaFlex insulation

OUTDOOR USE:

Painting with WB Finish or other protective jacketing is required to prevent damage to the insulation in exterior applications and to comply with the insulation protection sections of the International Energy Conservation Code (IECC) and ASHRAE 90.1.

OTHER GREAT ARMACELL PRODUCTS AVAILABLE

www.armacell.us

ARMACELL HAS THE SOLUTIONS

For more information about our **Educational Solutions Packages**, click on the package number to be linked to the package's technical data.



EDUCATION SOLUTIONS PORTFOLIO PACKAGES

ED1

Solution Package

ED2

Solution Package

ED3

Solution Package

Application	Core Performance Requirements	Superior Performance	High Performance	Standard Performance
Specification	Master Specification Link	ED1 Project Specification Link	ED2 Project Specification Link	ED3 Project Specification Link
Air Plenum Piping and Duct Insulation	<ul style="list-style-type: none"> Class A - Flame-spread 0-25, smoke developed 50 UL Classified to UL 723 (Listed and Labeled) Energy Efficient & Low Total Install Costs Low Dust or Fiber Emitting Properties Mold and Mildew Resistance Tough & Durable Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> ArmaFlex Ultra Pipe Insulation ArmaFlex Ultra Lap Seal Insulation ArmaFlex Ultra Sheet/Roll Insulation ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> ArmaFlex Ultra Pipe Insulation ArmaFlex Ultra Lap Seal Insulation ArmaFlex Ultra Sheet/Roll Insulation ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> ArmaFlex Ultra Pipe Insulation ArmaFlex Ultra Lap Seal Insulation ArmaFlex Ultra Sheet/Roll Insulation ArmaFlex Ultra Fittings
HVAC/R & Mechanical Piping	<ul style="list-style-type: none"> Class A - Flame-spread 0-25, smoke developed 0-450 Energy Efficient & Low Total Install Costs Low Dust or Fiber Emitting Properties Mold and Mildew Resistance Tough & Durable Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> ArmaFlex Ultra Pipe Insulation ArmaFlex Ultra Lap Seal Insulation ArmaFlex Ultra Sheet/Roll Insulation ArmaFlex Ultra Fittings ArmaFlex Shield Pipe Insulation 	<ul style="list-style-type: none"> AP ArmaFlex Pipe Insulation AP ArmaFlex Lap Seal Insulation AP ArmaFlex Sheet/Roll Insulation AP ArmaFlex Fittings 	<ul style="list-style-type: none"> ProFlex Pipe Insulation ProFlex Lap Seal Insulation ProFlex Sheet/Roll Insulation ProFlex Fittings
Plant Based Operations: Chilled Water and Hydronic Heating	<ul style="list-style-type: none"> Class A - Flame-spread 0-25, smoke developed 0-450 Energy Efficient & Low Total Install Costs Low Dust or Fiber Emitting Properties Mold and Mildew Resistance Tough & Durable Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> ArmaFlex Ultra Lap Seal Insulation ArmaFlex Ultra Sheet/Roll Insulation ArmaFlex Ultra Fittings 	<ul style="list-style-type: none"> AP ArmaFlex Pipe Insulation AP ArmaFlex Lap Seal Insulation AP ArmaFlex Sheet/Roll Insulation AP ArmaFlex Fittings 	<ul style="list-style-type: none"> ProFlex Pipe Insulation ProFlex Lap Seal Insulation ProFlex Sheet/Roll Insulation ProFlex Fittings
Plumbing	<ul style="list-style-type: none"> Class A - Flame-spread 0-25, smoke developed 0-450 Energy Efficient & Low Total Install Costs Low Dust or Fiber Emitting Properties Mold and Mildew Resistance Tough & Durable Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> Tundra Insulation (Canada) IMCOA SS Insulation or Tubolit SS Insulation PE Fittings 	<ul style="list-style-type: none"> Tundra Insulation (Canada) IMCOA SS Insulation or Tubolit SS Insulation PE Fittings 	<ul style="list-style-type: none"> Tundra Insulation (Canada) IMCOA SS Insulation or Tubolit SS Insulation PE Fittings
Accessories & Supports	<ul style="list-style-type: none"> Class A - Flame-spread 0-25, smoke developed 0-450 Energy Efficient & Low Total Install Costs Low Dust or Fiber Emitting Properties Mold and Mildew Resistance Tough & Durable Compliant to all State and City Building Codes 	<ul style="list-style-type: none"> Insuguard Multi Saddles & Shields ArmaFix Ecolight Pipe Supports Armacell Insulation Tape Armacell 520 Adhesives 	<ul style="list-style-type: none"> Insuguard Multi Saddles & Shields ArmaFix Ecolight Pipe Supports Armacell Insulation Tape Armacell 520 Adhesives 	<ul style="list-style-type: none"> Insuguard Multi Saddles & Shields ArmaFix Ecolight Pipe Supports Armacell Insulation Tape Armacell 520 Adhesives
Warranty		• 15-Year Limited Warranty	• 10-Year Limited Warranty	• 5-Year Limited Warranty
Support Documents		ED1 Solution Package - Document Link	ED2 Solution Package - Document Link	ED3 Solution Package - Document Link

WARRANTIES

**15-YEAR
LIMITED WARRANTY:**

**Superior Performance
Package-Products**



**10-YEAR
LIMITED WARRANTY:**

**High Performance
Package-Products**



**5-YEAR
LIMITED WARRANTY:**

**Standard Performance
Package-Products**



BASIC TERMS AND CONDITIONS FOR SOLUTION PORTFOLIO WARRANTY

- All applicable products defined within the Solution Portfolio must be installed to satisfy the system warranty for the defined package.
- This Warranty applies only to the products noted as the approved system components. Armacell will take no responsibility for any labor or other costs associated with the removal, repair, replacement or disposal of the defective Product materials.
- Product installation must be completed by an AQIP trained installer and installed in accordance with Armacell's North American Application Manual, and all other written and technical specifications of Armacell.
- Any defective Product is not discarded, destroyed or altered before inspection by Armacell, or rendered defective or damaged by modifications not made by Armacell, acts of God such as fires, explosions, hurricanes, tornados or earthquakes or by materials installed or stored near the Products.
- Owner/Contractor agrees to permit inspection of the Product installation at the Location at time of install and then at various times throughout the warranty term by Armacell and its representatives upon reasonable request during standard business hours.
- A jobsite inspection by Armacell or one of its appointed representatives will be required to validate package compliance and finalize the warranty request.
- Certificate of Warranty to be issued to the Installing Contractor for the identified project and will be effective from time of purchased.

Full Warranty Details will be provided at time of certificate issuance

All data and technical information are based on results achieved under typical application conditions. 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. By ordering/receiving product you accept the Armacell General Terms and Conditions of Sale applicable in the region. Please request a copy if you have not received these.

© Armacell, 2020

ArmaFlex, Tubolit, Imcoa, Tundra, ArmaFix, ProFlex and Insuguard are registered trademarks of the Armacell Group.

00272 | Education Solutions | Armacell | MKTbrochure | 042020 | NA | EN-A

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 3,100 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.

For more information, please visit:
www.armacell.us

