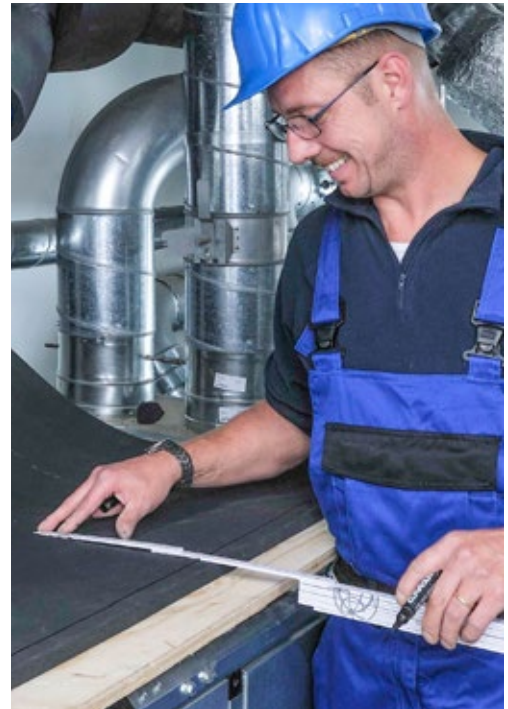


OPTIMISING ENERGY EFFICIENCY

Insulation technology

Insulating mechanical equipment is one of the simplest and most efficient measures to save energy on maritime vessels. With Armacell's insulation solutions shipping companies reduce energy costs for many years to come and minimise the risk of downtime due to unscheduled maintenance work. **Lightweight. Flexible. Reliable.**

www.armacell.eu



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

SOLUTIONS

ENABLING
ENERGY SAVINGS.



3,100
employees worldwide

24
production facilities
in 16 countries on
4 continents

500
active patents

We are the inventors of flexible foams for equipment insulation. Our lightweight thermal, acoustic and mechanical solutions create sustainable value for our customers. 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, lightweighting, the globalisation of food supplies and acoustic comfort, our product solutions stand out in functionality and ease of installation.

We dedicate our business activities to advancing and optimising energy efficiency for equipment and to closing the loop to achieve a more sustainable use of resources.

Armacell. Making a difference around the world.

NS



// Global

Nearly 3,100 employees, 24 sites, 16 countries, four continents: Armacell is a truly global group with an internationally diverse workforce comprising 70 different nationalities worldwide.

// 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.

// Customer-centric

We create genuine value for our customers, value them as partners, and are committed to developing equipment insulation 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.

WHAT WE DELIVER



TECHNICAL INSULATION

Technical equipment has to be protected against energy losses and condensation. Only closed-cell insulation materials effectively prevent moisture from penetrating the insulation material, providing plant with long-term corrosion protection. Our flexible elastomeric foams have a completely closed-cell material structure. The vapour barrier is not restricted to a thin foil but built up – cell by cell – throughout the entire insulation thickness. The highly flexible materials increase the energy efficiency of the equipment, prevent condensation, support corrosion protection and ensure that required line temperatures are maintained.

// ArmaFlex®

Thanks to their unique combination of technical and installation features, our ArmaFlex products offer superior performance at lower total installed cost. The materials are flexible and easy to install, even when installations offer limited space on board.

ArmaFlex products ensure maximum energy efficiency and functional reliability throughout the service life of the equipment.



CLOSED-CELL
STRUCTURE



PIPE BRACKETS

Pipe brackets represent a potential weak point in the insulation work. If the pipe is not thermally isolated from the bracket, thermal bridges occur and condensation may form. This leads to significant energy losses and to a higher risk of corrosion and potential expensive consequential damage. Using special pipe support solutions for cold applications ensures the long-term reliability of the insulation system. Our products are coordinated with the respective insulation range and effectively prevent thermal bridging.

// ArmaFix®

The ArmaFix pipe support provides maximum reliability. The system solution can be installed more quickly, neatly and easily than standard clamps and traditional pipe supports. Our pipe support consists of pressure-resistant PET load-bearing segments which are embedded in the closed-cell insulation material.



SYSTEM
SOLUTION

Since the PET core is made out of recycled PET bottles, it helps to conserve natural resources too.



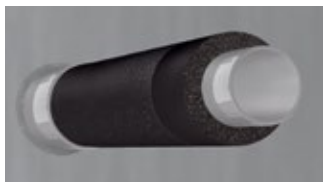
PENETRATIONS

Technical installations such as pipes, air ducts or electrical cables represent a potential fire risk. They penetrate fire divisions (bulkheads and decks) and form a path along which flames and smoke could spread in a fire. Pipework is of great importance for safety on ships and has to be sealed off professionally. As elastomeric insulation materials with intumescent properties can be easily installed in a wide range of applications, they typically increase the reliability of penetration seals.

// ArmaFlex® Protect

With ArmaFlex Protect, pipe penetrations can be sealed off more simply than ever before. By combining the proven properties of ArmaFlex with an intumescent component, fire spread is mostly ruled out. At the same time, this product ensures effective thermal insulation and reliable condensation control.

This product guarantees reliable fire safety in all A-class divisions (A-60 class decks and bulkheads) without the need for any complicated additional measures.

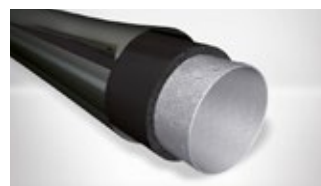


COVERINGS

In areas subject to greater mechanical stress, technical insulation should be covered to protect it against damage. Flexible covering systems have established themselves as an alternative to metal jackets. They provide tough protection against weathering, mechanical impact and corrosion under insulation (CUI), and also save time and money. Our pre-covered elastomeric insulation materials substantially reduce the fabrication and installation effort.

// Arma-Chek®

Thanks to its low bulk density and outstanding tear strength, Arma-Chek Juna is ideal for marine applications. Unlike traditional insulation materials and coverings, these pre-covered products can be installed in a single step. The material is UV-resistant and thinner thicknesses can be specified thanks to the highly absorptive black surface.



Arma-Chek Juna can be installed on combustible and non-combustible pipes.

WHY

OUR SOLUTIONS ARE DIFFERENT

ENERGY EFFICIENCY



Cruise ships are basically floating small towns and they have similar energy needs. Air conditioning alone accounts for 30–40% of energy consumption. Insulating technical equipment with elastomeric materials is one of the simplest and most efficient measures for saving energy. Our insulation materials can significantly increase energy efficiency and thus reduce operating costs on ships.

CONDENSATION CONTROL



Damp insulation is as unhelpful as a wet woollen coat in winter. It does not protect the equipment against either energy losses or corrosion. To prevent condensation on equipment, closed-cell insulation materials with a high resistance to water vapour transmission has to be used on cold pipes. Our solutions provide technical equipment with reliable long-term protection against condensation.

INDOOR AIR QUALITY



Air conditioning systems work tirelessly to ensure a pleasant room temperature on passenger ships. They also dehumidify and desalinate the damp sea air. ArmaFlex insulation materials are dust- and fibre-free. The antimicrobial Microban® technology protects AF/ArmaFlex against bacteria, mould and mildew throughout its service life.



INNOVATIVE SOLUTIONS



We have set quality standards for flexible technical insulation materials worldwide. Almost all significant innovations in the field of flexible technical insulation have come from Armacell. In 2012, for example, we were the first manufacturer to develop a flexible technical insulation material with extremely low smoke density. ArmaFlex Ultima thus facilitates to evacuate safer in the event of fire.

TRAINING



To ensure that our insulation materials are installed properly, Armacell has trained several thousands of installers around the world. Special training centres 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 ArmaFlex application certificate.

SUSTAINABILITY



The insulation of technical equipment is one of the simplest and most efficient measures for helping to reduce worldwide CO₂ emissions. Installing ArmaFlex products saves 140 times more energy than is needed to manufacture, transport and dispose of the products. We were the first manufacturer of flexible technical insulation materials to carry out lifecycle assessments and publish environmental product declarations.

SHIPS

ALREADY RELYING ON OUR SOLUTIONS

ALL OVER THE WORLD
MAJOR SHIPPING
COMPANIES HAVE
SPECIFIED ARMACELL
INSULATION MATERIALS
FOR THEIR PROJECTS.
HERE ARE JUST A FEW
OF THE SUCCESSFUL
PROJECTS REALISED:

// **Cruise ships of the Voyager, Oasis, Freedom, Spirit and Fantasy classes**

built at Kaverneer Masa Yards, Helsinki, Turku (Finland)

// **All cruise ships (classes: Breakaway, Breakaway-Plus, Dawn, Jewel, Leo, Quantum, Solstice, Dream, Radiance, Sphinx, Ikarus)**

built at the Meyer Werft, Papenburg (Germany)

// **Deep-sea research vessel Sonne**
(awarded the 'Blue Angel' eco-label), Meyer Werft, Papenburg (Germany)

// **Carnival Horizon**
Fincantieri, Marghera shipyard (Italy)

// **MSC Seaview**
Fincantieri, Monfalcone shipyard (Italy)

// **Queen Mary II**

Cruise ship, ALSTOM Chantiers de l'Atlantique, Saint-Nazaire (France)

// **MSC Divina**

STX France Cruise SA, Saint-Nazaire (France)

// **MS Plancius**

Converting a floating marine laboratory into a modern expedition vessel, Hansweert, Zeeland (Netherlands)

// **Royal Navy's Astute Class**

Nuclear-powered submarines (United Kingdom)

// **Royal Brunei Naval Ships**

(Kingdom of Brunei)

// **Beowulf**

Custom-designed Lavranos 43' sailboat, British Columbia (Canada)

// **T-AKE US**

Naval Cargo Ships, San Diego (USA)

// **Seahawk**

Trinity Yachts (USA)

// **ANZAC frigates**

HMAS Parramatta and other frigates for the Royal Australian Navy (Australia)

// **Indian Navy**

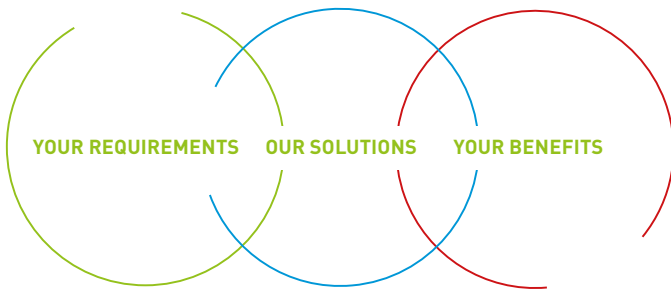
(India)





AIDA CRUISE SHIP

Over the years, the Meyer Werft in Papenburg, Germany, has built 46 luxury liners for discerning customers all over the world. When it comes to the insulation of chilled water and refrigeration pipes, the shipyard trusts Armacell products. AF/ArmaFlex and ArmaFix AF pipe hangers reliably prevent condensation and energy losses.



CHOOO

WE UNDERSTAND THE CHALLENGES IN TODAY'S SHIPBUILDING INDUSTRY AND ARE COMMITTED TO CREATING AN EXCEPTIONAL CUSTOMER EXPERIENCE. MAKE ARMACELL YOUR FIRST PORT OF CALL FOR EQUIPMENT INSULATION.



// Shipping companies

Cruise ships require almost as much energy for air-conditioning and refrigeration as for propulsion. The lightweight Armacell insulation materials improve the energy efficiency of the equipment for many years to come. Our Wheelmark approved solutions provide long-term protection against condensation and energy losses and reduce annoying noise from pipes and ducts.



More information about our products on our website:
arma.link/marine

SE

ARMACELL. DON'T MISS THE BOAT.



// Shipyards

Our products offer superior performance at lower total installed cost. Continuous internal and external monitoring ensures highest quality standards. We provide system solutions which greatly reduce the risk of failing the inspection. From the planning stage to the handover - our 360° service supports you throughout.

// Installers

Our highly flexible insulation materials are dust- and fibre-free and can be installed neatly, easily and quickly – even in tight spots on ships. Our system solutions include pipe supports, fire barriers and a new generation of innovative adhesives. We know the ropes and provide application training, on-site support and expert advice at every stage of the project.

All data and technical information are based on results achieved under the specific conditions defined according to the testing standards referenced. 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. Armacell takes every precaution to ensure the accuracy of the data provided in this document and all statements, technical information and recommendations contained within are believed to be correct at the time of publication. 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.

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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 3,100 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.eu


MAKING A DIFFERENCE AROUND THE WORLD