Armacell UK ROI Product Catalogue 2018

armacell®

MAKING A DIFFERENCE AROUND THE WORLD

CONTENTS

PRODUCT INDEX

	Refrigeration & Air Conditioning	Heating, Plumbing & Solar	Passive Fire Protection	Specialist applications	Covering Systems	Acoustics
AF/ArmaFlex Class 0 p.25	❄	☀	🔥			
ArmaFlex Ecolight p.37	❄	☀				
ArmaFix AF p.45	❄	☀	🔥			
ArmaFlex Ultima p.53	❄	☀	🔥	⭐		
ArmaFix Ultima p.63	❄	☀	🔥	⭐		
NH/ArmaFlex p.73	❄	☀		⭐		
ArmaFix NH p.81	❄	☀		⭐		
ArmaFlex Duct p.87	❄	☀				((o))
ArmaFlex Duct Plus p.93	❄	☀				((o))
HT/ArmaFlex p.101	❄	☀		⭐		
ArmaFlex DuoSolar p.111		☀		⭐	☂	
ArmaFlex Protect p.121	❄	☀	🔥	⭐		
ArmaProtect 1000 p.127	❄	☀	🔥	⭐		
ArmaProtect PP p.131	❄	☀	🔥	⭐		
ArmaFlex LTD p.137				⭐		
ArmaFlex Rail p.143	❄			⭐	☂	
HT/ArmaFlex Industrial p.159	❄			⭐		
Arma-Chek Silver p.169	❄	☀		⭐	☂	
ArmaFlex Tuffcoat p.181	❄	☀		⭐	☂	
Arma-Chek D p.191	❄			⭐	☂	
Arma-Chek R p.197				⭐	☂	((o))
ArmaComfort p.205		☀		⭐		((o))
ArmaSound RD 240 p.211				⭐		((o))
ArmaSound Barrier E p.217				⭐		((o))

Company information & mission

ARMACELL GROUP

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 3,000 employees and 25 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.com

ARMACELL UK

Armacell UK is based in Oldham, Lancashire and first commenced production in the 1960s. It is the only elastomeric foam insulation plant in Great Britain.

AF/ArmaFlex Class 0 is made at the UK site and was the first elastomeric insulation developed to meet the British Standards on product fire safety. The Oldham facility is also one of the principle locations for Tubolit domestic pipe insulation and ArmaSound RD production.

The Oldham plant is ISO 9001 and ISO 14001 certified and all products produced in the UK meet the CE marking regulations for technical insulation.

To view Declarations of Performance CE certificates for our products, please visit www.armacell.com/dop

ADVANCED INSULATION - ARMACELL'S MISSION

PIONEERING FLEXIBLE INSULATION

Back in 1954, Armacell invented ArmaFlex, the first flexible insulation product. In doing so, it established a new branch of industry - flexible technical insulation - that it has been shaping ever since. ArmaFlex is now the World's best-known brand for flexible technical insulation, and the brand name has become epnoymous in the building materials industry.

ENERGY SAVING

Armacell insulation materials are among the few products that save more energy than is used for their production: Armaflex saves an impressive 140 times more energy than it takes to manufacture!

In light of rising energy prices, stricter energy conservation laws and the rapid pace of climate change, Armacell believes that the insulation of building equipment and industrial installations will play an even more important role in future.

INNOVATIVE SOLUTIONS FOR SPECIFIC DEMANDS

In addition to conventional thermal insulation materials to protect against heat and cold, the company today offers a wide range of covering systems, fire-protection and noise-control solutions, pre-insulated pipes, special insulation systems for applications in industry and the accessories to match.

TECHNOLOGY LEADER

In recent years, Armacell has developed new insulation systems for:

- The oil and gas industry, a key growth market for the group
- Low smoke products that are setting new standards in the building services and mass transit industries

Being a technology leader in flexible technical insulation materials, Armacell hold more than 200 active patents Worldwide.

WAM - WORLD-CLASS ARMACELL MINDSET

To be better and better: that is the objective of WAM. The continuous improvement program introduced in 2013 is based on the World Class Manufacturing (WCM) concept, although it goes much further.

Through the constant systematic organisation of structures and processes in all areas of the company, the highest possible quality standards are achieved. This requires a new attitude, a new way of thinking and working.

The Armacell UK plant achieved Bronze level WAM accreditation in 2017, becoming the first plant in Europe to do so.

BRE GREEN GUIDE: 'A' RATING FOR ARMAFLEX MATERIALS

The BRE (Building Research Establishment) has now added pipe insulation products to their green guide to specification; with nitrile rubber insulation products, including ArmaFlex materials, receiving an A rating.

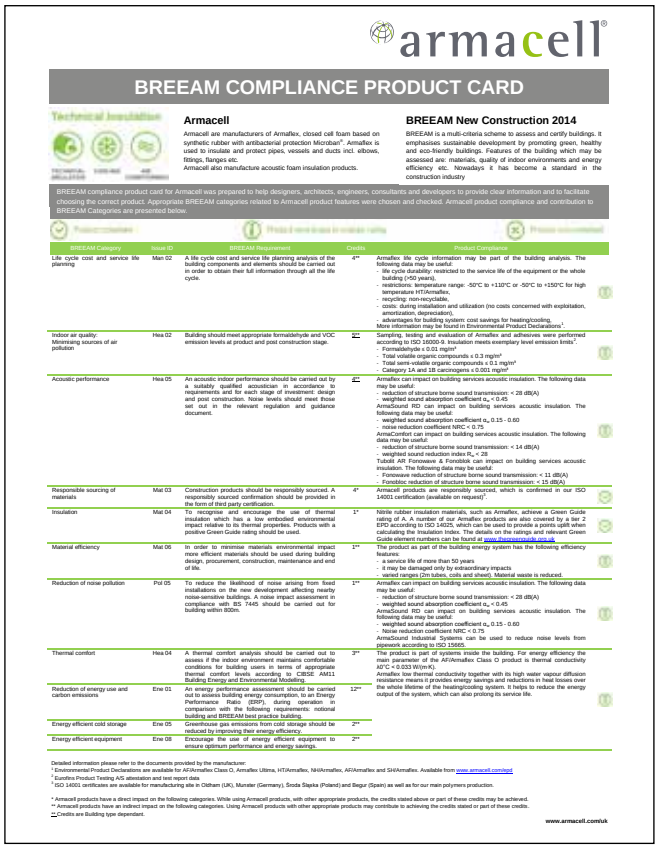
The Green Guide ratings compare the environmental impact of construction products on a scale of A+ to E, with A+ referring to products with the lowest environmental impact and E rated products having a high impact.

An A rating for nitrile rubber insulation validates the low environmental impact of ArmaFlex, helping specifiers to deliver sustainable buildings.

Green Guide ratings are determined by a number of factors, taking into account the whole lifecycle of the product, from manufacture to disposal:

1. Climate Change
2. Water Extraction
3. Mineral Resource Extraction
4. Stratoshpheric Ozone Depletion
5. Human Toxicity
6. Ecotoxicity to Freshwater and Land
7. Nuclear Waste
8. Waste Disposal
9. Fossil Fuel Depletion
10. Eutrophication
11. Photochemical Ozone Creation
12. Acidification

A summary of the ratings for nitrile rubber products can be found online at **www.thegreenguide.org.uk.**



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BREEAM COMPLIANCE PRODUCT CARD

Armacell

Armacell are manufacturers of Armaflex, closed cell foam based on synthetic rubber with antibacterial protection Microban®. Armaflex is used to insulate and protect pipes, vessels and ducts incl. elbows, fittings, flanges etc.
Armacell also manufacture acoustic foam insulation products.

BREEAM New Construction 2014

BREEAM is a multi-criteria scheme to assess and certify buildings. It emphasises sustainable development by promoting green, healthy and eco-friendly buildings. Features of the building which may be assessed are: materials, quality of indoor environments and energy efficiency etc. Nowadays it has become a standard in the construction industry

BREEAM compliance product card for Armacell was prepared to help designers, architects, engineers, consultants and developers to provide clear information and to facilitate choosing the correct product. Appropriate BREEAM categories related to Armacell product features were chosen and checked. Armacell product compliance and contribution to BREEAM Categories are presented below.

BREEAM Category	Issue ID	BREEAM Requirement	Credits	Product Compliance
Life cycle cost and service life planning	Man 02	A life cycle cost and service life planning analysis of the building components and elements should be carried out in order to obtain their full information through all the life cycle.	4**	Armaflex life cycle information may be part of the building analysis. The following data may be useful: - life cycle durability: restricted to the service life of the equipment or the whole building (>50 years), - restrictions: temperature range: -50°C to +110°C or -50°C to +150°C for high temperature HT/Armaflex, - recycling: non-recyclable, - costs: during installation and utilization (no costs concerned with exploitation, amortization, depreciation), - advantages for building system: cost savings for heating/cooling, More information may be found in Environmental Product Declarations[1].
Indoor air quality: Minimising sources of air pollution	Hea 02	Building should meet appropriate formaldehyde and VOC emission levels at product and post construction stage.	2**	Sampling, testing and evaluation of Armaflex and adhesives were performed according to ISO 16000-9. Insulation meets exemplary level emission limits[2]: - Formaldehyde ≤ 0.01 mg/m³ - Total volatile organic compounds ≤ 0.3 mg/m³ - Total semi-volatile organic compounds ≤ 0.1 mg/m³ - Category 1A and 1B carcinogens ≤ 0.001 mg/m³
Acoustic performance	Hea 05	An acoustic indoor performance should be carried out by a suitably qualified acoustician in accordance to requirements and for each stage of investment: design and post construction. Noise levels should meet those set out in the relevant regulation and guidance document.	2**	Armaflex can impact on building services acoustic insulation. The following data may be useful: - reduction of structure borne sound transmission: < 28 dB(A) - weighted sound absorption coefficient α_w < 0.45 ArmaSound RD can impact on building services acoustic insulation. The following data may be useful: - weighted sound absorption coefficient α_w 0.15 - 0.60 - noise reduction coefficient NRC < 0.75 ArmaComfort can impact on building services acoustic insulation. The following data may be useful: - reduction of structure borne sound transmission: < 14 dB(A) - weighted sound reduction index R_w < 28 Tubolit AR Fonowave & Fonotlok can impact on building services acoustic insulation. The following data may be useful: - Fonowave reduction of structure borne sound transmission: < 11 dB(A) - Fonotlok reduction of structure borne sound transmission: < 15 dB(A)
Responsible sourcing of materials	Mat 03	Construction products should be responsibly sourced. A responsibly sourced confirmation should be provided in the form of third party certification.	4*	Armacell products are responsibly sourced, which is confirmed in our ISO 14001 certification (available on request)[3].
Insulation	Mat 04	To recognise and encourage the use of thermal insulation which has a low embodied environmental impact relative to its thermal properties. Products with a positive Green Guide rating should be used.	1*	Nitrile rubber insulation materials, such as Armaflex, achieve a Green Guide rating of A. A number of our Armaflex products are also covered by a tier 2 EPD according to ISO 14025, which can be used to provide a points uplift when calculating the Insulation Index. The details on the ratings and relevant Green Guide element numbers can be found at www.thegreenguide.org.uk
Material efficiency	Mat 06	In order to minimise materials environmental impact more efficient materials should be used during building design, procurement, construction, maintenance and end of life.	1**	The product as part of the building energy system has the following efficiency features: - a service life of more than 50 years - it may be damaged only by extraordinary impacts - varied ranges (2m tubes, coils and sheet). Material waste is reduced.
Reduction of noise pollution	Pol 05	To reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings. A noise impact assessment in compliance with BS 7445 should be carried out for building within 800m.	1**	Armaflex can impact on building services acoustic insulation. The following data may be useful: - reduction of structure borne sound transmission: < 28 dB(A) - weighted sound absorption coefficient α_w < 0.45 ArmaSound RD can impact on building services acoustic insulation. The following data may be useful: - weighted sound absorption coefficient α_w 0.15 - 0.60 - Noise reduction coefficient NRC < 0.75 ArmaSound Industrial Systems can be used to reduce noise levels from pipework according to ISO 15665.
Thermal comfort	Hea 04	A thermal comfort analysis should be carried out to assess if the indoor environment maintains comfortable conditions for building users in terms of appropriate thermal control level according to CIBSE AM11 Building Energy and Environmental Modelling.	3**	The product as part of systems inside the building. For energy efficiency the main parameter of the AF/Armaflex Class O product is thermal conductivity at 0°C < 0.033 W/(m·K). Armaflex low thermal conductivity together with its high water vapour diffusion resistance means it provides energy savings and reductions in heat losses over the whole lifetime of the heating/cooling system. It helps to reduce the energy output of the system, which can also prolong its service life.
Reduction of energy use and carbon emissions	Ene 01	An energy performance assessment should be carried out to assess building energy consumption, to an Energy Performance Ratio (EPRP), during operation in comparison with the following requirements: notional building and BREEAM best practice building.	12**	
Energy efficient cold storage	Ene 05	Greenhouse gas emissions from cold storage should be reduced by improving their energy efficiency.	2**	
Energy efficient equipment	Ene 08	Encourage the use of energy efficient equipment to ensure optimum performance and energy savings.	2**	

Detailed information please refer to the documents provided by the manufacturer:
[1] Environmental Product Declarations are available for AF/Armaflex Class O, Armaflex Ultima, HT/Armaflex, NH/Armaflex, AF/Armaflex and SH/Armaflex. Available from www.armacell.com/epd
[2] Eurofins Product Testing A/S attestation and test report data
[3] ISO 14001 certificates are available for manufacturing site in Oldham (UK), Munster (Germany), Środa Śląska (Poland) and Begur (Spain) as well as for our main polymers production.

* Armacell products have a direct impact on the following categories. While using Armacell products, with other appropriate products, the credits stated above or part of these credits may be achieved.
** Armacell products have an indirect impact on the following categories. Using Armacell products with other appropriate products may contribute to achieving the credits stated or part of these credits.
— Credits are Building type dependant.

www.armacell.com/uk

Right - BREEAM compliance product card to help designers, architects, engineers, consultants and developers register the correct product, available at: **www.armaflex-greenguide.co.uk**

ENVIRONMENTAL PRODUCT DECLARATIONS

Armacell publishes environmental product declarations which are based on an independent lifecycle assessment (LCA). Comparing the primary energy input identified in the LCA with the energy saving achieved, shows that ArmaFlex insulation materials save 140 times more energy than is needed for their manufacture, transport and disposal.

EPDs are becoming more and more important in the construction industry: they provide a transparent, independent and reproducible analysis of the environmental impacts of construction products and give detailed information with sound data and figures.

"Armacell is the first manufacturer of flexible technical insulation materials to present environmental product declarations (EPDs)."

As a 'sustainability passport' EPDs form the basis for designing green buildings in accordance with certification schemes including BREEAM.

All information about the Armacell environmental product declarations as well as the special fact sheets for ArmaFlex products can be viewed and downloaded at www.armacell.com/epd

BREEAM awards a points uplift for products that have an independently verified third party Environmental Product Declaration (EPD). The table below shows the points award for each Green Guide rating and the EPD uplift:

Green Guide Rating	Points	EPD Tier 1 max points uplift	EPD Tier 2 Max Points uplift
A+	3	1	0.75
A	2	1	0.75
B	1	1	0.5
C	0.5	0.5	0.25
D	0.25	0.25	0.125
E	0	0	0

Tier 1 - 3rd party verified, cradle-to-grave EPD
Tier 2 - 3rd party verified, cradle-to-gate or cradle-to-gate with options EPD

THIRD-PARTY VERIFIED EPD ISO 14025 and EN 15804 Institut Bauen und Umwelt e.V.

Market destinations & applications

Insulation requirements vary greatly depending on the specific equipment requirements and destinations, with each destination encompassing more than one type of building, installation or equipment.

Thanks to their exceptional properties Armacell advanced insulation products can be used for a wide range of applications and conditions. From large multi-storey residential developments with strict fire safety requirements, to products specifically developed for domestic applications, Armacell offers thermal and acoustic insulation to the following markets:

Residential
Solutions for private residential developments to high-spec design and build projects

Commercial
Energy efficiency and condensation control for heating, ventilation, air conditioning and refrigeration (HVAC-R) systems in offices, data centres, retail and hotel buildings

Public & Government
Insulation systems for pipe & ductwork in public buildings including libraries, parliamentary offices, military bases and prisons

Educational
Advanced thermal and acoustic insulation systems for schools, colleges and universities

Passenger Terminals
Technical insulation know how for airport, rail, ferry and bus terminal projects

Healthcare
Dust & fibre free and antimicrobial products giving optimal insulation performance for hospitals and medical centres

Food & beverage
Products suitable for washdown application areas with dust & fibre free, antimicrobial, non-tainting solutions

Process Industry
Systems and product approvals for applications in the pharmaceutical and chemical process industries

Transport
Products developed specifically to meet rail and marine industry approvals

Heavy industry
Decicated product capabilities for Oil & Gas, mining, shipbuilding, steel, chemical & machinery manufacturing

Closed cell insulation systems

Refrigeration and cold water services operating at low temperatures attract condensation; and the associated problems of corrosion, mould growth and deterioration in the efficiency and service life of equipment.

Closed cell ArmaFlex insulation materials help to control condensation owing to its high water vapour diffusion resistance value of up to 10,000 mu (μ value). Conversely, if a non-closed cell product that doesn't act as an integral water vapour barrier is used, condensation can form under insulation leading to Corrosion Under Insulation (CUI).

The applications for refrigeration and air-conditioning systems range from food production and storage to the year round climate control of residences and commercial buildings. The correct choice of insulation can save a great deal of energy by improving the efficiency of the system.

Armacell's high-performance technical insulation materials meet all individual requirements for refrigeration and air-conditioning systems. ArmaFlex closed cell materials provide dependable, long-term thermal protection whilst also contributing to reducing operating noise.

Your advantages with Armacell

- Flexible, closed cell products with a high water vapour diffusion resistance to prevent moisture ingress
- Suitable for application temperatures to -50°C
- Market leading thermal conductivity value of 0.033 W/(m · K) to protect equipment against energy losses
- Meets BS 5422 condensation control requirements at reduced thicknesses
- FM approved

Market destination examples

- Supermarkets & food stores
- Data centres
- Pharmaceutical & chemical process industries
- Food & Beverage production
- Cruise liners

HEATING & PLUMBING APPLICATIONS

Central heating and renewable systems

Insulating sanitation and heating pipes as well as solar systems is one of the easiest, most economical and effective ways of saving energy.

The insulation of central heating pipework can reduce heat losses by as much as 87% and make a significant contribution to improving boiler efficiencies, with a payback period on energy bills of less than one year.

The insulation of cold water pipes is also important to protect pipework located outside or in unheated loft spaces. As pipes freeze, water expands and the pressure exerted is enough to either burst pipes or to break pipe connections apart. The scale of damage can be substantial and pipe insulation therefore plays an important role in preventing these problems by greatly slowing the rate of freezing.

Armacell offers a wide range of solutions to ensure maximum energy savings and efficiency in heating and plumbing systems. Our ArmaFlex and Tubolit insulation materials not only provide outstanding technical properties, they can also be installed quickly and easily for a perfect fit.

Armacell also makes a range of pre-formed elbows and tee pieces for quick and easy insulation of common pipe sizes.

Your advantages with Armacell

- Energy savings and operating cost reductions
- Self seal and pre-cut fitting options for quick and easy installation
- Wide product range available for any commercial and domestic heating & plumbing application
- Compliance with Part L Energy Saving requirements and fire regulations

Market destination examples

- High rise apartment buildings
- Hotels & office complexes
- Residential developments
- Solar hot water and ground source heat pump pipework

HEATING, VENTILATION & AIR-CONDITIONING APPLICATIONS

Ductwork

Heated and cooled air is distributed using ductwork including warm air return, supply, and exhaust systems. Rectangular ductwork is used for the main supply of heating and cooling systems, with circular ductwork and flexible hose sections used to branch off supply and return ducts to specific rooms.

The large surface areas of ducted heating, ventilation and air-conditioning systems are subject to significant heat losses/gains and subsequent problems with condensation and mould growth. To address these risks and maintain the desired temperature of heated or cooled air, the rectangular and circular ductwork requires insulating.

Ductwork can also be a source of unwanted noise and air pollutants that can contribute towards 'sick building' syndrome, causing problems such as viral infections, fatigue and a wider loss of productivity. The wrong choice of insulation can contribute to these problems in terms of condensation damage and pollutants in the form of dust, fibres and mould growth.

ArmaFlex provides a dust and fibre free, and formaldehyde free duct insulation option. Pairing excellent thermal values with a closed cell structure, ArmaFlex can meet the energy efficiency targets for ductwork without any risk of impacting upon the indoor air quality or contributing towards sick building syndrome.

ArmaFlex has added Microban® anti-bacterial protection to restrict mould growth, making it an obvious choice for improved air quality in schools, hospitals and offices. The fibre free materials are also easy to handle and work with, with no dust mask or gloves required.

In addition flexible closed cell foams have excellent acoustic properties and can be used as a combined thermal and acoustic insulation solution.

Air conditioning systems

Air conditioning pipework for split, VRV and VRF systems is one of the most common applications for ArmaFlex tube insulation, offering high performance thermal properties and condensation control at reduced insulation thicknesses. ArmaFlex coils can be used at low line temperatures to -50˚C and in high humidity applications with product variants available to meet low smoke, non halogen and high process temperature requirements.

Your advantages with Armacell

- Microban® antimicrobial protection to safeguard indoor air quality
- Easy to fit flexible sheet and 1.5m wide duct product options
- Easy dispense AC coils for air-conditioning pipework
- Self-adhesive product options
- Superior condensation control with high water vapour transmission resistance for an integral vapour barrier
- Combined thermal acoustic properties to reduce structure borne noise
- Ozone depletion and global warming potential ratings of zero

Market destination examples

- Department stores & shopping malls
- Hotels & Offices
- Apartments
- Schools
- Hospitals
- Concert halls & stadia

MANUFACTURING & FOOD PRODUCTION APPLICATIONS

Process temperature applications

Process industry equipment including pipework, ducts, vessels, valves and flanges should be insulated to help ensure that steam, hot water, hot gasses or cold liquids and gases are delivered at controlled levels.

Elastomeric thermal and acoustic insulation systems are suitable for both high and low temperature process applications. Easy to fabricate ArmaFlex sheet or tubes can be used to minimise heat loss/gain, improve process efficiencies, control condensation and provide mechanical impact and personnel protection.

When insulating pipework in food and beverage production locations it's important to ensure that insulation is safe and free from dust, fibres, mould and other contaminants.

Preventing the growth of dangerous mould and bacteria is especially important and all surfaces in food production locations, including the exposed surface of insulation, must be easy to clean and maintain.

Closed cell foams with Microban® have a natural advantage over sponge-like open cell foams and in food preparation locations closed cell foams can be covered with an additional cleanable surface such as Arma-Chek Silver or ArmaFlex Tuffcoat.

Your advantages with Armacell

- Washdown product options
- Non-tainting / contaminating material
- Reduced thickness required for condensation control
- Solutions for hot and cold process lines temperatures -180˚C (ArmaFlex LTD) to +150˚C (HT/ArmaFlex)

Market destination examples

- Drinks dispense pythons
- Hotels & sports stadia
- Food production and storage
- Pharmaceutical & chemical industry

OIL & GAS APPLICATIONS

Marine, offshore and heavy industrial applications

One of the greatest challenges for insulation of marine, offshore and heavy industrial environments is the issue of Corrosion Under Insulation (CUI) which causes pipe and metal cladding systems to rust and decay, resulting in expensive production stoppages and maintenance schedules.

Closed cell insulation and non-metallic covering systems provide an excellent alternative for thermal and acoustic insulation to protect against mechanical impact, chemicals and salt water.

Pre-fabricated fittings are also available to cut down on-site installation times in hazardous and process critical environments.

Your advantages with Armacell

- Multi-layer, light-weight and IMO certified Armaflex systems
- Modular ArmaSound and Cryogenic systems to meet a full range of thermal-acoustic performance requirements

Market destination examples

- Fixed & semi-submersible platforms
- Drill rigs and ships
- Offshore accommodation platforms
- Marine vessels and floating systems (FPS, FPSO & FLNG)
- Ammonia plants
- Ethylene plants
- LNG import and export terminals
- LNG storage tanks, LPG, NGL, Butadiene and Polypropelene storage facilities

Technical considerations

The following technical characteristics are applicable when considering the right thermal and acoustic insulation products for HVAC-R, process and industrial pipe and ductwork systems:

THERMAL CONDUCTIVITY

Thermal conductivity is a key characteristic of insulation and is a property of the material itself - independent of the material thickness.

Thermal conductivity is stated in W/(m·K) and measures the heat in joules which, per unit of time, flows through 1m^3 of a material (heat flow density). This is measured at a temperature difference of 1K and denotes the property of a material's ability to conduct heat.

For example, a material with a high thermal conductivity, such as copper, has a value of approximately 400 W/(m·K), compared to a low thermal conductivity material such as AF/Armaflex Class 0 at 0.033 W/(m · K) at 0 °C.

The lower a material's thermal conductivity value is, the longer it takes heat to transfer through it and the greater the insulative properties.

CONDENSATION CONTROL

At a given temperature and relative humidity, air contains a defined amount of water vapour. When air begins to cool water vapour starts to condense and eventually reaches 100% saturation - known as the '**dew point**' temperature. The higher the humidity level, the sooner the point of saturation is reached, even if the air only cools by a small amount. When the dew point is reached moisture is released in the form of droplets as it makes contact with cold surfaces.

For this reason pipework and services operating at below-ambient temperatures attract condensation. So whereas hot installations (heating and hot-water pipes) are mainly insulated to save energy, cold systems (such as the chilled-water pipes of air-conditioning systems or the suction lines of commercial freezers) principally need protection against condensation.

To prevent condensation, the insulation thicknesses used on cold pipes must be sufficient to ensure that the temperature on the surface of the insulation material never falls below the dew point. When selecting and determining the thickness of low-temperature insulation, it is also necessary to bear in mind that over the equipment service life, energy losses can increase dramatically as a result of moisture penetration.

A reliable insulation system must therefore provide protection against moisture penetration since with every % volume increase of moisture content, the thermal conductivity of insulation increases and the thermal performance deteriorates. The results are not only higher energy losses, but also a drop in the surface temperature meaning condensation occurs more readily.

It is only possible to guarantee that the surface temperature remains above the dew point (even after many years of operation) if the thermal conductivity of the insulation material does not deteriorate as a result of moisture penetration.

ArmaFlex materials are perfectly suited to refrigeration and cold applications since the closed cell structure provides an integral vapour barrier against moisture ingress. ArmaFlex does not require any additional vapour barrier due to its high water vapour resistance value of μ ≥10,000 (equivalent to a static air layer 100m wide).

Corrosion Under Insulation

Defined simply, Corrosion Under Insulation (CUI) describes any type of corrosion that occurs due to moisture build up within the insulation system. CUI usually occurs between 0°C, and 120°C and is particularly critical above 60°C.

CUI is hard to see without first removing the insulation, and facilities can have hundreds of kilometres of pipework that need to be manually inspected. It is also a serious problem that can shut plants down – often at a cost of millions per day. In extreme cases, corrosion has been known to trigger catastrophic safety incidents.

The World Corrosion Organisation estimates that corrosion costs the global economy $2.2 trillion. Armacell offers insulation that satisfies the requirements of ASTM C692 – known as the 'drip test procedure' and offers low leachable chlorides when tested in accordance with ASTM C871 or EN 13468. Armacell's insulation materials are also pH neutral.

How does CUI occur?

- Insulation covering is breached
- Water ingress into the insulation
- Water and oxygen reach the metal surface

As well as CUI, water ingress can lead to system weight gain and a significant reduction in both thermal and acoustic performance. Insulation often requires replacement within a few years at high costs per linear metre.

The highest incidence of leaks in the refining and chemical industries are due to CUI and between 40% and 60% of piping maintenance costs are CUI related. The problems caused by CUI have led to some industry sectors moving away from mineral wool insulation, since materials that are open cell have poor resistance to moisture. As a closed cell insulation, ArmaFlex drastically reduces the risk of CUI due to the insulation itself being a vapour barrier.

The cost of replacing the pipework outweighs the cost of the insulation. So it is important to get the correct insulation specified to begin with.

Stress Corrosion Cracking

Austenitic Stainless Steel (types 304 & 316) can be sensitive to corrosive attack by soluble inorganic chlorides in the presence of oxygen and moisture, especially when, at the same time, the alloy is highly stressed. This is known as stress corrosion cracking (SCC).

Chloride ions will always be present in the "normal building site environment" and may be deposited on the stainless steel surface during the handling and installation of all insulating materials. The presence of an insulation material, of any generic type, is more likely to concentrate chloride ions at the stainless steel surface. DIN 1988 limits the soluble chloride ion content of insulation products to 0.05% in order to protect against SCC. All ArmaFlex products meet the DIN 1988 requirements.

The stress corrosion reaction is not usually significant at temperatures below about 50°C, but can be severe in the temperature range 50°C to 105°C. The most likely time that moisture may be present on the surface is when the plant is restarted after shut down.

BS 5970 recommends that a barrier of aluminium foil, not less than 0.06mm thick, be applied to austentic stainless steel surfaces prior to the insulation.

The standard also recommends, as an alternative to aluminium foil, that specially formulated anti-corrosive paints may be used for this type of application. However, the paint manufacturer's instructions should be followed closely and the temperature limitations of the paint should not be exceeded.

The Armacell recommendation is that where austenitic stainless steel is insulated then it is advisable to carry out the precautions outlined above irrespective of the operating temperature.

The practical benefits of using Armaflex insulation:

- Closed cell structure with a very high resistance to water vapour transmission
- Ease of insullation so that all seems and joints may be sealed using ArmaFlex adhesive

HEAT LOSS & ENERGY SAVING

Minimising heat losses

The rate of heat flow from a pipe is largely governed by the differential to the ambient temperature, and heat losses can be considerable. The insulation of building equipment and industrial installations is one of the single most effective measures for improving energy efficiency and prolonging the lifespan of equipment. A small investment will have big impacts upon energy costs and reducing CO^2 emissions.

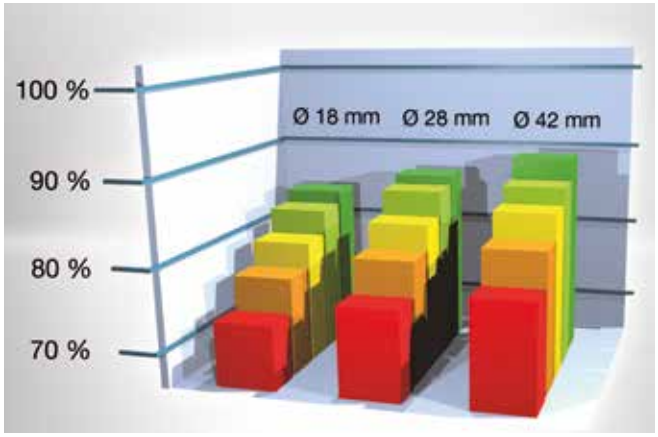
Unnecessary heat loss has a highly negative impact in today's environment and is something that we can all help to reduce by insulating building services equipment. The thickness requirements to meet environmental thickness tables such as BS 5422 and Part L and the design structure of many UK and Irish buildings, means it is often not physically possible to install the specified insulation thickness. For existing pipework installations, having limited space between pipework to install insulation is very often the reason no insulation is installed. Typical examples of this are in locations such as service shafts, under floors, suspended and enclosed ceiling structures and visible pipework.

The easiest and quickest method to insulate existing pipework is to use nitrile rubber insulation material. This highly flexible, non-fibrous insulation material makes safe application easy, especially in areas of limited working space.

Elastomeric insulation's biggest asset is its excellent thermal efficiency. For example, with AF/ArmaFlex Class O you can save up to 87% energy in typical domestic applications when compared to un-insulated pipes. On a typical central heating system, a 100m run of 15mm pipework insulated with 19mm thick Armaflex tube will save approximately £60 per annum*.

Savings in commercial applications will be vastly greater when considering the longer pipe runs involved.

*Based on a hot water temperature of 60°C and average ambient temperature of 18°C. Energy cost £0.048/kWh x 1,250 kWh per annum.



PIPE FREEZING

Since water services are often located outside or in unheated areas where ambient temperatures drop below 0°C, water freezes and expands, causing pipes to burst. For this reason the water supply regulations specify pipe insulation to reduce the risk of pipe freezing.

Frost protection thickness tables can be found in the download section of www.armacell.co.uk

ACOUSTICS

Understanding the nature of noise

The noise given off by a particular source can usually be categorised into one of the following forms:

Structure-borne noise - is the sound generated by a vibrating source or impact event. The acoustic energy created by these vibrations is transmitted into the structure of a building (e.g. floors, walls, pipework etc) or into mechanical elements (e.g. metal frames, panel work, supports etc). This energy travels through solid structures and is released as air-borne noise at different locations within the building or mechanical system.

Air-borne noise - is the sound that travels through the air and into the surrounding environment. In closed environments such as rooms and enclosures, air-borne sound may reverberate and increase the levels of noise both in and outside the contained space. Most forms of noise will contain contributions from both air-borne and structure-borne sound.

Although measures can be taken to limit structure-borne components, such as by isolation and damping; air-borne sound can only be treated with the use of absorbing materials. Open cell foams such as ArmaSound and ArmaComfort have an extremely high absorption performance per unit thickness, offering a solution for the most demanding applications.

In many cases, acoustic materials provide a low cost method of controlling noise, and if correctly applied, will significantly reduce the overall noise levels.

Many types of materials may be used to control both structure-borne and air-borne noise and are split into the following four categories:

- Sound absorption - Absorbers
- Sound transmission loss - Barriers
- Vibration isolation - Decouplers
- Vibration damping - Dampers

Primarily, absorption and transmission loss (barrier) materials control air-borne noise while damping and isolation materials control structure-borne noise.

Armacell's acoustic insulation solutions, for use in apartment, office and hotel buildings as well as electronic equipment and enclosures, help meet the demanding requirements for noise reduction.

Waste water and drainage pipework

Occupants of hotels and buyers of luxury apartments in particular expect a high level of sound control, with nuisance noise from running water services a real source of distraction. Due to the way in which waste water pipes are routed within the building, the water flow reverberates within the pipe and the amplified noise breaks out – partly through the pipe wall itself but primarily through coupling points.

Coupling points act as acoustic bridges through which noise can travel in the form of vibrations, exciting other surfaces to vibrate and creating a "loudspeaker" effect. As a result waste water pipework can radiate nuisance noise throughout a building.

Decoupling pipework

Introducing a visco-elastic resilient layer between the pipe and the structural connection points has the effect of decoupling the acoustic bridge – significantly reducing the breakout noise.

ArmaComfort AB Alu, Tubolit AR Fonoblok and Tubolit AR Fonowave are thin and highly cost effective decoupling materials that are proven to reduce noise breakout from waste water pipework. Aside from decoupling, these materials also perform a role damping vibration in the pipe wall – reducing the overall noise breakout.

Ductwork acoustics

If left untreated, both structure-borne and air-borne noise travels along duct networks with little attenuation - even over large distances.

There are typically four ways in which the noise from ductwork may transfer into the living or working space:

- Air-borne propagation noise
- Break-out & break-in noise
- Duct wall vibration
- Acoustic bridging

Internal lining

Internally lining ductwork using a sound absorbing material is the most effective way of reducing both air-borne and breakout noise. In addition, any sufficiently visco-elastic material applied inside the duct wall will also restrict vibration.

The Armacell range of elastomeric insulation materials are particularly well suited to internally lining ductwork. Being dust and fibre free there is no risk of fibre migration and no need to cover ArmaFlex or ArmaSound RD materials. ArmaFlex is also uniquely resistant to bacteria and mould growth owing to the in-built Microban® antimicrobial protection.

Combined thermal & acoustic lining

It is standard practice to insulate ductwork internally for acoustic performance and externally for thermal efficiency. ArmaFlex materials can however meet both thermal and acoustic requirements through internally lining ductwork. By eliminating the need for an additional external insulation layer, this approach results in a significant reduction of material and labour.

Eliminating acoustic bridging

Wherever a direct physical connection exists, structure-borne sound, or vibration from the duct can pass to other parts of the building structure. So called 'acoustic bridges' are prevented by the introduction of resilient materials, like high density ArmaLoad sections between points of direct contact with the duct. Without using isolating and damping materials, in the worst cases all other acoustic treatment can be rendered ineffective as the noise follows the 'path of least resistance'.

Enclosure acoustics

Compressors, pumps, air-conditioning units, heat pumps, generators and motors all generate large volumes of noise. Treating these pieces of equipment using acoustic enclosures or cabinets is a highly effective way of reducing the levels of noise experienced.

When contained within any enclosure the noise associated with equipment exists in four distinct fields:

- Internal airborne noise
- External breakout noise
- Enclosure wall vibration
- Structure borne mounting vibration

Lining enclosures

Internal lining of enclosures prevents the build up of reverberant noise within the enclosure. This improves conditions inside the enclosure and also reduces the volume of energy able to break out from the enclosure. As such lining enclosures proves to be doubly effective – reducing noise both inside and immediately around it. Often the effect is even greater as lining materials also helps to restrict enclosure wall vibration.

Selecting a sound absorbing lining

Space may be restricted and so the need for good absorption at low thicknesses should be considered. Beyond acoustic performance alone, the health of any operative working in and around the enclosure must be considered, as must the potential that linings may come into contact with oils or other chemicals.

Armacell manufactures a number of high performance sound absorbing materials suitable for internally lining enclosures. Due to the dust and fibre free nature of Armacell products, all of these materials are easily fitted in a single step without the need for additional facings and with no risk of fibre migration.

Industrial pipework

Heavy industrial pipework represents a major source of noise contamination on and around industrial sites and reducing this noise is a legal requirement in accordance with the ISO 15665 standard.

The best way of preventing noise breakout is to apply a fully integrated, high performance, acoustic pipe insulation system – such as ArmaSound Industrial Systems. Aside from acoustic performance, this system also fulfils several roles as thermal insulation and provides a barrier against pipe corrosion.

- Firstly, the use of a closed cell layer applied to the surface of the pipe minimises water ingress and the risk of corrosion under insulation (CUI)

- Non-metallic coverings, such as Arma-Chek R, are available to avoid susceptibility to rust and/or galvanic corrosion. Arma-Chek R is a tough, flexible elastomeric protective coating. The covering also provides a higher degree of compliance during installation to ensure better flexibility and improve sealing properties. The use of flexible elastomeric coverings also reduces low-frequency re-radiation effects that may be observed in practical application

- The combination of a closed and open cell structure allows for a high degree of thermal insulation performance to be achieved. All components within ArmaSound Industrial Systems fulfil both acoustic and thermal roles, eliminating the redundancy associated with traditional approaches. Using an elastomeric covering reduces re-radiation effects resulting from transference of acoustic vibration into the outer surface

- Additional acoustic benefits are realised around pipe supports and hangers through further reduction of structurally transmitted vibration. The combination of closed and open-cell technology, with an additional barrier covering, offers significant benefits for noise control engineers, specifiers and contractors

In particular, high thermal and acoustic performance is combined with the reduced risk of under insulation and galvanic corrosion.

SURFACE EMISSIVITY

The emissivity of a material is the relative ability of its surface to emit energy by radiation compared to energy radiated by a black body at the same temperature.

The dull, black surface of ArmaFlex is advantageous on cold pipework since the surface temperature absorbs more energy, keeping the surface temperature warmer and above the dew point at reduced insulation thicknesses.

The more reflective a material, the less energy it radiates. Silver coverings such as Arma-Chek Silver for instance can be recommended to reduce heat losses from hot applications by reflecting energy from the insulation surface back towards the pipe.

INDOOR AIR QUALITY

Air is always contaminated with pollutants to some degree, such as man-made volatile organic chemicals, industrial fibres, acidic particles of dust, and spores of mould and bacteria.

Whilst breathing these may not result in any immediate signs of ill health they may all contribute towards "building related symptoms".

The specification of ArmaFlex dust and fibre free insulation systems with added Microban® antimicrobial protection helps minimise the impact on indoor air quality.

Selecting dust & fibre free insulation on ductwork systems can minimise any potential contribution to indoor air pollution.

UV EXPOSURE

For outdoor pipework a UV resistant insulation should be specified to prevent degradation of the material and loss of thermal performance. ArmaFinish 99 paint can be used to protect AF/ArmaFlex Class 0 from UV damage, or alternatively HT/ArmaFlex is made from EPDM rubber which is suitable for outdoor use. Pre-covered insulation products such as Arma-Chek Silver are also available to provide additional protection.

Building regulations

Building regulations govern the minimum standards for design, construction and alterations to virtually every building. They are developed by the government and approved by Parliament. The Building Regulations 2010 cover the construction and extension of buildings and are supported by Approved Documents which set out detailed, practical guidance on compliance and the general performance expected of materials and building work in order to comply with the building regulations.

BS 5422

BS 5422 is the main British Standard referred to when specifying insulation materials for building services (Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C - 700 °C).

The standard sets out the minimum insulation thicknesses for specific temperatures and applications in order to achieve a good balance between energy saving and comparative cost of insulation.

CE MARKING

CE marking became a mandatory requirement for thermal insulation construction products in July 2013. The harmonised standards determine the required product characteristics and obligatory properties, including:

- fire behaviour (Euroclasses)
- dimensions and tolerances
- thermal conductivity
- dimensional stability and durability characteristics

Once a product has been tested to meet the required properties, a designation code is printed on the product label to display the specific technical properties required for the relevant European harmonised standard (hEN).

CE

PART L – CONSERVATION OF FUEL & POWER

Building regulations governing energy efficiency requirements are set out in Part L (Conservation of fuel and power), schedule 1. Specific technical guidance is contained in four Part L Approved Documents and two sub-tier guidance documents - the non-domestic building services and domestic building services compliance guides. These documents provide maximum permitted heat loss tables for various pipework applications.

Fire resistance

As pipes and ducts pass through fire rated walls or floors they provide an opening, which can then allow the passage of fire from one compartment to another.

Therefore, any pipes and ducts that penetrate the wall / floor require insulation products that meet the same level of fire resistance. Fire resistance means that structural elements such as wall or flooring elements can withstand a fully developed fire and fulfil requirements of insulation, integrity and/or load bearing capacity. The fire resistance rating is given as a time in minutes, i.e. a rating of R90 would provide 90 minutes fire resistance.

In circumstances where pipes or ducts penetrate through a fire rated wall or floor ArmaFlex Protect should be installed at the section where it passes through. ArmaFlex Protect provides a fire resistance of R120 for up to 120 minutes.

Reaction to fire

Reaction to fire relates to the combustibility and ignitability of a material, i.e. its contribution to fire growth in the event of a fire. Reaction to fire tests are commonly called up in codes and regulations in both building and transport sectors.

Requirements for buildings:

Most countries have their own national regulations that prescribe the required reaction to fire performance of materials:

National Building Regulation	Building Regulation Document
England The Building Regulations 2010	Approved Document Part B - Fire Safety
Wales The Building Regulations 2010	Approved Document Part B - Fire Safety
Scotland Building (Scotland) Regulations 2004	Technical Handbook Section 2 - Fire
Northern Ireland Building Regulations (Northern Ireland) 2004	Technical Booklet E - Fire Safety
Ireland Building Regulations 1997-2014	Technical Guidance Document B - Fire Safety

The UK & Ireland fire ratings are determined by the BS 476 fire testing standards.

BS 476 Part 7: Surface Spread of Flame test

BS 476 Part 6 test classifies a material as being Class 1, 2, 3 or 4 depending on the results of a test sample mounted vertically and placed at a 90° angle from a radiation panel. The radiation panel gives off heat in a similar way a fire would. The sample is exposed to the radiation panel for 10 mins, for the first minute a pilot flame is applied to the corner of the sample. During the test, the time taken for the flame spread to reach various distances is recorded 1.5 minutes into the test and at the end of the test.

BS 476 Part 6: Fire Propagation test

BS 476 Part 6 determines whether a rating of Class 0 is achieved for a material. The material must first have been tested to BS 476 Part 7 and achieved a rating of Class 1 before it can be tested.

The test measures the material's contribution to the growth of a fire. The sample is held in a small container and exposed to gas burners 3mm away from the surface of the material. The material is tested over a period of 20 minutes.

The rate of heat release during combustion is measured. To be Class 0 certified the fire propagation index (I) must be ⩽ 12 and the subindex (i1) must be ⩽ 6.

Euroclass fire ratings

The European classification system is defined in EN 13501-1 "Fire classification of construction products and building elements, Part 1 – Classification using data from reaction to fire tests".

The European system is similar to the BS 476 tests but also measures smoke production and flaming droplets. The products are classified as A1, A2, B, C, D, E or F (with A1 being the highest).

A1 and A2 are considered to be non-combustible or limited combustibility, generally for inorganic materials. Since ArmaFlex is produced from organic material the highest rating possible is B.

Smoke production is also classified as s1, s2 or s3 and flaming droplets are classified as d0, d1 or d2 (with s1 being minimal smoke production and d0 being zero flaming droplets).

So a full fire classification will look like the following for example: **B-s1,d0.**

Technical services

The installation of our high performance insulation solutions is backed up by a full technical support package, including thickness calculations, up-to-date product certifications, specification expertise and application support.

CPD PRESENTATIONS

Armacell UK provides a series of CIBSE approved lunchtime learning seminars for mechanical services engineers. The courses currently available are:

Mechanical services insulation materials

A review of the different types of mechanical services insulation available for HVAC-R pipe and ductwork equipment, and the key considerations when specifying materials, including fire performance, energy saving, thermal-conductivity ratings, condensation control, acoustics and installation methods.

"THE CONTENT OF THE PRESENTATION WAS EXCELLENT, VERY INFORMATIVE"

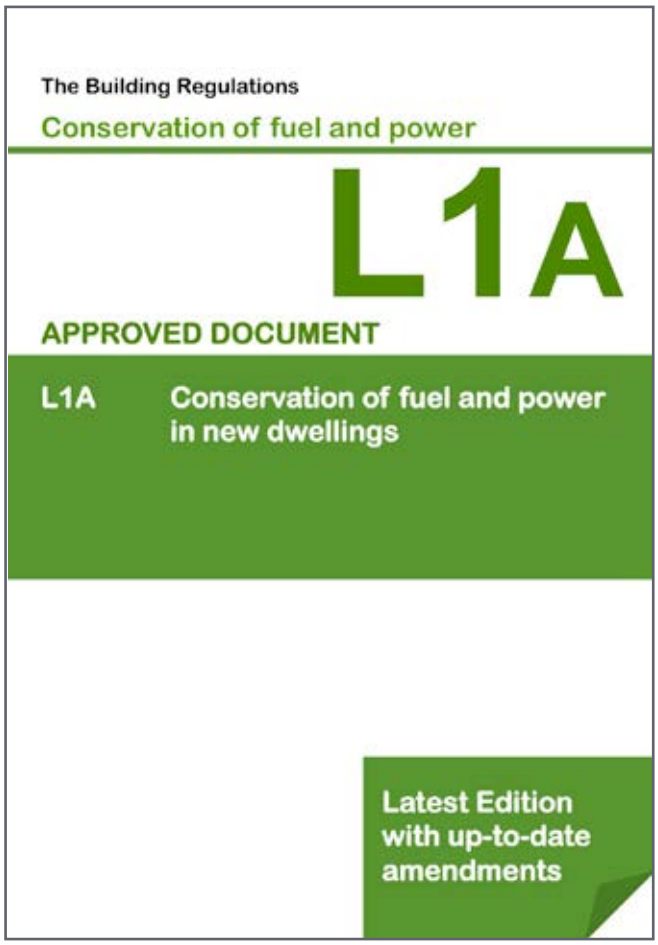
SENIOR ENGINEER, WSP
Building Regulations guidance for HVAC-R insulation materials

Environmental insulation standards

An introduction to the environmental considerations and assessment methods when specifying thermal insulation materials, including: BREEAM Green Guide ratings; Environmental Product Declaration (EPD) certificates; life-cycle assessments; global-warming and ozone-depletion potential ratings.

Building Regulations guidance for HVAC-R insulation materials

A review of the Building Regulations and standards governing pipe and duct insulation, including: BS 5422 (Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C); Part L and the Domestic and Non-Domestic Compliance Guides; water supply regulations; and fire regulations (BS 476 fire tests and Euroclasses).



CIBSE CPD

PREMIUM REWARDS

Thermal insulation contractors can now earn extra rewards on purchases of ArmaFlex and Arma-Chek products. A range of premium gifts can be collected by registering at the www.armacell-premium.com website and entering ibonus barcodes printed on eligible products. Barcodes can also be scanned in to register the ibonus points using the Armacell Premium app, available from the itunes and Google Play stores.

ARMWIN - INSULATION THICKNESS CALCULATOR

The main requirement of low-temperature insulation is to prevent condensation. In addition to the quality of the material and installation, the correct insulation thickness is decisive in achieving long-term condensation control, especially in high humidity conditions.

To calculate the insulation thickness it is necessary to know or define the line, ambient and relative humidity values. The thermal conductivity and heat transfer coefficient of both the insulation and the object to be insulated (pipe, tank or duct etc) is also required. To make these calculations easier these inputs can be selected from drop down menu options in the latest version of the ArmWin program provided by Armacell.

In addition to the insulation thicknesses required for condensation control, ArmWin can also be used to determine:

- Surface temperature
- Heat flow
- Temperature changes in flowing and stationary medium
- Freezing times for water pipes
- The most economical insulation thicknesses, i.e. those with the shortest pay-back periods

NBS BIM LIBRARY

The ArmaFlex product ranges are now free to download from the NBS National BIM library, making Armacell the first flexible insulation manufacturer to have Building Information Modelling objects available in the UK. The objects include tube and sheet range products suitable for Revit Building Design and IFC formats.

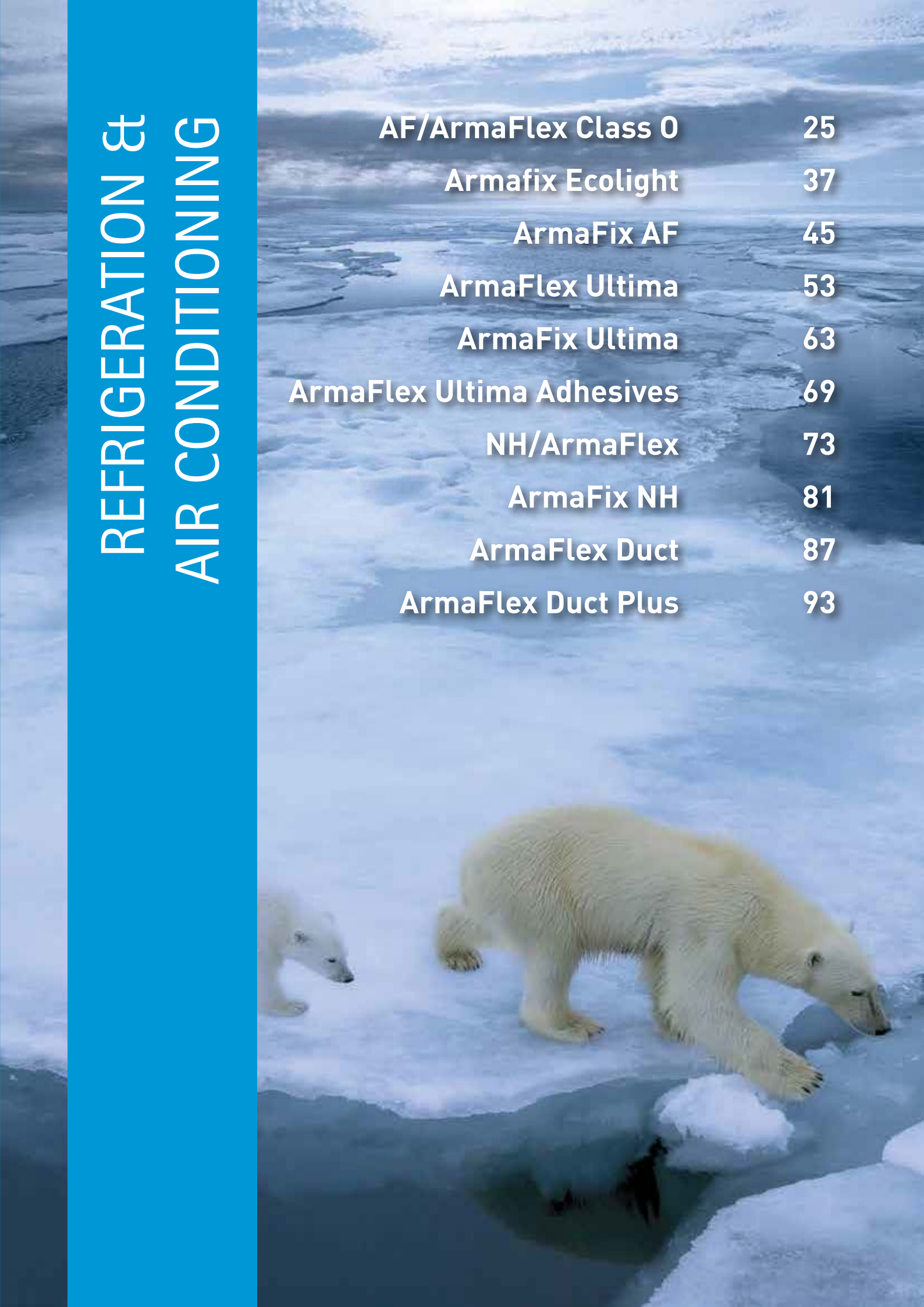
The full list of products available includes AF/ArmaFlex Class 0, ArmaFlex Ultima low smoke insulation, ArmaFlex Tuffcoat for mechanical protection and HT/ArmaFlex high temperature insulation for process applications.

The NBS library features a comprehensive list of building product manufacturers and directly links to their BIM objects.

The objects can be accessed via the NBS site at:

http://www.nationalbimlibrary.com/armacell-uk-ltd

REFRIGERATION & AIR CONDITIONING

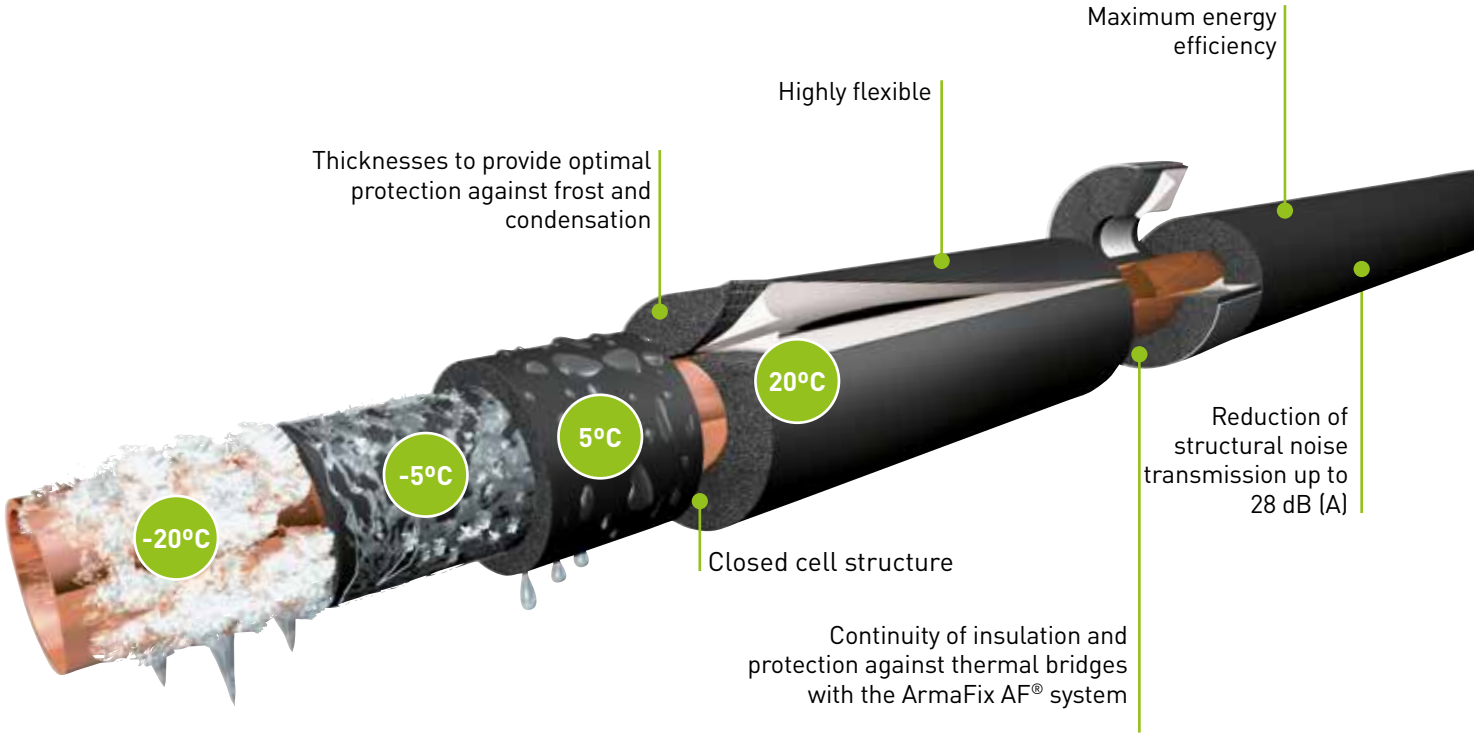


AF/ArmaFlex® Class 0

THE FLEXIBLE & SUSTAINABLE INSULATION SYSTEM FOR ENERGY EFFICIENCY & CONDENSATION CONTROL – TRUSTED FOR OVER 40 YEARS

- Closed cell material
- Built in water vapour barrier reducing the risk of corrosion under insulation (CUI)
- FM and UL approved
- Built-in Microban® antimicrobial protection reduces mould and bacteria growth
- Low thermal conductivity value (0.033 W/m • K @ 0°C)
- Euroclass B/B_L-s3, d0
- BRE Green Guide A rating
- CE marked, EN 14304
- Highest system reliability when installed with ArmaFix pipe supports and ArmaFlex adhesives
- Available in handy self-seal tube format to speed up install times

PROPERTIES



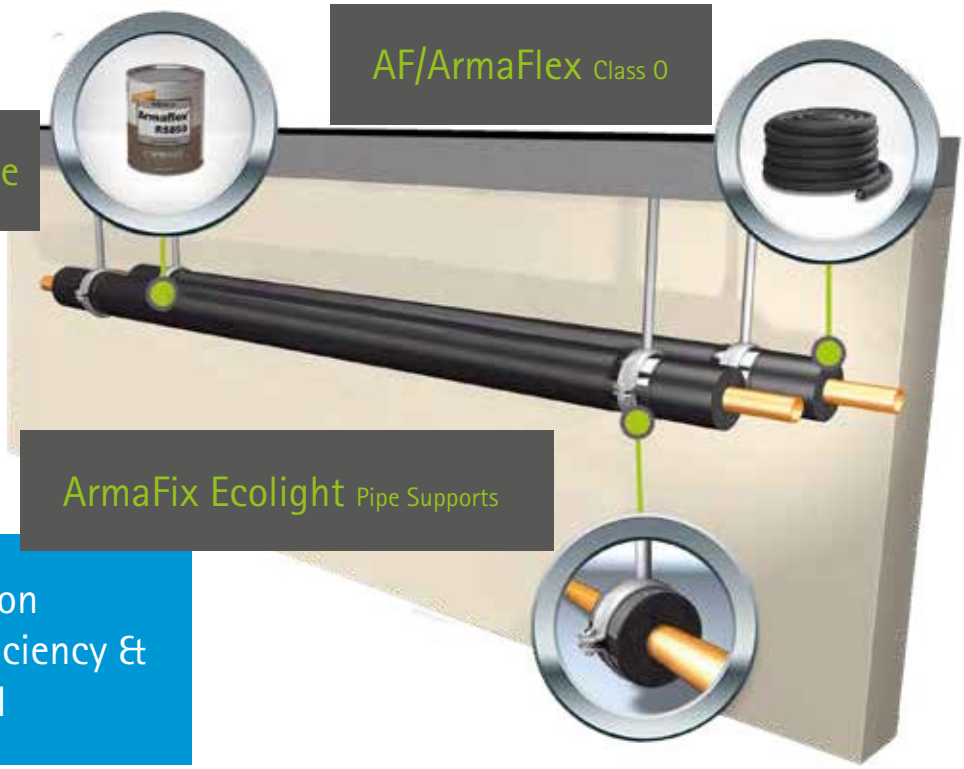
PROTECTION THAT LIVES ON MICROBAN®

- **Euroclass B_L-s3, d0**
- **λ 0ºC ≤ 0,033 W/(m·K)**
- **μ ≥ 10,000**

for more information consult technical data

Green Guide Rating BREEAM A

COMPLETE SYSTEM

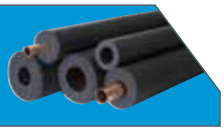


The complete insulation system for energy efficiency & condenstation control

RANGE

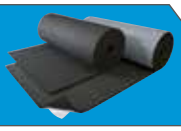
TUBE

Tubes, self-adhesive tubes (self-seal), AC coils, 15m coils



SHEET

Sheet, self-adhesive sheet, continuous sheet (rolls), self-adhesive continuous sheet (rolls)



TAPE

Self-adhesive tape

RECOMMENDED PRODUCTS

For a complete installation

ArmaFix Ecolight
p. 37

ArmaFlex RS850 adhesive
p.230

ArmaFlex Cleaner
p. 238

ArmaFinish 99
p. 238

TECHNICAL DATA

Flexible closed-cell thermal insulation with high resistance to water vapour diffusion, low thermal conductivity and built-in Microban® antimicrobial protection.

Material type	Flexible, closed-cell insulation material with built-in Microban® antimicrobial protection.
Colour	Black
Material information	Self-adhesive coating: pressure-sensitive adhesive coating on modified acrylate basis with mesh structure. Covered with polyethylene film.
Applications	Insulation/protection to control condensation, reduce energy loss and protect against frost on pipes, air ducts, vessels (incl. elbows, fittings, flanges etc). Suitable for hot and cold water services, chilled water lines, heating systems, air conditioning ductwork and refrigerated pipework.
Special features	MCCP-free
Safety & environment	Type III Environmental product Declaration (EPD): Declaration # EPD-ARM-20150110-IBB1-DE, Insitut Bauen und Umwelt e,V. (IBU).
Assembly	Lightweight and flexible. Closed cell structure means no additional vapour barrier is required.
Remarks	Declaration Of Performance (DOP) is available in accordance with Article 7(3) of regulation (EU) No 305/2011

Property	Value/Assessment	Test Ref	Standards & Remarks
Temperature Range			
Max service temperature	+110˚C (+85˚C if sheet or tape is glued to a flat object)	EU 5709	Tested acc to EN 14706, EN 14707 & EN 14304
Min service temperature	-50˚C (for temperatures below -50 ˚C please contact our technical department)		
Thermal Conductivity			
Tubes 6-19mm Sheet & tape 3-32mm	λ 0˚C ⩽ 0.033 W/(m·K) [33+0.1· ϑ_m + 0.0008· ϑ_m^2]/1000	EU 5709	Declared acc. to EN ISO 13787. Tested acc. to EN12667 & EN ISO 8497
Tubes 25-32mm	λ 0˚C ⩽ 0.036 W/(m·K) [36+0.1· ϑ_m + 0.0008· ϑ_m^2]/1000		
Water Vapour Diffusion Resistance			
Tubes 6-19mm Sheet 6-32mm	μ ⩾ 10,000	EU 5709	Tested acc.to EN 12086 & EN 13469
Tubes 25-32mm	μ ⩾ 7,000		
Fire Performance			
Tubes	B_L-s3, d0	EU 5709	Classified acc. to EN 13501-1. Tested acc. to EN 13823 & EN ISO 11925-2
Sheets & tapes	B-s3, d0		
Surface Spread of Flames	Class 1	GB 6935 & GB 6936	Tested acc. to BS 476 Part 7:1997
Fire Propagation	Total Index Performance (I) ⩽ 12 Sub Index (i_1) ⩽ 6		Tested acc. to BS 476 Part 6:1989
Fire performance acc. to Building Regulations	Class 0		
Fire Class	FM Approved	D5551	Tested acc.to UBC26-3 Class No. 4924
Fire resistance on metal pipes	EI30 - EI120	EU5584	Classified acc. to EN 13501-2. Tested acc.to EN1366-3
Marine approval	DNV-GL Approval	EU5928	Tested acc. to IMO 2010 FTP code
Practical fire behaviour	Self-extinguishing, does not drip & does not spread flames		
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1	EU 5709	Tested acc. to EN 822, EN 823 & EN 13467
UV resistance	For protection against UV radiation use ArmaFinish 99 paint. Alternatively use HT/ArmaFlex, ArmaFlex Tuffcoat or Arma-Chek Silver		
Health apects	ODP & GWP rating 0		
Storage & shelf life	Self-adhesive tapes, sheets & tubes	1 year	
Antimicrobial behaviour	Built-in Microban® active antimicrobial protection	No fungal growth observed	

TUBE

Length - 2m, **Colour** - Black, **Antimicrobial protection** - Microban®

Pipe max. Outside Ø (mm)	Inner tube. Ø min (mm)	Inner tube. Ø max (mm)	6mm INSULATION THICKNESS		9mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
6	7	9	AF-CO-06X006	544	AF-CO-09X006	352
10	11	13	AF-CO-06X010	400	AF-CO-09X010	280
12	13	15	AF-CO-06X012	336	AF-CO-09X012	240
15	16	18	AF-CO-06X015	266	AF-CO-09X015	192
20	21	23	-	-	AF-CO-09X020	156
22	23	25	-	-	AF-CO-09X022	140
28	29	31.5	-	-	AF-CO-09X028	98
35	36	38.5	-	-	AF-CO-09X035	84
42	43	46	-	-	AF-CO-09X042	60
48	49	51.5	-	-	AF-CO-09X048	56
54	55	58	-	-	AF-CO-09X054	54
60	61	64	-	-	AF-CO-09X060	42

Pipe max. Outside Ø (mm)	Inner tube. Ø min (mm)	Inner tube. Ø max (mm)	13mm INSULATION THICKNESS		19mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
6	7	9	AF-CO-13X006	226	-	-
10	11	13	AF-CO-13X010	188	AF-CO-19X010	104
12	13	15	AF-CO-13X012	162	AF-CO-19X012	92
15	16	18	AF-CO-13X015	136	AF-CO-19X015	78
18	19	21	AF-CO-13X018 •	118	AF-CO-19X018 •	70
20	21	23	AF-CO-13X020	112	AF-CO-19X020	70
22	23	25	AF-CO-13X022	104	AF-CO-19X022	64
25	26	28	AF-CO-13X025 •	84	AF-CO-19X025 •	54
28	29	31.5	AF-CO-13X028	78	AF-CO-19X028	50
32	33	35.5	AF-CO-13X032 •	60	AF-CO-19X032 •	40
35	36	38.5	AF-CO-13X035	60	AF-CO-19X035	40
42	43	46	AF-CO-13X042	56	AF-CO-19X042	32
48	49	51.5	AF-CO-13X048	40	AF-CO-19X048	30
54	55	58	AF-CO-13X054	42	AF-CO-19X054	24
60	61	64	AF-CO-13X060	36	AF-CO-19X060	24
64	65	67	AF-CO-13X064 •	34	AF-CO-19X064 •	20
67	68	71	AF-CO-13X067	34	AF-CO-19X067	20
76	77	80	AF-CO-13X076	28	AF-CO-19X076	18
80	81	84	AF-CO-13X080	28	AF-CO-19X080	16
89	90	93	AF-CO-13X089	22	AF-CO-19X089	16
93	94	97	AF-CO-13X093 •	20	AF-CO-19X093 •	16
108	110	114	AF-CO-13X108 •	18	AF-CO-19X108 •	12
114	116	120	AF-CO-13X114 •	18	AF-CO-19X114 •	12

TUBE

Length - 2m, **Colour** - Black, **Antimicrobial protection** - Microban®

Pipe max. Outside Ø (mm)	Inner tube. Ø min (mm)	Inner tube. Ø max (mm)	25mm INSULATION THICKNESS		32mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
12	13	15	AF-CO-25X012	50	-	-
15	16	18	AF-CO-25X015	48	AF-CO-32X015	32
20	21	23	AF-CO-25X020	40	-	-
22	23	25	AF-CO-25X022	40	AF-CO-32X022	32
28	29	31.5	AF-CO-25X028	32	AF-CO-32X028	24
35	36	38.5	AF-CO-25X035	24	AF-CO-32X035	18
42	43	46	AF-CO-25X042	24	AF-CO-32X042	16
48	49	51.5	AF-CO-25X048	22	AF-CO-32X048	12
54	55	58	AF-CO-25X054	18	AF-CO-32X054	12
60	61	64	AF-CO-25X060	18	AF-CO-32X060	12
67	68	71	AF-CO-25X067	16	AF-CO-32X067	12
76	77	80	AF-CO-25X076	14	AF-CO-32X076	10
80	81	84	AF-CO-25X080	12	-	-
89	90	93	AF-CO-25X089	12	AF-CO-32X089	8
93	94	97	AF-CO-25X093 •	12	-	-
108	110	114	AF-CO-25X108 •	8	-	-
114	116	120	AF-CO-25X114 •	8	AF-CO-32X114 •	6

LARGE DIAMETER TUBES

Length - 2m, **Colour** - Black, **Antimicrobial protection** - Microban®

Pipe max. Outside Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	AF-2			AF-3		
			Insulation thickness (mm)	Code	m/carton	Insulation thickness (mm)	Code	m/carton
125	127	131	15	AF-2-125	12	19	AF-3-125	12
140	142	146	15.5	AF-2-140	8	19	AF-3-140	80
160	162	166	16	AF-2-160	8	19	AF-3-160	8

Pipe max. Outside Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	AF-4			AF-5		
			Insulation thickness (mm)	Code	m/carton	Insulation thickness (mm)	Code	m/carton
125	127	131	23.5	AF-4-125	12	31.5	AF-5-125	6
140	142	146	24.5	AF-4-140	10	32	AF-5-140	6
160	162	166	25	AF-4-160	6		-	-
168	170	174	25	AF-4-168	4	45	AF-5-168	4

DOMESTIC BUILDING SERVICES COMPLIANCE GUIDE

Length - 2m, **Colour** - Black, **Antimicrobial protection** - Microban®

Thickness required to meet Domestic Building Services Compliance Guide / Part L max permissible heat losses				
Pipe max. outside Ø (mm)	**Max Permissible Heat Loss (W/m)**	**Thickness**	**Code**	**m/carton**
8	7.06	13	AF-CO-13X010	188
10	7.23	13	AF-CO-13X010	188
12	7.35	19	AF-CO-19X012	92
15	7.89	19	AF-CO-19X015	78
22	9.12	25	AF-CO-25X022	40
28	10.07	25	AF-CO-25X028	32
35	11.08	25	AF-CO-25X035	24
42	12.19	25	AF-CO-25X042	24
54	14.12	32	AF-CO-32X054	12

Other information and remarks		
Length tolerance for tubes	±1.5%	
Thickness tolerance for tubes	⩽ 8mm	± 1mm
	9 - 18mm	± 1.5mm
	19 - 31mm	± 2.5mm
	> 31mm	± 3mm
All AF/ArmaFlex Class 0 tubes available as SLIT items. Add 0.12 p/m net after discount has been applied. For ordering add -SLT to above codes e.g. AF-CO-19X010-SLT		
• Not a stock item		

SELF-ADHESIVE TUBE (SELF SEAL)

Length - 2m, **Colour** - Black, **Antimicrobial protection -** Microban®

Pipe max. Outside - Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	9mm INSULATION THICKNESS		13mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
15	16	18	AF-CO-09X015-A	192	AF-CO-13X015-A	136
20	21	23	AF-CO-09X020-A •	156	AF-CO-13X020-A	112
22	23	25	AF-CO-09X022-A	140	AF-CO-13X022-A	104
28	29	31.5	AF-CO-09X028-A	98	AF-CO-13X028-A	78
35	36	38.5	AF-CO-09X035-A	84	AF-CO-13X035-A	60
42	43	46	AF-CO-09X042-A	60	AF-CO-13X042-A	56
48	49	51.5	AF-CO-09X048-A •	56	AF-CO-13X048-A	40
54	55	58	AF-CO-09X054-A	54	AF-CO-13X054-A	42
60	61	64	AF-CO-09X060-A •	42	AF-CO-13X060-A	36
67	68	71			AF-CO-13X067-A •	34
76	77	80			AF-CO-13X076-A	28
89	90	93			AF-CO-13X089-A	22

Pipe max. Outside - Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	19mm INSULATION THICKNESS		25mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
15	16	18	AF-CO-19X015-A	78	AF-CO-25X015-A	48
20	21	23	AF-CO-19X020-A •	70	AF-CO-25X020-A •	40
22	23	25	AF-CO-19X022-A	64	AF-CO-25X022-A	40
28	29	31.5	AF-CO-19X028-A	50	AF-CO-25X028-A	32
35	36	38.5	AF-CO-19X035-A	40	AF-CO-25X035-A	24
42	43	46	AF-CO-19X042-A	32	AF-CO-25X042-A	24
48	49	51.5	AF-CO-19X048-A	30	AF-CO-25X048-A	22
54	55	58	AF-CO-19X054-A	24	AF-CO-25X054-A	18
60	61	64	AF-CO-19X060-A	24	AF-CO-25X060-A	18
67	68	71	AF-CO-19X067-A •	20	AF-CO-25X067-A •	16
76	77	80	AF-CO-19X076-A	18	AF-CO-25X076-A	14
89	90	93	AF-CO-19X089-A	16	AF-CO-25X089-A	12

Other information and remarks		
Length tolerance for tubes	±1.5%	
Thickness tolerance for tubes	⩽ 8mm	± 1mm
	9 - 18mm	± 1.5mm
	19 - 31mm	± 2.5mm
	> 31mm	± 3mm

• Not a stock item

15M COILS

Colour - Black , **Antimicrobial protection** - Microban®, supplied in clear polyethylene bag

Pipe max. Outside - Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	6mm INSULATION THICKNESS		9mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
6	7	9			AF-CO-09X006/E-15	180
10	11	13	AF-CO-06X010/E-15	210	AF-CO-09X010/E-15	150
12	13	15	AF-CO-06X012/E-15	180	AF-CO-09X012/E-15	135
15	16	18	AF-CO-06X015/E-15 •	135	AF-CO-09X015/E-15	135
20	21	23			AF-CO-09X020/E-15	105
22	23	25			AF-CO-09X022/E-15	90
28	29	31.5			AF-CO-09X028/E-15	75

Pipe max. Outside - Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	13mm INSULATION THICKNESS	
			Code	m/carton
6	7	9	AF-CO-13X006/E-15	135
10	11	13	AF-CO-13X010/E-15	105
12	13	15	AF-CO-13X012/E-15	90
15	16	18	AF-CO-13X015/E-15	90
20	21	23	AF-CO-13X020/E-15	90
22	23	25	AF-CO-13X022/E-15	75
28	29	31.5	AF-CO-13X028/E-15	60

AC COILS

Length - 2m, **Colour** - Black , **Antimicrobial protection -** Microban®, supplied in a specially designed carton for easy dispense

Pipe max. Outside - Ø (mm)	6mm INSULATION THICKNESS		9mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
6			AF-CO-09X006/E	70
10	AF-CO-06X010/E	75	AF-CO-09X010/E	50
12			AF-CO-09X012/E	45
15	AF-CO-06X015/E	55	AF-CO-09X015/E	40
20			AF-CO-09X020/E	34
22			AF-CO-09X022/E	30
28			AF-CO-09X028/E	26

AC COILS

Length - 2m, **Colour** - Black , **Antimicrobial protection** - Microban®, supplied in a specially designed carton for easy dispense

Pipe max. Outside - Ø (mm)	13mm INSULATION THICKNESS	
	Code	m/carton
6	AF-CO-13X006/E	45
10	AF-CO-13X010/E	35
12	AF-CO-13X012/E	32
15	AF-CO-13X015/E	32
20	AF-CO-13X020/E	28
22	AF-CO-13X022/E	26
28	AF-CO-13X028/E	20

SHEET

Length - 2m, Width - 0.5m, **Colour** - Black , **Antimicrobial protection** - Microban®

Code	Thickness (mm)	m²/carton
AF-CO-10MM	10	13
AF-CO-13MM	13	9
AF-CO-19MM	19	7
AF-CO-25MM	25	5
AF-CO-32MM	32	4

SELF-ADHESIVE SHEET

Length - 2m, **Width** - 0.5m, **Colour** - Black , **Antimicrobial protection** - Microban®

Code	Thickness (mm)	m²/carton
AF-CO-10MM/A •	10	13
AF-CO-13MM/A •	13	9
AF-CO-19MM/A •	19	7
AF-CO-25MM/A •	25	5
AF-CO-32MM/A •	32	4

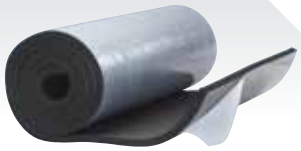
CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - Black, **Antimicrobial protection** - Microban®

Code	Thickness (mm)	Roll Length (m)	m²/carton
AF-03MM/E •	3	30	30
AF-CO-06MM/E	6	15	15
AF-CO-10MM/E	10	10	10
AF-CO-13MM/E	13	8	8
AF-CO-19MM/E	19	6	6
AF-CO-25MM/E	25	4	4
AF-CO-32MM/E	32	3	3
AF-50MM/E	50	5	5

SELF-ADHESIVE CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - Black, **Antimicrobial protection** - Microban®

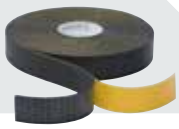


Code	Thickness (mm)	Roll Length (m)	m²/carton
AF-03MM/EA •	3	30	30
AF-CO-06MM/EA •	6	15	15
AF-CO-10MM/EA •	10	10	10
AF-CO-13MM/EA •	13	8	8
AF-CO-19MM/EA •	19	6	6
AF-CO-25MM/EA •	25	4	4
AF-CO-32MM/EA •	32	3	3
AF-50MM/EA •	50	5	5

Other information and remarks		
Length tolerance for tubes and sheet	± 1.5 to 5%	
Thickness tolerance for sheets	⩽ 6mm	± 1mm
	7 - 19mm	± 1.5mm
	> 19mm	± 2mm
• Not a stock item.		

TAPE

Colour - Black, **Antimicrobial protection** - Microban®



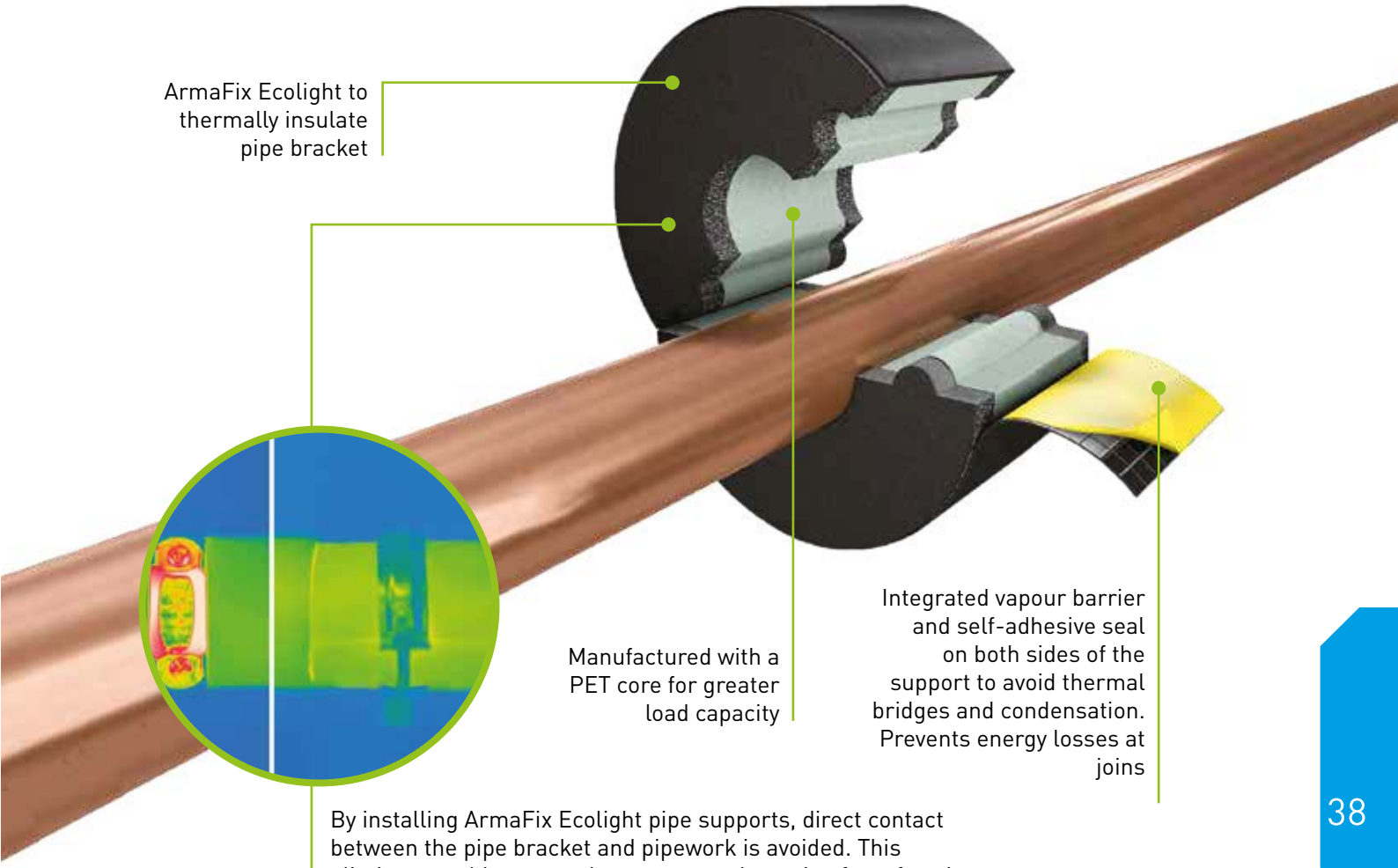
Code	Width (mm)	Length (m)	Thickness (mm)	Rolls/carton
AF-TAPE-MC	50	15	3	12

ArmaFix® Ecolight

ECO-FRIENDLY PIPE SUPPORTS FOR A COMPLETE INSULATION SYSTEM

- Available in 13, 19, 25, 32 & 40mm insulation thickness
- Light weight pipe support system with a density of 95 - 105kg/m³
- Thermal Conductivity 0.033 W/(m · k)
- Temperature range -30°C up to +80°C
- Fire rating to match ArmaFlex insulation
- Energy saving & condensation control
- Self seal closing seams for fast application
- Prevents thermal bridging at pipe fixings for HVAC applications
- Dust and fibre free
- PET Material is made using 100% recycled PET bottles
- Compatible with ArmaFlex black elastomeric ranges
- ArmaFix clamps available with M8/M10 mounting nut

PROPERTIES



By installing ArmaFix Ecolight pipe supports, direct contact between the pipe bracket and pipework is avoided. This eliminates cold spots and prevents condensation from forming on chilled water and refrigeration lines. By helping to control condensation, the risk of corrosion and secondary damage to surrounding goods and equipment can be prevented

RECYCLED PET FOAM

Made using 100% recycled plastic bottles, diverting thousands of tonnes of plastic from landfill.

CLAMPS

ArmaFix clamps are available to match the ArmaFix Ecolight sizes.

INSTALLATION GUIDE

1 Install the support around the pipe, seal the surface using adhesive & remove the backing strip.

2 Close the seam applying firm pressure & push the pipe support into the middle of the clamp.

3 Tighten the screws & before installing the tube, glue the edges of the pipe support to the pipe.

4 Wet seal the butt joins using the adhesive. Install the insulation either side of the support & fit under slight compression.

PIPE SUPPORTS & CLAMPS

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

AF/ArmaFlex Class 0
p. 25

TECHNICAL DATA

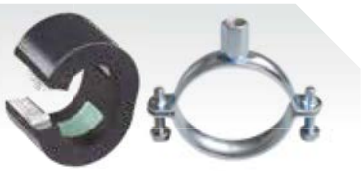
Pipe support for refrigeration and air conditioning applications to prevent condensation at fixing points. PET load bearing segments with outer ArmaFlex layer for system compatibility with adjoining insulation.

Material type	PET foam bearing segments with outer ArmaFlex insulation for connection to adjoining tube sections. Outside cladding made from PVC foil.
Colour	Black
Material information	Traces of silicon can be found on the protective film used on the self-adhesive closures. Please contact our customer services for details
Applications	An integral component for ArmaFlex insulation systems, providing thermal isolation of pipework in air conditioning and refrigeration appications.
Remarks	When used in applications with intermittent temperatures, expansion of the insulation should be taken into account during installation (application temperature above 10˚C)

Property	**Value/Assessment**	**Standards & Remarks**
Temperature Range		
Max service temperature	+80˚C	
Min service temperature	0˚C	
Thermal Conductivity		
	0.033 W/m•K) @ 0°C	Declared acc. to EN ISO 13787 Tested acc. to EN12667 & EN ISO 8497
Water Vapour Diffusion Resistance		
	μ ≥ 10,000	Tested acc.to EN 12086 & EN 13469
Fire Performance		
Reaction to fire	Euroclass E Euroclass Bs3 d0 (when installed with an Bs3 d0 rated pipe insulation). Equivalent to Class O rating in the UK	Classified acc. to EN 13501-1 Tested acc. to EN 13823 & EN ISO 11925-2
Acoustic Performance		
Reduction of structure-borne sound transmission	According to insulation material used	
Other technical features		
Density	95 - 105 kg/m^3 (pipe bearing segments)	
Storage & shelf life	Products with self-adhesive closures to be installed within 1 year	

ArmaFix Clamps	
Description	Pipe clamp with quick release closing and combination mounting nut
Material type	Steel with an electrolytic zinc coating to protect the clamp from corrosion.
Colour	Silver
Material information	Clamp supplied with combination nut for fixing to threaded rod.
Applications	For use alongside ArmaFlex insulation at pipe hanging points to eliminate thermal bridging on refrigeration and air-conditioning installations.
Fire Performance	The insulation layer does not affect the fire performance of the steel clamp
Screw connections	M8 / M10 combination nut
Tension screws	M6 / M8
Clamp	Width 20mm - 30mm, Thickness 1.5mm - 3mm

PIPE SUPPORTS AND CLAMPS



Pipe max. Outside - Ø (mm)	Max permissable distance (m)	13mm INSULATION THICKNESS		CLAMPS 13mm	
		Code	Pieces/carton	Code	Pieces/carton
6	2	ECP-13X006	25	PCX 025/030	25
10	2	ECP-13X010	25	PCX 025/030	25
12	2	ECP-13X012	25	PCX 025/030	25
15	2	ECP-13X015	25	PCX 033/037	25
18	2	ECP-13X018	25	PCX 033/037	25
22	2	ECP-13X022	25	PCX 042/046	25
28	3	ECP-13X028	25	PCX 047/052	25
32	3	ECP-13X032	25	PCX 047/052	25
35	3	ECP-13X035	25	PCX 054/058	25
42	3	ECP-13X042	25	PCX 063/068	25
48	4	ECP-13X048	20	PCX 068/073	10
54	4	ECP-13X054	20	PCX 068/073	10
60	4	ECP-13X060	20	PCX 082/085	10
64	4	ECP-13X064	20	PCX 082/085	10
76	5	ECP-13X076	20	PCX 092/099	10
89	6	ECP-13X089	15	PCX 108/112	10
102	6	ECP-13X102	15	PCX 125/130	10
114	6	ECP-13X114	15	PCX 133/137	10

Pipe max. Outside - Ø (mm)	Max permissable distance (m)	19mm INSULATION THICKNESS		CLAMPS 19mm	
		Code	Pieces/carton	Code	Pieces/carton
6	2	ECP-19X006	25	PCX 038/041	25
10	2	ECP-19X010	25	PCX 038/041	25
12	2	ECP-19X012	25	PCX 038/041	25
15	2	ECP-19X015	25	PCX 047/052	25
18	2	ECP-19X018	25	PCX 047/052	25
22	2	ECP-19X022	25	PCX 054/058	25
28	3	ECP-19X028	25	PCX 059/063	25
32	3	ECP-19X032	25	PCX 059/063	25
35	3	ECP-19X035	25	PCX 063/068	10
42	3	ECP-19X042	20	PCX 068/073	10
48	4	ECP-19X048	20	PCX 072/080	10
54	4	ECP-19X054	20	PCX 082/085	10
60	4	ECP-19X060	20	PCX 088/092	10
64	4	ECP-19X064	20	PCX 088/092	10
76	5	ECP-19X076	20	PCX 099/103	10
89	6	ECP-19X089	15	PCX112/118	10
102	6	ECP-19X102	15	PCX133/137	10
114	6	ECP-19X114	15	PCX137/142	10

Pipe max. Outside - Ø (mm)	Max permissable distance (m)	25mm INSULATION THICKNESS		CLAMPS 25mm	
		Code	Pieces/carton	Code	Pieces/carton
6	2	ECP-25X006	25	PCX 047/052	25
10	2	ECP-25X010	25	PCX 047/052	25
12	2	ECP-25X012	25	PCX 047/052	25
15	2	ECP-25X015	25	PCX 059/063	25
18	2	ECP-25X018	25	PCX 059/063	25
22	2	ECP-25X022	25	PCX 063/068	25
28	3	ECP-25X028	20	PCX 068/073	25
32	3	ECP-25X032	20	PCX 068/073	25
35	3	ECP-25X035	20	PCX 072/080	25
42	3	ECP-25X042	20	PCX 082/085	25
48	4	ECP-25X048	20	PCX 088/092	10
54	4	ECP-25X054	20	PCX 092/099	10
60	4	ECP-25X060	20	PCX 099/103	10
64	4	ECP-25X064	20	PCX 099/103	10
76	5	ECP-25X076	20	PCX 112/118	10
89	6	ECP-25X089	15	PCX 133/137	10
102	6	ECP-25X102	15	PCX 137/142	10
114	6	ECP-25X114	15	PCX 159/164	10

Pipe max. Outside - Ø (mm)	Max permissable distance (m)	32mm INSULATION THICKNESS		CLAMPS 32mm	
		Code	Pieces/carton	Code	Pieces/carton
6	2	ECP-32X006	25	PCX 063/068	25
10	2	ECP-32X010	25	PCX 063/068	25
12	2	ECP-32X012	25	PCX 063/068	25
15	2	ECP-32X015	20	PCX 072/080	10
18	2	ECP-32X018	20	PCX 072/080	10
22	2	ECP-32X022	20	PCX 072/080	10
28	3	ECP-32X028	20	PCX 088/092	10
32	3	ECP-32X032	20	PCX 092/099	10
35	3	ECP-32X035	20	PCX 092/099	10
42	3	ECP-32X042	20	PCX 099/103	10
48	4	ECP-32X048	20	PCX 108/112	10
54	4	ECP-32X054	20	PCX 112/118	10
60	4	ECP-32X060	20	PCX 112/118	10
64	4	ECP-32X064	20	PCX 125/130	10
76	5	ECP-32X076	20	PCX 133/137	10
89	6	ECP-32X089	15	PCX 145/152	10
102	6	ECP-32X102	15	PCX 159/164	10
114	6	ECP-32X114	15	PCX 168/173	10
140	6	ECP-32X140	15	PCX 199	10
168	6	ECP-32X168	15	PCX 222	10

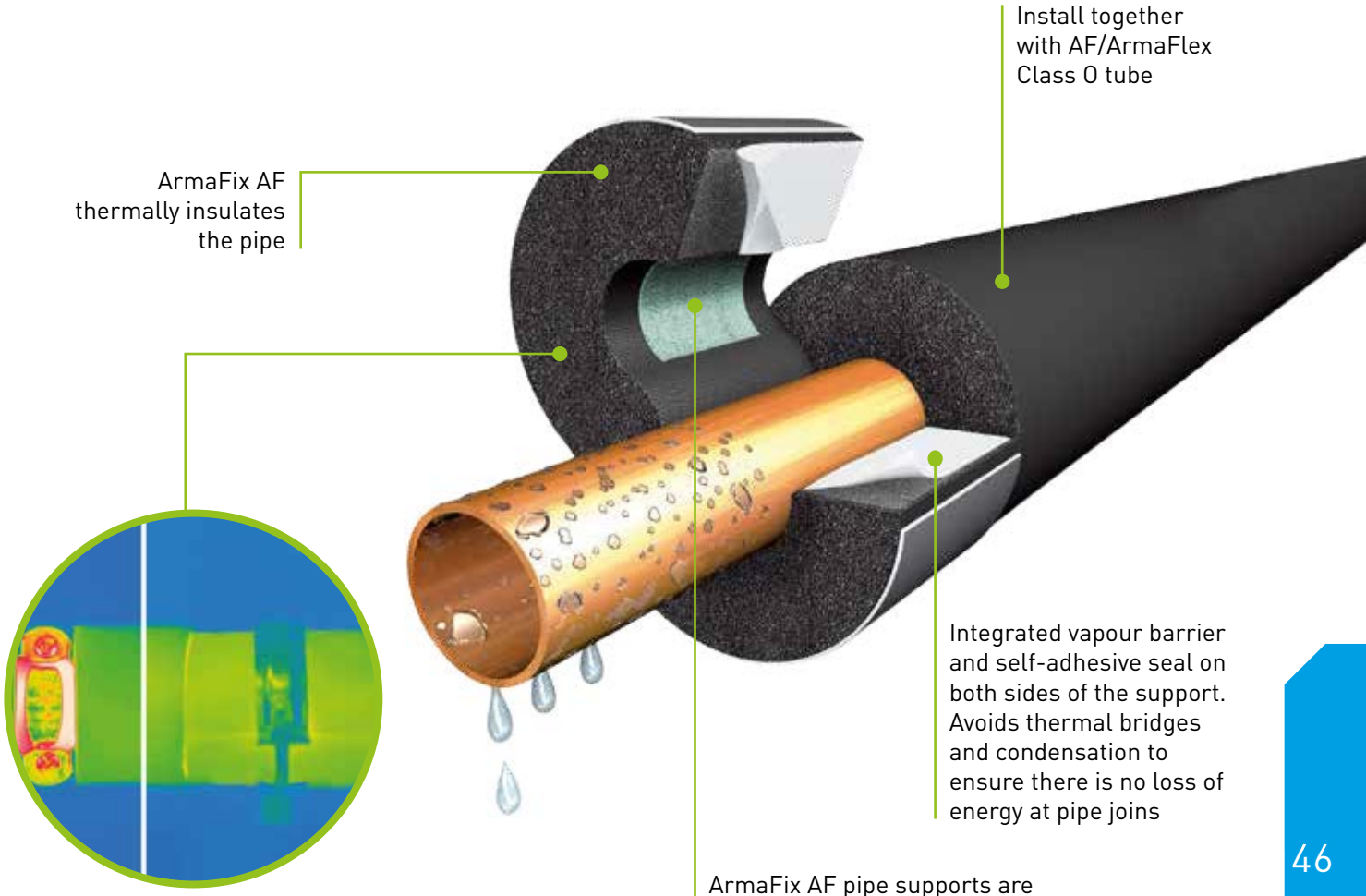
Pipe max. Outside - Ø (mm)	Max permissable distance (m)	40mm INSULATION THICKNESS		CLAMPS 40mm	
		Code	Pieces/carton	Code	Pieces/carton
6	2	ECP-40X006	20	PCX 082/085	10
10	2	ECP-40X010	20	PCX 082/085	10
12	2	ECP-40X012	20	PCX 082/085	10
15	2	ECP-40X015	20	PCX 088/092	10
18	2	ECP-40X018	20	PCX 092/099	10
22	2	ECP-40X022	20	PCX 092/099	10
28	3	ECP-40X028	20	PCX 099/103	10
32	3	ECP-40X032	20	PCX 108/112	10
35	3	ECP-40X035	20	PCX 122/118	10
42	3	ECP-40X042	20	PCX 125/130	10
48	4	ECP-40X048	20	PCX 133/137	10
54	4	ECP-40X054	20	PCX 133/137	10
60	4	ECP-40X060	20	PCX 133/137	10
64	4	ECP-40X064	20	PCX 137/142	10
76	5	ECP-40X076	20	PCX 145/152	10
89	6	ECP-40X089	15	PCX 164/169	10
102	6	ECP-40X102	15	PCX 168/173	10
114	6	ECP-40X114	15	PCX 199	10

ArmaFix® AF

THE PRE-INSULATED PIPE SUPPORTS FOR CONDENSATION CONTROL & COMPATIBILITY WITH AF/ARMAFLEX

- Now with environmentally friendly PET core, with greater load capacity
- Built-in vapour barrier to prevent thermal bridges
- Easy installation with self-adhesive closure
- High mechanical resistance
- Optimised combi-packs available with matching clamp and support

PROPERTIES



COMBI-PACK

ArmaFix AF pipe supports are available in convenient combi-packs which include the brackets and their corresponding clamps.

DUCT SUPPORTS

The ArmaFix AF pipe supports are designed to thermally insulate joins on duct installations.

INSTALLATION GUIDE

1 Install the supoport around the pipe, seal the surface using self-adhesive tape.

2 Close the seam applying firm pressure & push the pipe support into the middle of the clamp.

3 Tighten the screws & before installing the tube, glue the edges of the pipe support to the pipe.

4 Wet seal the butt joins using the adhesive. Install the insulation either side of the support & fit under slight compression.

PIPE SUPPORTS & CLAMPS

DUCT SUPPORT

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

AF/ArmaFlex Class 0
p. 25

TECHNICAL DATA

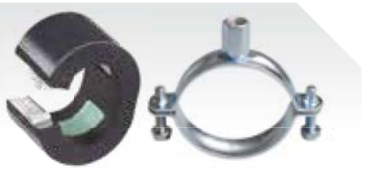
Supports for pipe and ductwork to avoid condensation at fixing points in refrigeration and air conditioning installations. Compatible with AF/ArmaFlex Class O range.

Material type	PET foam bearing segments, embedded in and glued to ArmaFlex elastomeric foam material. Outside bearing shells made from painted aluminium sheeting 0.8mm thick. One-piece support with self-seal fastener, complete with 2 ArmaFORM PET insert sections (RG 100kg/m^3). Available to fit a wide range of pipe diameters. Two half round steel pipe clamps with electrolytically applied zinc coating.
Colour	Dark Grey
Material information	Traces of silicon can be found on the protective film used on the self-adhesive closures. Maximum clamp distances apply for vertical load effects on horizontal installations with predominantly static loads. Combined slot/cross tensioning screws supplied loosely secured.
Applications	Insulated pipe and duct supports to prevent thermal and acoustic bridging at fixing points on refrigeration systems and chilled water pipes.
Safety & environment	Zero ODP, Zero GWP, Dust and fibre free
Remarks	When used in installations with intermittent temperatures, extensions and contractions of pipework may exert pressure on the insulation. This needs to be considered in the overall application by ensuring suitable compression of ArmaFlex at joining points.

Property	**Value/Assessment**	**Standards & Remarks**
Temperature Range		
Max service temperature	+110°C	
Min service temperature	-50°C (For temperatures below -50 °C please contact our technical department)	
Thermal Coductivity		
	λ 0°C ≤ 0.033 W/(m·K) [33+0.1· ϑ_m + 0.0008· ϑ_m^2]/1000	Declared acc. to EN ISO 13787. Tested acc. to EN12667 & EN ISO 8497
Water Vapour Diffusion Resistance		
	μ ≥ 10,000	Tested acc.to EN 12086 & EN 13469
Fire Performance		
Reaction to fire	Same as AF/ArmaFlex elastomeric foam Inhouse quality monitoring	Classified acc. to EN 13501-1. Tested acc. to EN 13823 & EN ISO 11925-2
Entire system with ArmafFlex insulation: Low flammability	B_L-s3, d0	
Practicial fire behaviour	Self-extinguishing, does not drip & does not spread flames	
Acoustic Performance		
Reduction of structure-borne sound transmission	According to insulation material used in the clamp/pipe fastener	
Other technical features		
Density	95 - 105 kg/m^3 (pipe bearing segments)	
Storage & shelf life	Products with self-adhesive closures to be installed within 1 year	Store in dry, clean conditions at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

ArmaFix Clamps	
Description	Pipe clamp with quick release closing and combination mounting nut
Material type	Steel with an electrolytic zinc coating to protect the clamp from corrosion.
Colour	Silver
Material information	Clamp supplied with combination nut for fixing to threaded rod.
Applications	For use alongside ArmaFlex insulation at pipe hanging points to eliminate thermal bridging on refrigeration and air-conditioning installations.
Fire Performance	The insulation layer does not affect fire performance of the steel clamp
Screw connections	M8 / M10 combination nut
Tension screws	M6 / M8
Clamp	Width 20mm - 30mm, Thickness 1.5mm - 3mm

PIPE SUPPORTS AND CLAMPS



Pipe max. Outside - Ø (mm)	Max permissible distance (m)	AF-2 INSULATION THICKNESS 12 - 16.5mm					CLAMPS AF-2	
		Code	Thickness [mm]	Outer Ø [mm]	Length [mm]	Pieces/ carton	Code	Pieces/carton
10	2	FX-2-10/12 •	12	34	45	32	PCX 025/030	25
12	2	FX-2-10/12 •	12	36	45	32	PCX 025/030	25
15	2	FX-2-15/18 •	12.5	40	45	32	PCX 033/037	25
18	2	FX-2-15/18 •	12.5	43	45	32	PCX 033/037	25
22	2.75	FX-2-22/25 •	12.5	47	45	32	PCX 042/046	25
25	2.75	FX-2-22/25 •	12.5	50	45	32	PCX 042/046	25
28	3	FX-2-28/30 •	12.5	53	45	32	PCX 047/052	25
30	3	FX-2-28/30 •	13	56	45	32	PCX 047/052	25
35	3.5	FX-2-35/38 •	13	61	50	28	PCX 054/058	25
38	3.5	FX-2-35/38 •	13.5	65	50	28	PCX 054/058	25
42	3.75	FX-2-42/45 •	13.5	69	50	28	PCX 063/068	25
45	3.75	FX-2-42/45 •	13.5	72	50	28	PCX 063/068	25
48	4.25	FX-2-48 •	14	76	55	28	PCX 068/073	10
54	4.25	FX-2-54/57 •	14	82	55	28	PCX 072/080	10
57	4.25	FX-2-54/57 •	14	85	55	28	PCX 072/080	10
60	4.75	FX-2-60/64 •	16	92	65	24	PCX 082/085	10
64	4.75	FX-2-60/64 •	16	96	65	24	PCX 082/085	10
70	4.75	FX-2-70 •	14	98	65	24	PCX 092/099	10
76	5.50	FX-2-76/80 •	14.5	105	75	20	PCX 099/103	10
80	5.50	FX-2-76/80 •	14.5	109	75	20	PCX 099/103	10
89	6	FX-2-89 •	14.5	118	95	16	PCX 112/118	10
102	6	FX-2-102/108 •	16	134	95	16	PCX 133/137	10
108	6	FX-2-102/108 •	16.5	141	95	16	PCX 133/137	10
114	6	FX-2-110/114 •	15	144	115	12	PCX 137/142	10
125	6	FX-2-125 •	16.5	158	115	12	PCX 145/152	10
133	6	FX-2-133/140 •	16	165	115	12	PCX 159/164	10
140	6	FX-2-133/140 •	16	172	115	12	PCX 159/164	10

Pipe max. Outside - Ø (mm)	Max permissible distance (m)	AF-2 INSULATION THICKNESS 12 - 16.5mm					CLAMPS AF-2	
		Code	Thickness [mm]	Outer Ø [mm]	Length [mm]	Pieces/ carton	Code	Pieces/carton
160	6	FX-2-160 •	16.5	193	115	9	PCX 190	10
165	6	FX-2-165/168 •	16.5	198	125	9	PCX 199	10
168	6	FX-2-165/168 •	16.5	201	125	9	PCX 199	10

Pipe max. Outside - Ø (mm)	Max permissible distance (m)	AF-4 (AF-3) INSULATION THICKNESS 18 - 25mm					CLAMPS AF-4 (AF-3)	
		Code	Thickness [mm]	Outer Ø [mm]	Length [mm]	Pieces/ carton	Code	Pieces/carton
10	2	FX-4(3)-10/12 •	18	46	55	28	PCX 042/046	25
12	2	FX-4(3)-10/12 •	18	48	55	28	PCX 042/046	25
15	2	FX-4(3)-15/18 •	18.5	52	55	28	PCX 042/046	25
18	2	FX-4(3)-15/18 •	18.5	55	55	28	PCX 042/046	25
22	2.75	FX-4(3)-22/25 •	19	60	55	28	PCX 054/058	25
25	2.75	FX-4(3)-22/25 •	19	64	55	28	PCX 054/058	25
28	3	FX-4(3)-28/30 •	19	66	55	28	PCX 063/068	25
30	3	FX-4(3)-28/30 •	19	68	55	28	PCX 063/068	25
35	3.5	FX-4(3)-35/38 •	19.5	74	65	24	PCX 068/073	10
38	3.5	FX-4(3)-35/38 •	19.5	77	65	24	PCX 068/073	10
42	3.75	FX-4(3)-42/45 •	21.5	85	65	24	PCX 072/080	10
45	3.75	FX-4(3)-42/45 •	21.5	88	65	24	PCX 072/080	10
48	4.25	FX-4(3)-48 •	21.5	91	65	24	PCX 082/085	10
54	4.25	FX-4(3)-54/57 •	22	98	65	24	PCX 088/092	10
57	4.25	FX-4(3)-54/57 •	22	101	65	24	PCX 088/092	10
60	4.75	FX-4(3)-60/64 •	22.5	105	75	20	PCX 099/103	10
64	4.75	FX-4(3)-60/64 •	22.5	109	75	20	PCX 099/103	10
70	4.75	FX-4(3)-70 •	23	116	75	20	PCX 108/112	10
76	5.50	FX-4(3)-76/80 •	23	122	85	16	PCX 112/118	10
80	5.50	FX-4(3)-76/80 •	23.5	127	85	16	PCX 112/118	10
89	6	FX-4(3)-89 •	23.5	136	100	12	PCX 133/137	10
102	6	FX-4(3)-102/108 •	23.5	149	100	12	PCX 137/142	10
108	6	FX-4(3)-102/108 •	24	156	100	12	PCX 137/142	10
114	6	FX-4(3)-110/114 •	24	162	115	12	PCX 145/152	10
125	6	FX-4(3)-125 •	24	173	115	12	PCX 168/173	10
133	6	FX-4(3)-133/140 •	25	183	115	12	PCX 190	10
140	6	FX-4(3)-133/140 •	25	190	115	12	PCX 190	10
160	6	FX-4(3)-160 •	25	210	115	6	PCX 206	10
165	6	FX-4(3)-165/168 •	25.5	216	125	6	PCX 222	10
168	6	FX-4(3)-165/168 •	25.5	219	125	6	PCX 222	10

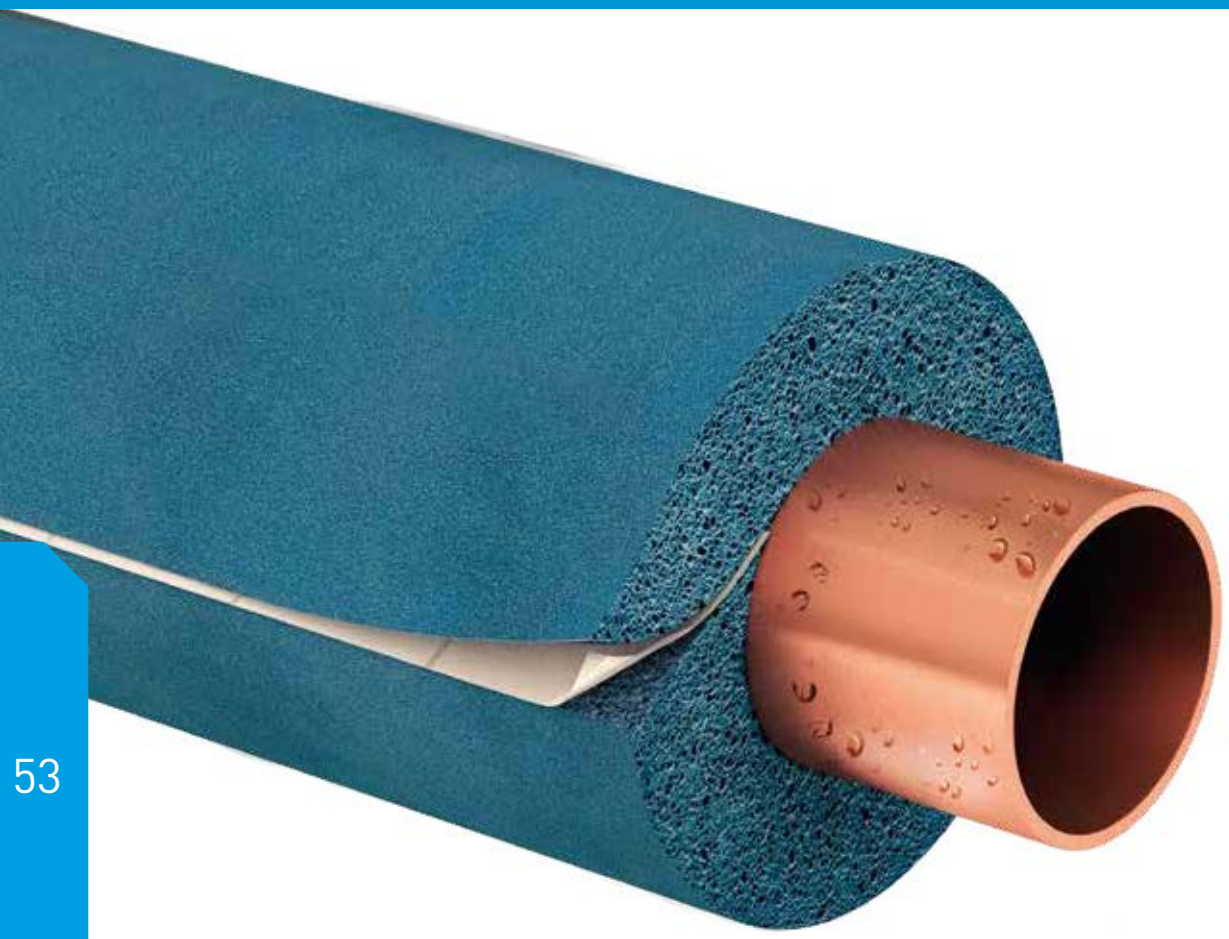
Pipe max. Outside - Ø (mm)	Max permissible distance (m)	AF-6 INSULATION THICKNESS 29.5 - 4.5mm					CLAMPS AF-6	
		Code	Thickness [mm]	Outer Ø [mm]	Length [mm]	Pieces/ carton	Code	Pieces/carton
15	2	FX-6-15/18 •	29.5	74	75	20	PCX068/073	10
18	2	FX-6-15/18 •	29.5	77	75	20	PCX068/073	10
22	2.75	FX-6)-22/25 •	29	80	75	20	PCX072/080	10
25	2.75	FX-6)-22/25 •	29	83	75	20	PCX072/080	10
28	3	FX-6-28/30 •	31.5	91	75	20	PCX082/085	10
30	3	FX-6-28/30 •	31.5	93	75	20	PCX082/085	10
35	3.5	FX-6-35/38 •	34.5	104	85	16	PCX099/103	10
38	3.5	FX-6-35/38 •	34.5	107	85	16	PCX099/103	10
42	3.75	FX-6-42/45 •	35.5	113	85	16	PCX099/103	10
45	3.75	FX-6-42/45 •	35.5	116	85	16	PCX099/103	10
48	4.25	FX-6-48 •	35.5	119	85	16	PCX112/118	10
54	4.25	FX-6-54/57 •	36	126	85	16	PCX112/118	10
57	4.25	FX-6-54/57 •	36	129	85	16	PCX112/118	10
60	4.75	FX-6-60/64 •	37	134	100	12	PCX133/137	10
64	4.75	FX-6-60/64 •	37	138	100	12	PCX133/137	10
70	4.75	FX-6-70 •	37	144	100	12	PCX137/142	10
76	5.50	FX-6-76/80 •	38	152	115	12	PCX137/142	10
80	5.50	FX-6-76/80 •	38	156	115	12	PCX137/142	10
89	6	FX-6-89 •	39	167	125	12	PCX159/164	10
102	6	FX-6-102/108 •	38.5	179	125	12	PCX190	10
108	6	FX-6-102/108 •	40	188	125	12	PCX190	10
114	6	FX-6-110/114 •	41	196	145	12	PCX199	10
125	6	FX-6-125 •	41	207	145	12	PCX206	10
133	6	FX-6-133/140 •	43	219	145	8	PCX231	10
140	6	FX-6-133/140 •	42.5	225	145	8	PCX231	10
160	6	FX-6-160 •	44	248	145	6	PCX249	10
165	6	FX-6-165/168 •	44.5	254	165	5	PCX259	10
168	6	FX-6-165/168 •	44.5	257	165	5	PCX259	10

DUCT SUPPORT

ARMAFIX AF DUCT SUPPORT				
Code	**Thickness [mm]**	**Width [mm]**	**Length [m]**	**Pieces/carton**
AS-19MM	19	100	2	5
AS-25MM	25	100	2	4

Other information
• Not a stock item
Supports above 165.1mm diameter are supplied in two pieces.
Max. permissible distance [m] according to DIN 1988.

ArmaFlex Ultima®



THE FLEXIBLE INSULATION WITH MINIMUM SMOKE EMISSIONS

- Environmental product declaration available (EPD)
- Manufactured with patented Armaprene® technology
- Low smoke emission for greater safety
- Complete installation with adhesives, supports and accessories
- Adapted for sustainable building (BREEAM)

CE

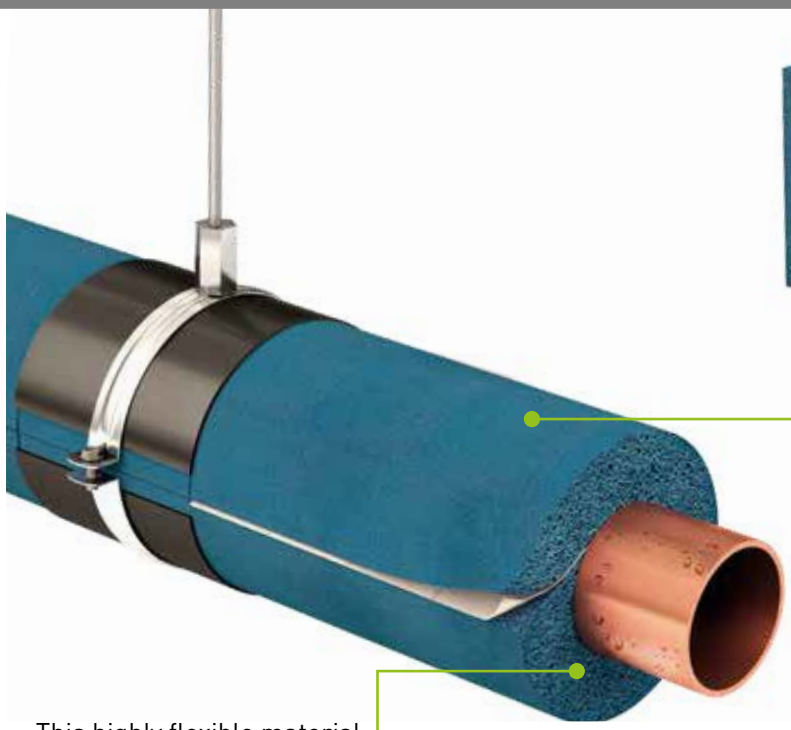
FM APPROVED

RAL GÜTEZEICHEN
Dämmstoffe aus Schaumkunststoffen
FEF / PEF

Green Guide Rating
BREEAM A

EPD
Environmental Product Declaration

PROPERTIES



With the fire classification B_L-s1, d0, ArmaFlex Ultima has established a new standard in flexible technical insulation

This highly flexible material with closed cell structure emits very low smoke density, making an important contribution to fire safety in buildings

European patent
No. 2 261 305

PATENTED

ARMAPRENE TECHNOLOGY

LOW SMOKE EMISSIONS

Euroclasses: The European classification system & fire reaction tests

COMPLETE SYSTEM

For any professional insulation challenge

- ArmaFlex Ultima
- ArmaFix Ultima
- ArmaFlex Ultima RS850, ArmaFlex Ultima 700, ArmaFlex SF Cleaner.

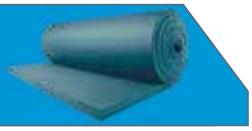
RANGE

TUBE

Tubes, Self-adhesive tubes (self-seal)

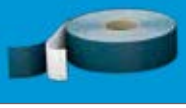
SHEET

Continuous sheet (rolls), Self-adhesive continuous sheet (rolls)



TAPE

Self-adhesive



RECOMMENDED PRODUCTS

For a complete installation

ArmaFix Ultima pipe supports
p. 63

ArmaFlex Ultima 700 adhesive
p. 69

ArmaFlex Ultima RS850 adhesive
p. 69

ArmaFlex SF Cleaner
p. 238

TECHNICAL DATA

Closed cell flexible elastomeric foam, based on a patented synthetic rubber with unique fire reaction properties and minimal smoke emission. Recommended for application in air conditioning and refrigeration installations, as well as for building equipment, industrial installations and high risk areas.

Material type	Elastomeric foam based rubber; manufactured with Armaprence® Patented technology US patent No. 8.163.811, EU patent No. 2 261 305. Factory made flexible elastomeric foam (FEF) according to EN 14304
Colour	Blue
Material information	Self-adhesive coating: pressure-sensitive adhesive coating on modified acrylate basis with mesh structure. Covered with polyethylene foil. The protective backing present on the self-adhesive tubes and sheets may contain traces of silicon.
Applications	Insulation/protection to control condensation, reduce energy loss and protect against frost on pipes, air ducts, vessels (incl. elbows, fittings, flanges etc) Suitable for hot and cold water services, chilled water lines, heating systems, air conditioning ductwork and refrigerated pipework. Armaflex tape should be used to fully secure seld-adhesive tube seams.
Special features	Low smoke performance
Safety & environment	Type III Environmental product Declaration (EPD): Declaration # EPD-ARM-20150109-IBB1-DE, Insitut Bauen und Umwelt e,V. (IBU).
Assembly	Light-weight and flexible. Closed cell structure means no additional vapour barrier is required.
Remarks	Declaration Of Performance (DOP) is available in accordance with Article 7(3) of regulation (EU) No 305/2011 www.armacell.com/dop

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110°C (+85°C if sheet or tape is glued to a flat object)	EU 5846	Tested acc to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C (For temperatures below -50 °C please contact our technical department)		
Thermal Conductivity			
Tubes, Sheet & tape	λ 0°C ⩽ 0.040 W/(m·K) $[40+0.1 \cdot \vartheta_m + 0.0009 \cdot \vartheta_m^2]/1000$	EU 5846	Declared acc. to EN ISO 13787 Tested acc. to EN12667 & EN ISO 8497
Water Vapour Diffusion Resistance			
Tubes & Sheet	μ ⩾ 7000	EU 5846	Tested acc. to EN 12086 & EN 13469
Fire Performance			
Tubes, self-adhesive tubes, tape	B_L-s1.d0	EU 5846	Classified acc. to EN 13501-1 Tested acc. to EN 13823 & EN ISO 11925-2
Sheets , self-adhesive sheet	B-s2,d0		
Ship building	Bureau Veritas, Det Norske Veritas, Lloyds Register	D 5243 EU 5954 D 5245	Classified acc. to MED 96/98/EC MODULE D Tested acc. to IMO Resolution
Fire resistance od structural element	EI 30 - EI 120	EU 5846 EU 5584	Classified acc. to EN 13501-2 Tested acc. to EN 1366-3
Fire Class	FM Approved up to 25mm	D 5192	Tested acc.to UBC26-3 Class No. 4924
Practicial fire behaviour	Self-extinguishing, does not drip & does not spread flames, low smoke density		
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1	EU 5846	Tested acc. to EN 822, EN 823 & EN 13467
UV resistance	For protection against UV radiation use cladding systems such as Okabell for outdoor application Okatherm for indoor aplications.		
Storage & shelf life	Self-adhesive tapes Self-adhesive sheets Self-adhesive tubes	1 year. Can be stored in dry clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)	
Antimicrobial behaviour	No fungal growth observed		

TUBE

Width - 2m, **Colour** - Blue, **Fire Performance** - B_L-s1.d0

Pipe max. Outside - Ø (mm)	9mm INSULATION THICKNESS		13mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
6			UD-13X006	164
10			UD-13X010	140
12	UD-09X012	192	UD-13X012	130
15	UD-09X015	180	UD-13X015	112
18	UD-09X018	150	UD-13X018	98
22	UD-09X022	124	UD-13X022	88
28	UD-09X028	96	UD-13X028	64
35	UD-09X035	70	UD-13X035	56
42	UD-09X042	56	UD-13X042	48
48	UD-09X048	52	UD-13X048	40
54	UD-09X054	42	UD-13X054	36
60	UD-09X060	40	UD-13X060	28
64	UD-09X064	28	UD-13X064	26
76	UD-09X076	32	UD-13X076	24
89	UD-09X089	24	UD-13X089	18

Pipe max. Outside - Ø (mm)	19mm INSULATION THICKNESS		25mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
10	UD-19X010	92		
12	UD-19X012	84		
15	UD-19X015	64		
18	UD-19X018	58	UD-25X018	46
22	UD-19X022	56	UD-25X022	36
28	UD-19X028	40	UD-25X028	36
35	UD-19X035	40	UD-25X035	28
42	UD-19X042	24	UD-25X042	24
48	UD-19X048	24	UD-25X048	20
54	UD-19X054	24	UD-25X054	18
60	UD-19X060	16	UD-25X060	18
64	UD-19X064	16	UD-25X064	16
76	UD-19X076	16	UD-25X076	12
89	UD-19X089	16	UD-25X089	12

Pipe max. Outside - Ø (mm)	32mm INSULATION THICKNESS	
	Code	m/carton
15	UD-32X015 •	32
18	UD-32X018 •	32
20	UD-32X020 •	24
22	UD-32X022 •	24
28	UD-32X028 •	24
35	UD-32X035 •	18
42	UD-32X042	16
48	UD-32X048	12
54	UD-32X054	12
60	UD-32X060	10
64	UD-32X064 •	10
76	UD-32X076	10
89	UD-32X089	8

Other information and remarks		
Length tolerance for tubes	± 1.5%	
	9 - 13mm	± 1.5mm
	19 - 25mm	± 2.5mm
	> 32mm	± 3mm
• Not a stock item		

SELF-ADHESIVE TUBE (SELF SEAL)

Width - 2m, **Colour** - Blue, **Fire Performance** - B_L-s1.d0

Pipe max. Outside - Ø (mm)	9mm INSULATION THICKNESS		13mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
15	UD-09X015-A	180	UD-13X015-A	112
18	UD-09X018-A	150	UD-13X018-A	98
22	UD-09X022-A	124	UD-13X022-A	88
28	UD-09X028-A	96	UD-13X028-A	64
35	UD-09X035-A	70	UD-13X035-A	56
42	UD-09X042-A	56	UD-13X042-A	48
48	UD-09X048-A	52	UD-13X048-A	40
54	UD-09X054-A	42	UD-13X054-A	36
60	UD-09X060-A	40	UD-13X060-A	28
76	UD-09X076-A	32	UD-13X076-A	24
89	UD-09X089-A	24	UD-13X089-A	18

Pipe max. Outside - Ø (mm)	19mm INSULATION THICKNESS		25mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
15	UD-19X015-A	64		
18	UD-19X018-A	58	UD-25X018-A	46
22	UD-19X022-A	56	UD-25X022-A	36
28	UD-19X028-A	40	UD-25X028-A	36
35	UD-19X035-A	40	UD-25X035-A	28
42	UD-19X042-A	24	UD-25X042-A	24
48	UD-19X048-A	24	UD-25X048-A	20
54	UD-19X054-A	24	UD-25X054-A	18
60	UD-19X060-A	16	UD-25X060-A	18
76	UD-19X076-A	16	UD-25X076-A	12
89	UD-19X089-A	16	UD-25X089-A	12

Other information and remarks		
Length tolerance for tubes	±1.5%	
	9 - 13mm	± 1.5mm
	19 - 25mm	± 2.5mm

CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - Blue, **Fire Performance** - B-s2, d0

Code	Thickness (mm)	Roll Length (m)	m²/carton
UD-06-99/E	6	15	15
UD-09-99/E	9	10	10
UD-13-99/E	13	8	8
UD-19-99/E	19	5	5
UD-25-99/E	25	4	4
UD-32-99/E	32	3	3

SELF-ADHESIVE CONTINUOUS SHEET (ROLLS)

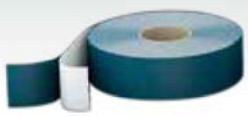
Width - 1m, **Colour** - Blue, **Fire Performance** - B-s2, d0

Code	Thickness (mm)	Roll Length (m)	m²/carton
UD-06-99/EA	6	15	15
UD-09-99/EA	9	10	10
UD-13-99/EA	13	8	8
UD-19-99/EA	19	5	5
UD-25-99/EA	25	4	4
UD-32-99/EA	32	3	3

Other information and remarks		
Length tolerance for sheet	±1.5 to 5%	
Thickness tolerance for sheet	6mm	± 1mm
	9 - 19mm	± 1.5mm
	25 - 32mm	± 2mm

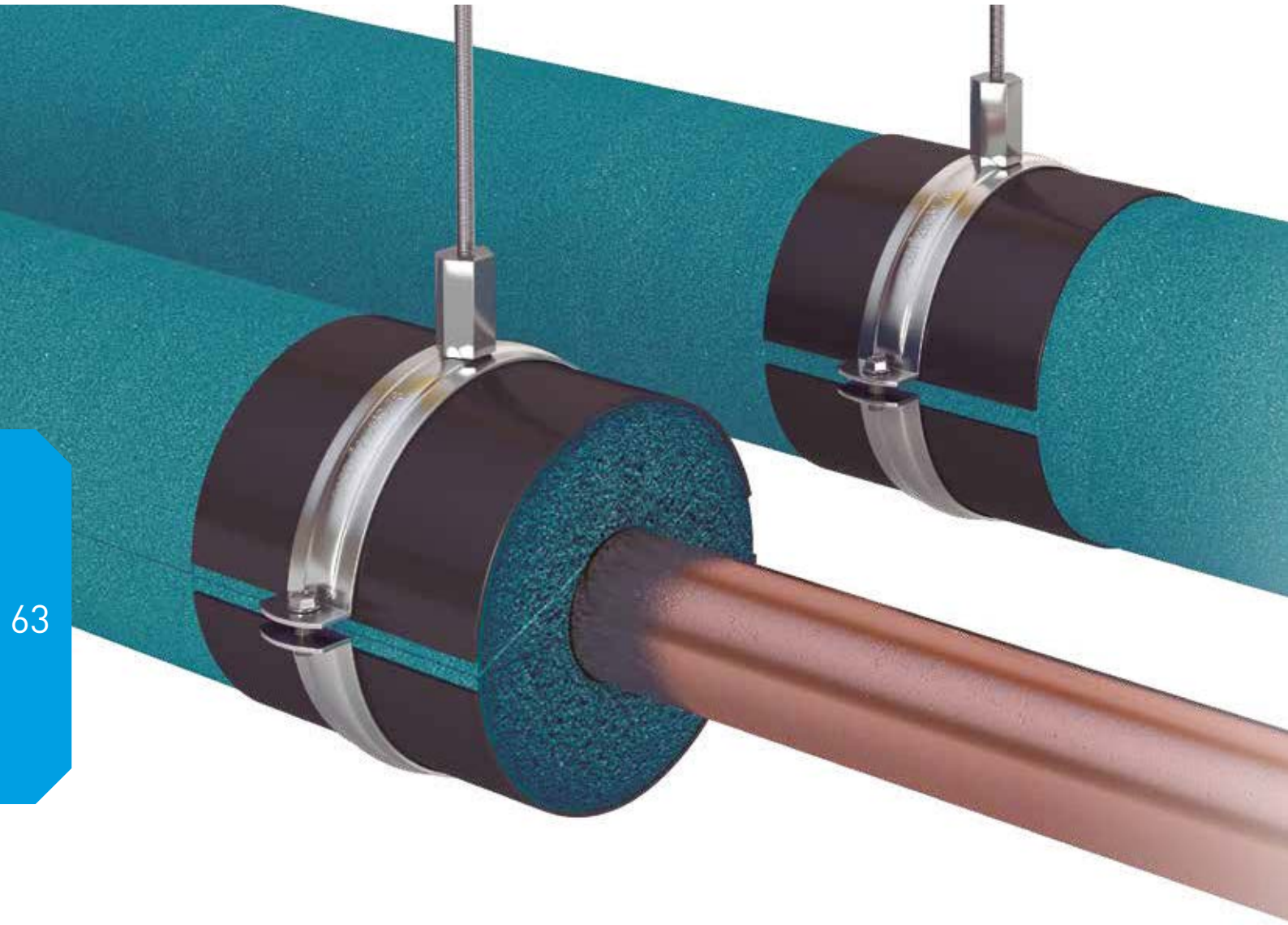
TAPE

Colour - Blue, **Fire Performance** - B-s1, d0



Code	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
UD-TAPE	50	15	3	12

ArmaFix Ultima®



COMPATIBLE PIPE SUPPORTS FOR USE WITH ARMAFLEX ULTIMA LOW SMOKE INSULATION

- Environmentally friendly PET core, with greater load capacity.
- Increased fire safety thanks to low smoke emission
- Prevents thermal bridges and reduction of energy losses
- Very good mechanical resistance
- Compatible with ArmaFlex Ultima tubes

PIPE SUPPORTS & CLAMPS

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex Ultima tube
p. 53

ArmaFlex Ultima 700 adhesive
p. 69

ArmaFlex Ultima RS850 adhesive
p. 69

TECHNICAL DATA

Pipe and duct supports for refrigeration and air conditioning installations to prevent condensation at fixing points. Theremally non-interacting single piece, with 2 ArmaFORM PET-foam sections with self-adhesive closure. All dimensions correspond to the ArmaFlex Ultima tube and sheet range.

Material type	PET foam bearing segments, embedded in and glued to ArmaFlex Ultima elastomeric foam material. Outside bearing shell made of painted 0.8mm thick aluminium sheeting , which simultaneously serves as a vapour barrier for the PET bearing segments.
Colour	Blue
Material information	Traces of silicone can be found on the protective film used on the self-adhesive closures. Please contact customer services for details.
Applications	Thermally non-interating mounting aid for tubes and sheet in referigeration and air-conditioning applications, which are to be insulated with ArmaFlex Ultima.
Remarks	When used in applications with intermittent temperatures, thermal length extensions may cause inherent pressure in the installation; this needs to be considered in the overall insulation construction.

Property	**Value/Assessment**	**Standards & Remarks**
Temperature Range		
Max service temperature	+110˚C	
Min service temperature	-50˚C (for temeratures below -50 ˚C please contact our technical department)	
Thermal Conductivity		
	Same as ArmaFlex Ultima elastomeric foam	Declared acc. to EN ISO 13787 Tested acc. to EN12667 & EN ISO 8497
Water Vapour Diffusion Resistance		
	Same as ArmaFlex Ultima elastomeric foam	Tested acc.to EN 12086 & EN 13469
Fire Performance		
Reaction to fire	**COMPLETE SYSTEM INSALLATION:** Installed with ArmaFlex Ultima tubes **B_Ls1,d0** Installed with ArmaFlex Ultima sheet **Bs2,d0**	Classified acc. to EN 13501-1 Tested acc. to EN 13823 & EN ISO 11925-2
Practical fire behaviour	Self-extinguishing, does not drip & does not spread flames.	
Acoustic Performance		
Reduction of structure-borne sound transmission	According to insulation material used	According to DIN 4109
Other technical features		
Density	95 - 105 kg/m³ (pipe bearing segments)	
Storage & shelf life	Products with self-adhesive closures to be installed within 1 year	

ArmaFix clamps	
Description	Pipe clamp with quick release closing and combination mounting nut
Material type	Steel with an electrolytic zinc coating to protect from corrosion.
Colour	Silver
Material information	Clamp supplied with combination nut for fixing to threaded rod.
Applications	For use alongside ArmaFlex insulation at pipe hanging points to eliminate thermal bridging on refrigeration and air-conditioning installations.
Fire Performance	The insulation layer does not affect the fire performance of the steel clamp
Screw connections	M8 / M10 combination nut
Tension screws	M6 / M8
Clamp	Width 20mm - 30mm, Thickness 1.5mm - 3mm

PIPE SUPPORTS AND CLAMPS

Pipe max. Ou89tside - Ø (mm)	Max permissible distance (m)	13mm INSULATION THICKNESS		CLAMPS13mm	
		Code	Pieces/carton	Code	Pieces/carton
10	2	ULP13(9)-10/12 •	32	PCX 025/030	25
12	2	ULP13(9)-10/12 •	32	PCX 025/030	25
15	2	ULP13(9)-15/18 •	32	PCX 033/037	25
18	2	ULP13(9)-15/18 •	32	PCX 033/037	25
22	2.75	ULP13(9)-22/25 •	32	PCX 042/046	25
25	2.75	ULP13(9)-22/25 •	32	PCX 042/046	25
28	3	ULP13(9)-28/30 •	32	PCX 047/052	25
30	3	ULP13(9)-28/30 •	32	PCX 047/052	25
35	3.5	ULP13(9)-35/28 •	28	PCX 054/058	25
38	3.5	ULP13(9)-35/38 •	28	PCX 054/058	25
42	3.75	ULP13(9)-42/45 •	28	PCX 063/068	25
45	3.75	ULP13(9)-42/45 •	28	PCX 063/068	25
48	4.25	ULP13(9)-48 •	28	PCX 068/073	10
54	4.25	ULP13(9)-54/57 •	28	PCX 068/073	10
57	4.25	ULP13(9)-54/57 •	28	PCX 068/073	10
60	4.75	ULP13(9)-60/64 •	24	PCX 082/085	10
64	4.75	ULP13(9)-60/64 •	24	PCX 082/085	10
76	5.50	ULP13(9)-76/80 •	20	PCX 092/099	10
80	5.50	ULP13(9)-76/80 •	20	PCX 092/099	10
89	6	ULP13(9)-89 •	16	PCX 108/112	10

Other information
• Not a stock item

Pipe max. Outside - Ø (mm)	Max permissible distance (m)	19mm INSULATION THICKNESS		CLAMPS 19mm	
		Code	Pieces/carton	Code	Pieces/carton
10	2	ULP19-10/12 •	28	PCX 038/041	25
12	2	ULP19-10/12 •	28	PCX 038/041	25
15	2	ULP19-15/18 •	28	PCX 047/052	25
18	2	ULP19-15/18 •	28	PCX 047/052	25
22	2.75	ULP19-22/25 •	28	PCX 054/058	25
25	2.75	ULP19-25/25 •	28	PCX 054/058	25
28	3	ULP19-28/30 •	28	PCX 059/063	25
30	3	ULP19-28/30 •	28	PCX 059/063	25
35	3.5	ULP19-35/28 •	24	PCX 063/068	25
38	3.5	ULP19-35/38 •	24	PCX 063/068	25
42	3.75	ULP19-42/45 •	24	PCX 068/073	10
45	3.75	ULP19-42/45 •	24	PCX 068/073	10
48	4.25	ULP19-48 •	24	PCX 072/080	10
54	4.25	ULP19-54/57 •	24	PCX 082/085	10
57	4.25	ULP19-54/57 •	24	PCX 082/085	10
60	4.75	ULP19-60/64 •	20	PCX 088/092	10
64	4.75	ULP19-60/64 •	20	PCX 088/092	10
76	5.50	ULP19-76/80 •	16	PCX 099/103	10
80	5.50	ULP19-76/80 •	16	PCX 099/103	10
89	6	ULP19-89 •	12	PCX 112/118	10

Pipe max. Outside - Ø (mm)	Max permissible distance (m)	25mm INSULATION THICKNESS		CLAMPS 25mm	
		Code	Pieces/carton	Code	Pieces/carton
15	2	ULP25-15/18 •	28	PCX 059/063	25
18	2	ULP25-15/18 •	28	PCX 059/063	25
22	2.75	ULP25-22/25 •	28	PCX 063/068	25
25	2.75	ULP25-25/25 •	28	PCX 063/068	25
28	3	ULP25-28/30 •	28	PCX 068/073	10
30	3	ULP25-28/30 •	28	PCX 068/073	10
35	3.5	ULP25-35/28 •	24	PCX 072/080	10
38	3.5	ULP25-35/38 •	24	PCX 072/080	10
42	3.75	ULP25-42/45 •	24	PCX 082/085	10
45	3.75	ULP25-42/45 •	24	PCX 082/085	10
48	4.25	ULP25-48 •	24	PCX 088/092	10
54	4.25	ULP25-54/57 •	24	PCX 092/099	10
57	4.25	ULP25-54/57 •	24	PCX 092/099	10
60	4.75	ULP25-60/64 •	20	PCX 099/103	10
64	4.75	ULP25-60/64 •	20	PCX 099/103	10
76	5.50	ULP25-76/80 •	16	PCX112/118	10
80	5.50	ULP25-76/80 •	16	PCX112/118	10
89	6	ULP25-89 •	12	PCX137/142	10

Other information
• Not a stock item

ArmaFlex Ultima® adhesives

COMPATIBLE PIPE SUPPORTS FOR USE WITH ARMAFLEX ULTIMA LOW SMOKE INSULATION

- New generation of blue coloured adhesives developed especially for bonding ArmaFlex Ultima
- Recommended for insulation materials based on Armaprene® synthetic foams
- Sustainable buildings - ArmaFlex Ultima RS850 helps meet the requirements for sustainable building and the certification of “green buildings”

ARMAFLEX ULTIMA 700 One-component adhesive specifically developed for ArmaFlex Ultima and insulating materials based on Armaprene® synthetic rubbers. 	
Material type	Contact adhesive on polychloroprene basis, free of aromatic components.
Colour	Blue
Applications	Application on pipes and tanks with service temperature up to +110˚C. Gluing of ArmaFlex Ultima and insulation materials based on Armaprene® synthetic rubbers.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +15˚C to +20˚C, not below 0˚C. At temperatures below +5˚C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is poor or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas exposed to strong sunlight.
Remarks	The adhesive achieves its final strength after 36 hours. Only then should plant be put into operation. Wait 36 hours before applying coatings (exception: ArmaFinish 99), adhesive tape, coverings etc.

ARMAFLEX ULTIMA RS850 Non-drip one component adhesive gel form. Specifically designed for processing ArmaFlex and insulating materials based on Armaprene® synthetic rubbers 	
Material type	Thixotropic one component contact adhesive based on polychloroprene.
Colour	Blue
Material special information	Gel based
Applications	Application on pipes and tanks with service temperature up to +70˚C. Gluing of ArmaFlex Ultima and insulation materials based on Armaprene® synthetic rubbers.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +15˚C to +20˚C, not below +10˚C. At temperatures below +5˚C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is bad or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas exposed to strong sunlight.
Remarks	The adhesive achieves its final strength after 24 hours. The system should not be operated during this period and any self -adhesive tape or protective coatings should only be applied after this period has elapsed.

	ULTIMA 700	ULTIMA RS850
Temperature Range		
Max service temperature	+110˚C (for temperatures above +110˚C please contact our technical department)	+70˚C
Min service temperature	-50˚C (for temperatures below -50 ˚C please contact our technical department)	-40˚C (for temperatures below -50 ˚C please contact our technical department)
Performance		
Coverage (guidance only)	Minimum consumption with the adhesive applied to both surfaces: ArmaFlex tubes (thickness > consumption unslit > consumption slit) • 10mm > 1120m per litre > 140m per litre • 20mm > 280m per litre > 70m per litre • 30mm > 175m per litre > 45m per litre • 40mm > 130m per litre > 35m per litre Sheets • 3-4 m^2 per litre	
Storage & shelf life		
	12 months in an unopened container. Store as cool as possible but protected from frost. In the event of frost any gelification is reversible on warming	18 months in an unopened container. Store between 0˚C and 35˚C in a dry place. Do not store with explosive substances or spontaneously combusting sunstances. In the event of frost any gelification is reversible on warming
Preparation of surfaces		
	Clean surfaces and ArmaFlex Ultima surface with ArmaFlex Cleaner. Compatibility with bases: • Very good adhesion to metallic sufaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with Asphalt, bitumen and red lead (linseed oil-based)	Clean surfaces and ArmaFlex Ultima surface with ArmaFlex Cleaner. Compatibility with bases: • Very good adhesion to metallic sufaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with Asphalt, bitumen, red lead (linseed oil-based), polystyrene and plasticated PVC
Woking time		
Drying time	3- 5 mins	2 min
Contact adhesion	15 - 20 mins	10 - 15 mins
Setting	36 hours	24 hours
The open time depends on the quantity as well as indoor climate conditions. Before operating plant the setting time needs to be allowed to lapse.		
Other technical features		
Flash point	approx -26 ˚C	
Expolsion limits	Lower: approx 1.1 Vol % Upper: approx 12.8 Vol %	
Hazard class	Highly flammable	
Ageing stability	Very good	
Resistance to weathering	Very good	
Recycling	Allocation of a waste code number, according to the European Waste Catalouge, should be carried out in agreement with the regional waste disposal company. For details see relevant Safety Data Sheet. Packaging must be emptied of all residues. Packaging with traces of cured product can be recycled. Packaging with uncured product must be recycled into new product.	
Transport classes	Depending on the type of transport	

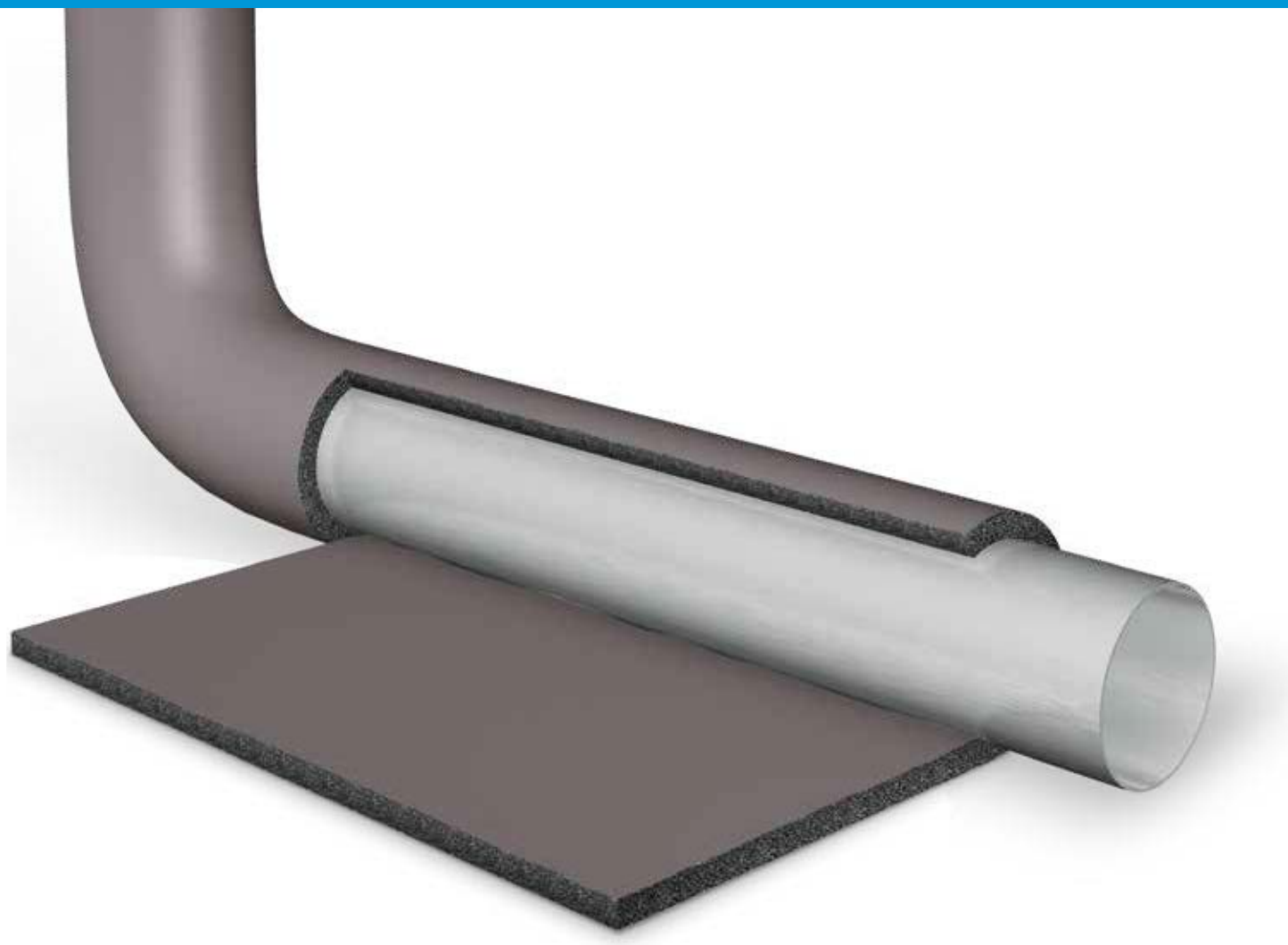
ARMAFLEX ULTIMA 700

Code	Description	Pieces/carton
AHU-700/1.0	ArmaFlex Ultima 700 Adhesive, 1 Litre cans	12

ARMAFLEX ULTIMA RS850

Code	Description	Pieces/carton
AHU-RS850/0.7	ArmaFlex Ultima RS850 Adhesive, 0.75 Litre cans	6

NH/ArmaFlex®



HALOGEN-FREE INSULATION WITH LOW SMOKE EMISSIONS

- Low amounts of smoke and acid gas in a fire
- Reduces toxicity and corrosive effects on people and equipment
- Prevents stress corrosion cracking of stainless steel
- Fibre dust free material with low thermal conductivities
- Excellent protection against water vapour diffusion
- IMO certified, UL and FM-approved
- Self-adhesive tubes to comply with green building schemes

APPROVED
TYPE APPROVAL SCHEME

TYPE APPROVED PRODUCT
DNV·GL
DNVGL.COM/AF

RAL GÜTEZEICHEN
Dämmstoffe aus Schaumkunststoffen
FEF / PEF

Green Guide Rating
BREEAM A

CE

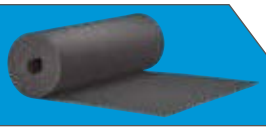
EPD
Environmental Product Declaration

TUBE

Tubes, self-adhesive tubes (self-seal)

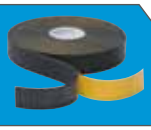
SHEET

Continuous sheet (rolls), self-adhesive continuous sheet (rolls)



TAPE

Self-adhesive tape



RECOMMENDED PRODUCTS

For a complete installation

ArmaFix NH pipe support
p. 81

ArmaFlex RS850 adhesive
p. 230

ArmaFlex SF Cleaner
p. 238

TECHNICAL DATA

Halogen-free flexible closed-cell thermal insulation material. Certified for use in marine environments, rail and military sectors. Also suitable to use on clean and server rooms.

Material type	Elastomeric foam based synthetic rubber. Factory made elastomeric foam (*FEF) according to EN 14304
Colour	Dark Grey / Anthracite
Applications	Insulation / protection for air conditioning and refrigeration, ventilation and process equipment to prevent condensation and save energy on pipework, air ducts, vessels (incl. elbows, fittings, flanges etc.)
Special features	Zero halogens (chloride, bromide) acc. to DIN / VDE 0472, part 815. Fulfills DIN 1988 Parts 2 and 7
Safety & environment	ODP Zero, GWP Zero
Remarks	Declaration Of Performance (DOP) is available in accordance with Article 7(3) of regulation (EU) No 305/2011

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110°C (+85°C if sheet or tape is glued to the object with its whole surface)	EU 5664	Tested acc to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C (for temperatures below -50 °C please contact our technical department)		
Thermal Conductivity			
	λ 0°C ⩽ 0.040 W/(m·K) [40+0.1· ϑ_m + 0.0009· ϑ_m^2]/1000	EU 5664	Tested acc. to BS 874 Part 2 1986, EN12667 & EN ISO 8497
Water Vapour Diffusion Resistance			
	μ ⩾ 2,000	EU 5664	Tested acc.to DIN 52 615, EN 12086 & EN 13469
Fire Performance			
Tubes	Euroclass D_L-s2, d0	EU 5157	Classified acc. to EN 13501-1 Tested acc. to EN 13823 & EN ISO 11925-2
Sheets & tapes	Euroclass E		
Reaction to fire	Class 1	GB 5905	Tested acc. to BS 476 Part 7:1997
Ship building: Bureau Veritas, Det Norske Veritas, Lloyds Register	Low flammability	D5555, D5348, EU 5475 & EU6111	ACC. to IMO A653 (16)
Railway sheets up to 25mm	S4 SR2 ST2	D 6666	acc. to DIN 54837 ISO 5659 (DIN 5510-2)
UL Approved	HF-1	D 5837	UL: acc. to UL94, IEC60695 & Can/CSA-C.22.2 No 0.17, UL 746C
Practicial fire behaviour	Self-extinguishing, does not drip & does not spread flames		
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1		Tested acc. to EN 822, EN 823 & EN 13467
Chemical behaviour	Resistant against commonly used building materials including concrete, lime, gypsum, cement		
Health apects	Dust and fibre free		
Storage & shelf life	Self-adhesive tapes Self-adhesive sheets Self-adhesive tubes	1 year	Stored in dry clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)
Resistance to	Building materials: Very good Chemicals: Consult product test list Ozone: Very good		
Water absorption	0.2% by volume		Tested acc. to ASTM C 209
Environmental aspects	ODP zero, GWP zero	EU5197	

TUBES

Length - 2m, **Colour** - Dark Grey

Pipe max. Outside - Ø (mm)	9mm INSULATION THICKNESS		13mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
10	NH-09X10 •	266	NH-13X10 •	156
12	NH-09X12 •	200	NH-13X12 •	162
15	NH-09X15 •	192	NH-13X15 •	120
18	NH-09X18 •	166	NH-13X18 •	112
22	NH-09X22 •	136	NH-13X22 •	98
28	NH-09X28 •	98	NH-13X28 •	78
35	NH-09X35 •	76	NH-13X35 •	56
42	NH-09X42 •	60	NH-13X42 •	48
48	NH-09X48 •	50	NH-13X48 •	40
54			NH-13X54 •	34
60			NH-13X60 •	32
76			NH-13X76 •	22
89			NH-13X89 •	18

Pipe max. Outside - Ø (mm)	19mm INSULATION THICKNESS		25mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
15	NH-19X15 •	78	NH-25X15 •	40
18	NH-19X18 •	60	NH-25X18 •	40
22	NH-19X22 •	56	NH-25X22 •	40
28	NH-19X28 •	48	NH-25X28 •	32
35	NH-19X35	36	NH-25X35 •	24
42	NH-19X42	32	NH-25X42 •	22
48	NH-19X48	24	NH-25X48 •	18
54	NH-19X54	24	NH-25X54 •	16
60	NH-19X60	18	NH-25X60 •	12
76	NH-19X76	12	NH-25X76 •	10
89	NH-19X89	12	NH-25X89 •	8
114	NH-19X114	8	NH-25X114 •	6

Other information and remarks		
Length tolerance for tubes	±1.5%	
Thickness tolerance for tubes	9-13mm	± 1.5mm
	19-25mm	± 2mm
• Not a stock item		

SELF-ADHESIVE TUBES (SELF-SEAL)

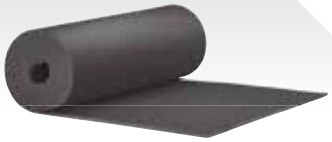
Length - 2m, **Colour** - Dark Grey

Pipe max. Outside - Ø (mm)	13mm INSULATION THICKNESS		19mm INSULATION THICKNESS	
	Code	m/carton	Code	m/carton
15	NH-13X015-A •	120	NH-19X015-A •	78
18	NH-13X018-A •	112	NH-19X018-A •	60
22	NH-13X022-A •	98	NH-19X022-A •	56
28	NH-13X028-A •	78	NH-19X028-A •	48
35	NH-13X035-A •	56	NH-19X035-A •	36
42	NH-13X042-A •	48	NH-19X042-A •	32
48	NH-13X048-A •	40	NH-19X048-A •	24
54	NH-13X054-A •	34	NH-19X054-A •	24
60	NH-13X060-A •	32	NH-19X060-A •	18
76			NH-19X076-A •	12
89			NH-19X089-A •	12

Other information and remarks		
Length tolerance for tubes	±1.5%	
Thickness tolerance for tubes	⩽ 13mm	± 1.5mm
	> 19mm	± 2.5mm
• Not a stock item		

SHEET

Width - 1m, **Colour** - Dark Grey

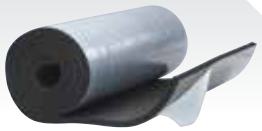


Code	Thickness (mm)	Roll Length (m)	m²/carton
NH-03-99/E	3	30	30
NH-06-99/E	6	15	15
NH-10-99/E	10	10	10
NH-13-99/E	13	8	8
NH-19-99/E	19	6	6
NH-25-99/E	25	4	4
NH-32-99/E	32	3	3

Other information and remarks		
Length tolerance for tubes	1.5% to ±5%	
Thickness tolerance for tubes	3 - 6mm	± 1mm
	10 - 19mm	± 1.5mm
	25 - 32mm	± 2mm

SELF-ADHESIVE SHEET (ROLLS)

Width - 1m, **Colour** - Dark Grey



Code	Thickness (mm)	Roll Length (m)	m²/carton
NH-06-99/EA	6	15	15
NH-10-99/EA	10	10	10
NH-13-99/EA	13	8	8
NH-19-99/EA	19	6	6
NH-25-99/EA	25	4	4
NH-32-99/EA	32	3	3

TAPE

Colour - Dark Grey

Code	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
NH-TAPE	50	15	3	12

PROJECT

Kvaerner Masa shipyard
Helsinki, Finland

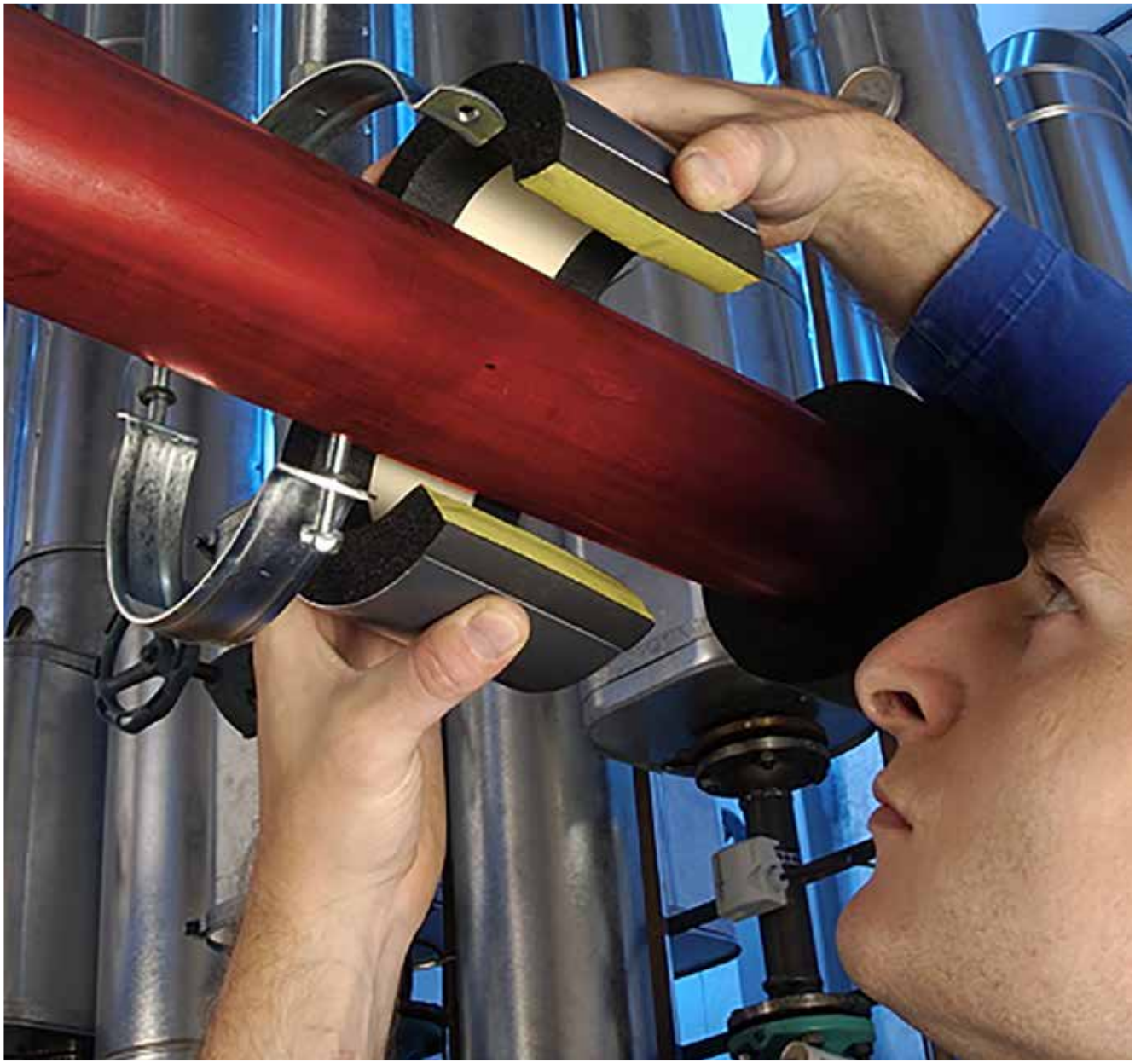
PRODUCTS USED

NH/ArmaFlex
ArmaFix NH

ArmaFix NH®

COMPATIBLE PIPE SUPPORTS FOR USE WITH NH/ARMAFLEX INSULATION

- Environmentally friendly PET core, with greater load capacity
- Increased fire safety thanks to non-halogen material
- Prevents thermal bridges and reduction of energy losses
- Very good mechanical resistance
- Compatible with NH/ArmaFlex tubes



RANGE

PIPE SUPPORTS & CLAMPS

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

NH/ArmaFlex tubes
p. 73

TECHNICAL DATA

Insulated pipe and duct supports to prevent condensation at fixing points on refrigeration and air conditioning installations. Single piece assembly with 2 ArmaFORM PET-foam sections and self-adhesive closure. All dimensions correspond to the NH/ ArmaFlex tube range.

Material type	PET foam bearing segments, embedded in and glued to NH/ArmaFlex elastomeric foam material. Outside bearing shell made of painted 0.8mm thick aluminium sheeting, which simultaneously serves as a vapour barrier for the PET bearing segments.
Colour	Dark grey
Material information	Traces of silicone can be found on the protective film used on the self-adhesive closures. Please contact customer services for details.
Applications	Thermally non-interating mounting aid for tubes and sheet in referigeration and air-conditioning applications, which are to be insulated with NH/ArmaFlex.
Remarks	When used in applications with intermittent temperatures, thermal length extensions may cause inherent pressure in the installation; this needs to be considered in the overall insulation construction.

Property	**Value/Assessment**	**Standards & Remarks**
Temperature Range		
Max service temperature	+110˚C	
Min service temperature	-50˚C (for temperatures below -50 ˚C please contact our technical department)	
Thermal Conductivity		
	Same as NH/ArmaFlex elastomeric foam	Declared acc. to EN ISO 13787 Tested acc. to EN12667 & EN ISO 8497
Water Vapour Diffusion Resistance		
	Same as NH/ArmaFlex elastomeric foam	Tested acc.to EN 12086 & EN 13469
Fire Performance		
Reaction to fire	Same as NH/ArmaFlex **ENTIRE SYSTEM INSALLATION:** Installed with NH/ArmaFlex D_Ls2,d0	Classified acc. to EN 13501-1 Tested acc. to EN 13823 & EN ISO 11925-2
Practical fire behaviour	Self-extinguishing, does not drip & does not spread flames.	
Acoustic Performance		
Reduction of structure-borne sound transmission	According to insulation material used	According to DIN 4109
Other technical features		
Density	95 - 105 kg/m³ (pipe bearing segments)	
Storage & shelf life	Products with self-adhesive closures to be installed within 1 year	

ArmaFix clamps	
Description	Pipe clamp with quick release closing and combination mounting nut
Material type	Steel with an electrolytic zinc coating to protect from corrosion.
Colour	Silver
Material information	Clamp supplied with combination nut for fixing to threaded rod.
Applications	For use alongside ArmaFlex insulation at pipe hanging points to eliminate thermal bridging on refrigeration and air-conditioning installations.
Fire Performance	The insulation layer does not affect the fire performance of the steel clamp
Screw connections	M8 / M10 combination nut
Tension screws	M6 / M8
Clamp	Width 20mm - 30mm, Thickness 1.5mm - 3mm

PIPE SUPPORTS AND CLAMPS

Pipe max. Outside - Ø (mm)	Max permissible distance (m)	13mm INSULATION THICKNESS		CLAMPS 13mm	
		Code	Pieces/carton	Code	Pieces/carton
10	2	PHN-13-10/12 •	32	PCX 025/030	25
12	2	PHN-13-10/12 •	32	PCX 025/030	25
15	2	PHN-13-15/18 •	32	PCX 033/037	25
18	2	PHN-13-15/18 •	32	PCX 033/037	25
22	2.75	PHN-13-22/25 •	32	PCX 042/046	25
25	2.75	PHN-13-22/25 •	32	PCX 042/046	25
28	3	PHN-13-28/30 •	32	PCX 047/052	25
30	3	PHN-13-28/30 •	32	PCX 047/052	25
32	3.5	PHN-13-32 •	28	PCX 047/052	25
35	3.5	PHN-13-35/38 •	28	PCX 054/058	25
38	3.5	PHN-13-35/38 •	28	PCX 054/058	25
40	3.75	PHN-13-40 •	28	PCX 059/063	25
42	3.75	PHN-13-42/45 •	28	PCX 063/068	25
45	3.75	PHN-13-42/45 •	28	PCX 063/068	25
48	4.25	PHN-13-48 •	28	PCX 068/073	10
54	4.25	PHN-13-54/57 •	28	PCX 068/073	10
57	4.25	PHN-13-54/57 •	28	PCX 068/073	10
60	4.75	PHN-13-60/64 •	24	PCX 082/085	10
64	4.75	PHN-13-60/64 •	24	PCX 082/085	10
76	5.50	PHN-13-76/80 •	20	PCX 092/099	10
80	5.50	PHN-13-76/80 •	20	PCX 092/099	10
89	6.00	PHN-13-89 •	16	PCX 108/112	10

Other information
• Not a stock item

Pipe max. Outside - Ø (mm)	Max permissible distance (m)	19mm INSULATION THICKNESS		CLAMPS 19mm	
		Code	Pieces/carton	Code	Pieces/carton
10	2	PHN-19-10/12 •	28	PCX 038/041	25
12	2	PHN-19-10/12 •	28	PCX 038/041	25
15	2	PHN-19-15/18 •	28	PCX 047/052	25
18	2	PHN-19-15/18 •	28	PCX 047/052	25
22	2.75	PHN-19-22/25 •	28	PCX 054/058	25
25	2.75	PHN-19-22/25 •	28	PCX 054/058	25
28	3	PHN-19-28/30 •	28	PCX 059/063	25
30	3	PHN-19-28/30 •	28	PCX 059/063	25
32	3.5	PHN-19-32 •	28	PCX 059/063	25
35	3.5	PHN-19-35/38 •	24	PCX 063/068	25
38	3.5	PHN-19-35/38 •	24	PCX 063/068	25
42	3.75	PHN-19-42/45 •	24	PCX 068/073	10
45	3.75	PHN-19-42/45 •	24	PCX 068/073	10
48	4.25	PHN-19-48 •	24	PCX 072/080	10
54	4.25	PHN-19-54/57 •	24	PCX 082/085	10
57	4.25	PHN-19-54/57 •	24	PCX 082/085	10
60	4.75	PHN-19-60/64 •	20	PCX 088/092	10
64	4.75	PHN-19-60/64 •	20	PCX 088/092	10

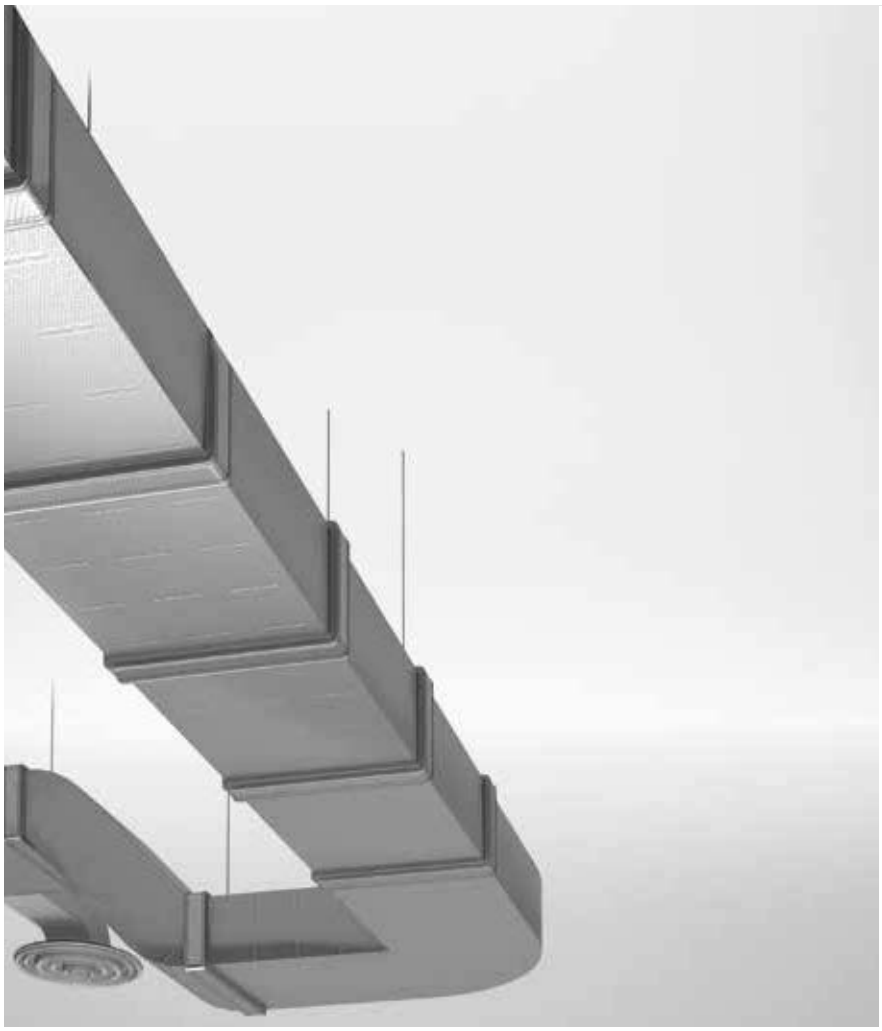
Pipe max. Outside - Ø (mm)	Max permissible distance (m)	25mm INSULATION THICKNESS		CLAMPS 25mm	
		Code	Pieces/carton	Code	Pieces/carton
15	2	PHN-25-15/18 •	28	PCX 059/063	25
18	2	PHN-25-15/18 •	28	PCX 059/063	25
22	2.75	PHN-25-22/25 •	28	PCX 063/068	25
25	2.75	PHN-25-25/25 •	28	PCX 063/068	25
28	3	PHN-25-28/30 •	28	PCX 068/073	10
30	3	PHN-25-28/30 •	28	PCX 068/073	10
35	3.5	PHN-25-32 •	24	PCX 068/073	10
38	3.5	PHN-25-35/38 •	24	PCX 072/080	10
42	3.5	PHN-25-35/38 •	24	PCX 072/080	10
45	3.75	PHN-25-42/45 •	24	PCX 082/085	10
48	3.75	PHN-25-42/45 •	24	PCX 082/085	10
54	4.25	PHN-25-48 •	24	PCX 088/092	10
57	4.25	PHN-25-54/57 •	24	PCX 092/099	10
60	4.25	PHN-25-54/57 •	24	PCX 092/099	10
64	4.75	PHN-25-60/64 •	20	PCX 099/103	10
76	4.75	PHN-25-60/64 •	20	PCX 099/103	10
80	5.50	PHN-25-76/80 •	16	PCX 112/118	10
89	5.50	PHN-25-76/80 •	16	PCX 112/118	10

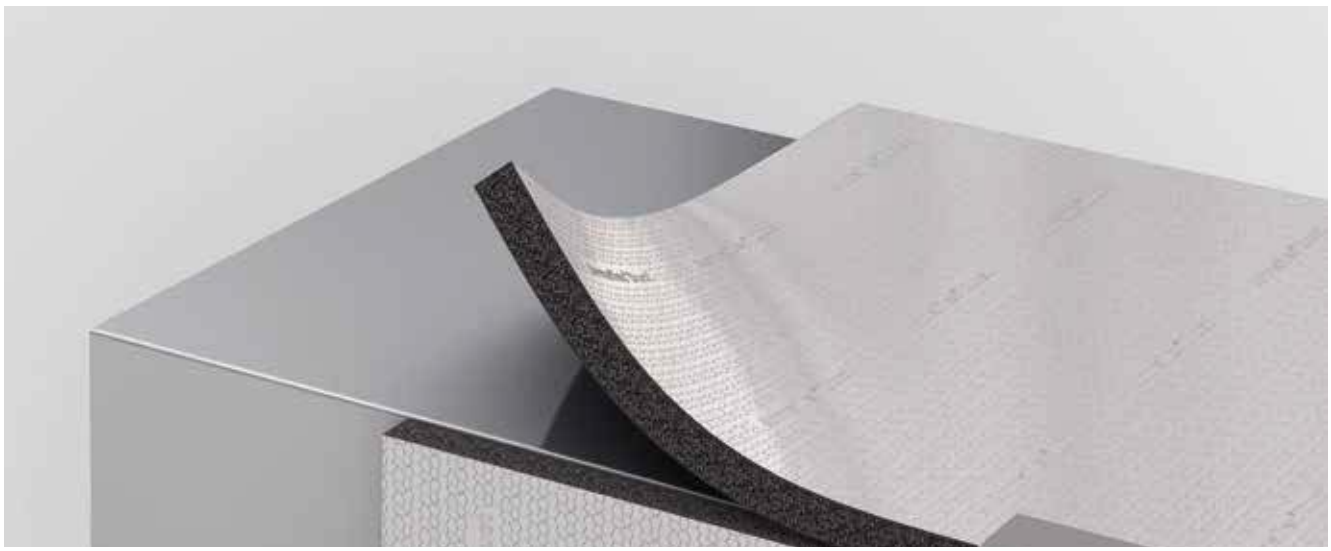
Other information
• Not a stock item

ArmaFlex® Duct Alu

DUST & FIBRE FREE ARMAFLEX INSULATION FOR DURABLE PROTECTION OF AIR DUCTS

- Prevents condensation and heat losses on cold and warm air supply ducts
- Available with alu-foil covering for a smooth and easy to clean aesthetic finish
- 1.5m wide sheet available to match ductwork panels
- Flexible material, easy to cut and install with no PPE required
- Closed cell structure for water vapour transmission resistance

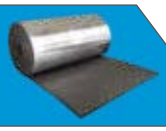




PROTECTION THAT LIVES ON
MICROBAN®

SHEET

Pre-covered endless sheet (rolls), pre-covered endless self-adhesive sheet (rolls)



TAPE

Self-adhesive tape

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

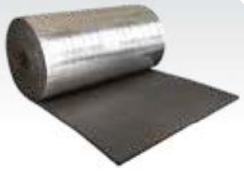
Closed cell insulation material with a bright silver covering, specifically designed and produced for the thermal and acoustic insulation of air-conditioning ducts. ArmaFlex Duct insulation reduces heat loss and the closed cell structure prevents water vapour transmission, thus avoiding the risk of corrosion.

Material type	Elastomeric foam based synthetic rubber. Factory made flexible elastomeric foam (FEF) according to EN 14304
Colour	Black with silver foil covering
Material special information	Self-adhesive coating: pressure-sensitive adhesive coating on modified acrylate basis with mesh structure and covered with polyethylene foil.
Applications	Insulation of rectangular and cylindrical air ducts
Remarks	Declaration Of Performance (DOP) is available in accordance with Article 7(3) of regulation (EU) No 305/2011

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110°C	EU 5697	Tested acc to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C		
Thermal Conductivity			
Sheets 9 - 25mm	λ 0°C ≤ 0.036 W/(m·K) [36+0.1· ϑ_m + 0.0008· ϑ_m^2]/1000	EU 5697	Declared acc. to EN ISO 13787 Tested acc. to EN12667 & EN ISO 8497
Sheets 32 - 40mm	λ 0°C ≤ 0.038 W/(m·K) [38+0.1· ϑ_m + 0.0008· ϑ_m^2]/1000		
Water Vapour Diffusion Resistance			
	μ ≥ 7000	EU 5697	Tested acc.to EN 12086
Fire Performance			
Reaction to fire	Euroclass E	GB 5697	Classified acc. to EN 13501-1 Tested acc. to EN 13823 EN ISO 11925-2
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1		Tested acc. to EN 822, EN 823 & EN 13467
Storage & shelf life	Self-adhesive sheets	1 year	Stored in dry clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

PRE-COVERED CONTINUOUS SHEET (ROLLS)

Width - 1.5 m, **Colour** - Black with silver foil coating



Code	Thickness (mm)	Roll Length (m)	Width (m)	m²/carton
ADU-09MM/E-L •	9	20	1.5	30
ADU-13MM/E-L •	13	16	1.5	24
ADU-19MM/E-L •	19	12	1.5	18
ADU-25MM/E-L •	25	8	1.5	12
ADU-32MM/E-L •	32	6	1.5	9

PRE-COVERED CONTINUOUS SHEET SELF-ADHESIVE SHEET (ROLLS)

Width - 1m & 1.5 m, **Colour** - Black with silver foil coating

Code	Thickness (mm)	Roll Length (m)	Width (m)	m²/carton
ADU-09MM-1/EA-L •	9	20	1	20
ADU-13MM-1/EA-L •	13	16	1	16
ADU-19MM-1/EA-L •	19	12	1	12
ADU-25MM-1/EA-L •	25	8	1	8
ADU-32MM-1/EA-L •	32	6	1	6

Code	Thickness (mm)	Roll Length (m)	Width (m)	m²/carton
ADU-09MM/EA-L •	9	20	1.5	30
ADU-13MM/EA-L •	13	16	1.5	24
ADU-19MM/EA-L •	19	12	1.5	18
ADU-25MM/EA-L •	25	8	1.5	12
ADU-32MM/EA-L •	32	6	1.5	9

Other information and remarks		
Thickness tolerance for sheets	⩽ 6mm	± 1mm
	7 - 19mm	± 1.5mm
	⩾19mm	± 2mm
• Not a stock item		

SELF-ADHESIVE TAPES

Colour - Sliver

Code	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
ACH-PSATAPES-30 •	30	25	0.08	10
ACH-PSATAPES-50 •	50	50	0.08	6

ArmaFlex® Duct Plus

ARMAFLEX DUCT PLUS INSULATION (EUROCLASS B-S3, D0) FOR AIR CONDITIONING DUCTS

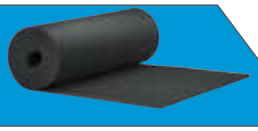
- Closed cell insulation to prevent condensation
- 1.5 metre wide sheet adapted to duct dimensions and for less waste on site
- Easy to install and free of fibre dust
- Smooth surface for easy cleaning

ABOVE

Sheet production line
Armacell Münster, Germany

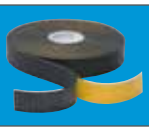
SHEET

Pre-covered continuous sheet (rolls), pre-covered continuous self-adhesive sheet (rolls)



TAPE

Self-adhesive tape



RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

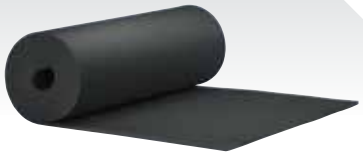
Flexible closed-cell elastomeric foam insulation. Specifically designed for the thermal and acoustic insulation of air conditioning ducts. Offers an improved fire rating for indoor applications, reduces heat loss and the closed cell structure prevents condensation, water vapour transmission and corrosion under insulation.

Material type	Elastomeric foam based synthetic rubber. Factory made flexible elastomeric foam (FEF) according to EN 14304
Colour	Black with silver foil covering
Material special information	Self-adhesive coating: pressure-sensitive adhesive coating on modified acrylate basis with mesh structure and covered with polyethylene foil.
Applications	Insulation of rectangular and cylindrical air ducts
Remarks	Declaration Of Performance (DOP) is available in accordance with Article 7(3) of regulation (EU) No 305/2011

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110°C (+85°C if sheet or tape is glued to a flat surface)		Tested acc. to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C		
Thermal Conductivity			
Sheets 9 - 32mm	λ 0°C ≤ 0.036 W/(m·K) [36+0.1· ^{9}m + 0.0008· ^{9}m^{2}]/1000	EU 5697	Declared acc. to EN ISO 13787 Tested acc. to EN12667 & EN ISO 8497
Sheets 32 - 40mm	λ 0°C ≤ 0.038 W/(m·K) [38+0.1· ^{9}m + 0.0008· ^{9}m^{2}]/1000		
Water Vapour Diffusion Resistance			
	μ ≥ 7000	EU 5697	Tested acc.to EN 12086
Fire Performance			
Reaction to fire	Euroclass B-s3, d0	GB 5697	Classified acc. to EN 13501-1 Tested acc. to DIN EN 13823 DIN EN ISO 11925-2
Practical fire behaviour	Self-extinguishing, does not drip		
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1	EU 5697	Tested acc. to EN 822, EN 823 & EN 13467
Storage & shelf life	Self-adhesive sheets	1 year	Stored in dry clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

CONTINUOUS SHEET (ROLLS)

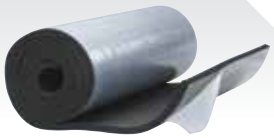
Width - 1.5m, **Colour** - Black, **Fire rating** - B-s3, d0



Code	Thickness (mm)	Roll Length (m)	Width (m)	m²/carton
ADU-09MM/E-P •	9	20	1.5	30
ADU-13MM/E-P •	13	16	1.5	24
ADU-19MM/E-P •	19	12	1.5	18
ADU-25MM/E-P •	25	8	1.5	12
ADU-32MM/E-P •	32	6	1.5	9

SELF-ADHESIVE CONTINUOUS SHEET (ROLLS)

Width - 1.5m, **Colour** - Black, **Fire rating** - B-s3, d0



Code	Thickness (mm)	Roll Length (m)	Width (m)	m²/carton
ADU-09MM/EA-P •	9	20	1.5	30
ADU-13MM/EA-P •	13	16	1.5	24
ADU-19MM/EA-P •	19	12	1.5	18
ADU-25MM/EA-P •	25	8	1.5	12
ADU-32MM/EA-P •	32	6	1.5	9

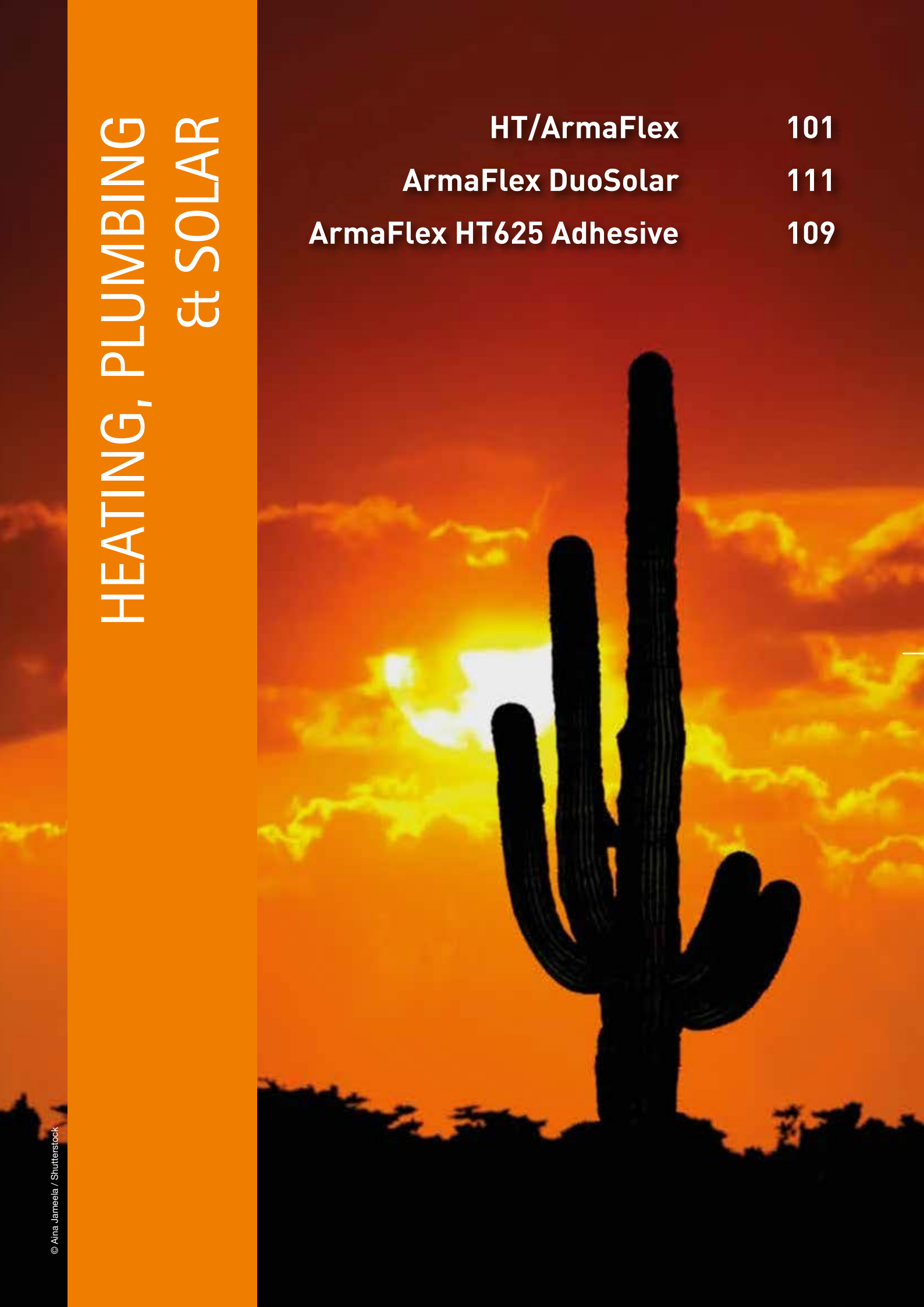
Other information and remarks		
Thickness tolerance for sheets	⩽ 6mm	± 1mm
	7 - 19mm	± 1.5mm
	⩾19mm	2mm
• Not a stock item		

TAPE

Colour - Black, **Antimicrobial protection** - Microban®

Code	Width (mm)	Length (m)	Thickness (mm)	Rolls/carton
AF-TAPE-MC	50	15	3	12

HEATING, PLUMBING & SOLAR



HT/ArmaFlex®

THE FLEXIBLE INSULATION FOR HIGH TEMPERATURE APPLICATIONS

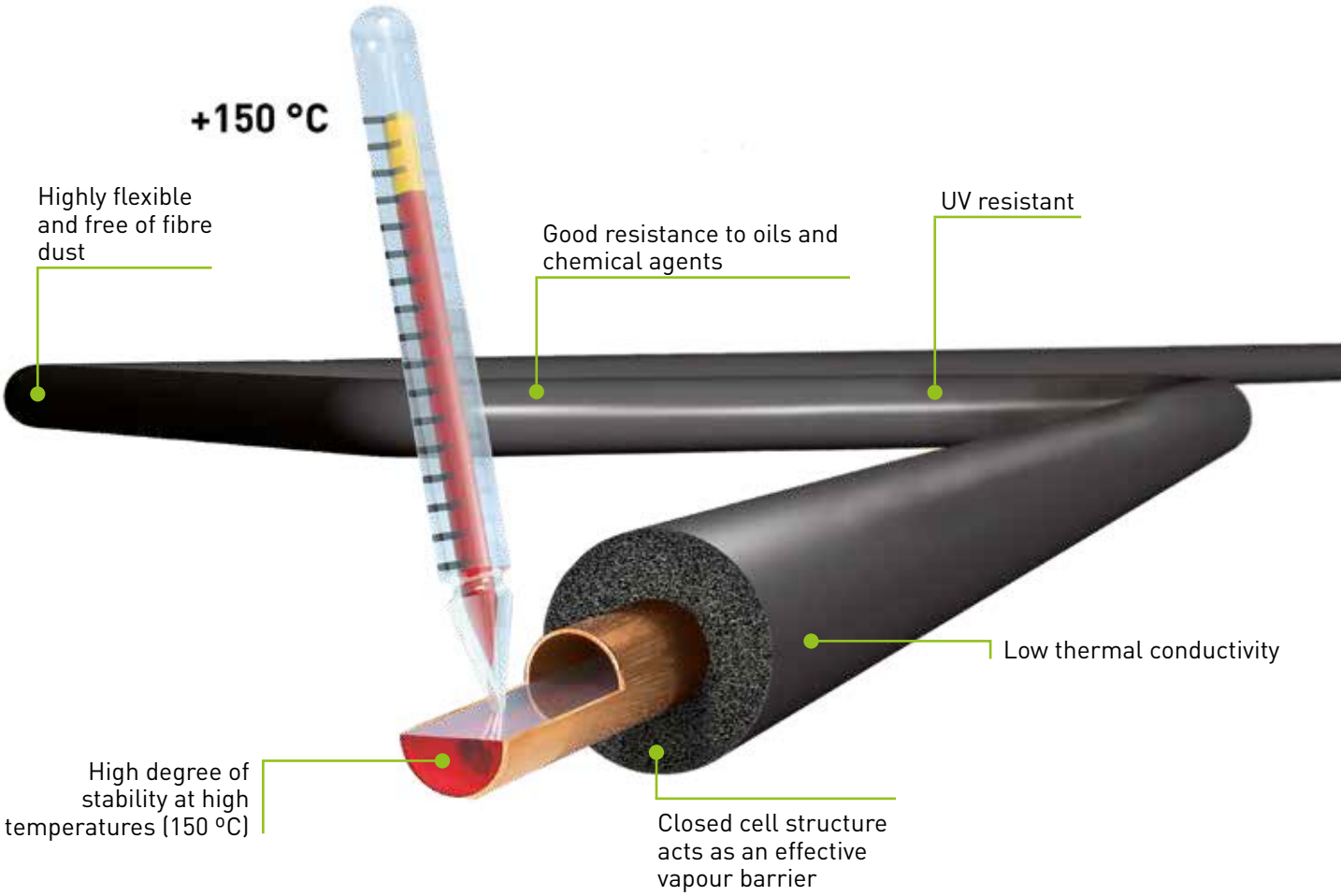
- High degree of stability for a wide temperature range
- UV resistant and able to withstand typical weathering effects
- Built-in vapour barrier to reduce the risk of corrosion under insulation (CUI)
- Retains its physical characteristics throughout service life
- Reduces energy losses with a low thermal conductivity
- Low maintenance and repair costs

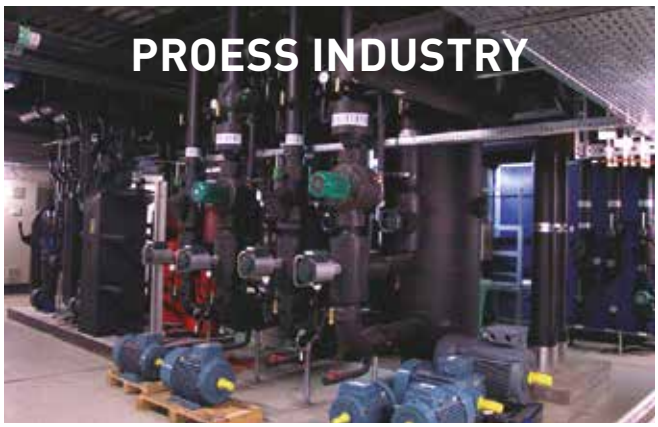
EPD
Environmental Product Declaration

CE

APPROVED
LR
TYPE APPROVAL SCHEME

PROPERTIES





COMPLETE SYSTEM

The complete insulation system for high temperature applications.

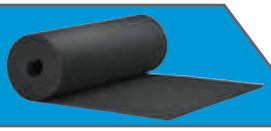
- HT/ArmaFlex
- ArmaFix pipe supports
- ArmaFlex HT625 adhesive

TUBE

Tubes, coils

SHEET

Continuous sheet (rolls)



TAPE

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex HT625 adhesive
p. 109

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

Flexible closed cell elastomeric insulation, based on synthetic EPDM rubber, specifically suitable for installations that work at high temperatures.

Material type	Synthetic EPDM rubber based foam.
Colour	Black
Applications	Thermal insulation of pipes, vessels and ducts for solar panels (including outdoors), motor vehicles, hot gas lines, steam and dual temperature lines.
Special features	Fulfills DIN 1988, resistant to UV radiation.
Safety and environment	Type III Environmental Product Declaration (EPD): Declaration number EPD-ARM-20150108-IBB1-DE, institut bauen und umwelt e.V (IBU).
Assembly	The ArmaFlex application guide should be consulted before use.
Remarks	Declaration Of Performance (DOP) is available in accordance with Article 7(3) of regulation (EU) No 305/2011

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+150°C, +85°C for tape	EU 5666	Tested acc. to EN 14706 & EN 14707
Min service temperature	-50°C		
Thermal Conductivity			
Tubes	λ 40°C ⩽ 0.042 W/(m·K) $[36.92+0.125\cdot\vartheta_m+0.0008\cdot(\vartheta_m-30)^2]/1000$	EU 5666	Tested acc. to BS 874 Part 2 1986, EN 12667 & EN ISO 8497
Sheets	λ 40°C ⩽ 0.045 W/(m·K) $[39.92+0.125\cdot\vartheta_m+0.0008\cdot(\vartheta_m-30)^2]/1000$		
Water Vapour Diffusion Resistance			
Tubes	$\mu \geqslant 4000$	EU 5666	Tested acc.to EN 12086 & EN 13469
Sheet	$\mu \geqslant 3000$		
Fire Performance			
Reaction to fire	Class 1 Euroclass tubes & sheets D-s3, d0 & D_L-S3,d0 UL94	GB 5904 & EU5666	Tested acc. to BS476 Part 7: 1997 Classified acc. to EN 13501-1 Tested acc. to EN 13823 EN ISO 11925-2
Other fire class	UL approved V-0 Lloyds register material having low flame spread characteristics	UL:EU 5837 Lloyd R: EU 6136	UL tested acc. to UL94 IEC 60695 & Can/ CSA-C.22.2. No.0.17, UL 746C. Lloyds Register: Tested acc. to BS 476 Part 7
Practical fire behaviour	Self-extinguishing, doesn't drip, doesn't spread flames		
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1	EU 5316	Tested acc. to EN 822, EN 823 & EN 13467
UV resistance	Good		
Health aspects	Dust & fibre free		
Storage & shelf life	Tape & self-adhesive sheets	1 year	Stored in dry clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)
Resistance to:	Building materials: Very good, Chemicals: Consult product test list Ozone: Very good, UV: Very good		
Environmental aspects	ODP zero, GWP zero	EU 5197	

TUBE

Length - 2m, **Colour** - Black

Pipe max. Outside - Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	10mm INSULATION THICKNESS		13mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
10	11.5	13	HT-10X010 •	192	HT-13X010 •	140
12	13.5	15	HT-10X012 •	172	HT-13X012 •	130
15	16.5	18	HT-10X015	144	HT-13X015	112
18	19.5	21	HT-10X018 •	130	HT-13X018 •	98
22	23.5	25	HT-10X022	108	HT-13X022	84
28	29.5	31	HT-10X028 •	82	HT-13X028 •	64
35	36.5	38.5	HT-10X035 •	60	HT-13X035	50
42	44	46	HT-10X042 •	50	HT-13X042	40
48	50	52			HT-13X048	32
54	55.5	57.5			HT-13X054	32
60	62	64			HT-13X060	28
76	77.5	80			HT-13X076	24
89	91	93			HT-13X089	18

Pipe max. Outside - Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	19mm INSULATION THICKNESS		25mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
12	13.5	15	HT-19X012 •	80		
15	16.5	18	HT-19X015	64	HT-25X015	40
18	19.5	21	HT-19X018 •	58	HT-25X018 •	36
22	23.5	25	HT-19X022	50	HT-25X022	36
28	29.5	31	HT-19X028	48	HT-25X028	32
35	36.5	38.5	HT-19X035	32	HT-25X035	24
42	44	46	HT-19X042	24	HT-25X042	20
48	50	52	HT-19X048	22	HT-25X048	16
54	55.5	57.5	HT-19X054	18	HT-25X054	16
60	62	64	HT-19X060	16	HT-25X060	16
76	77.5	80	HT-19X076	18	HT-25X076	12
89	91	93	HT-19X089	16	HT-25X089	12

Other information and remarks		
Length toloerance for tubes	± 1.5%	
Thickness tolerance for tubes	10 - 13mm	± 1.5mm
	19 - 25mm	± 2.5mm
• Not a stock item		

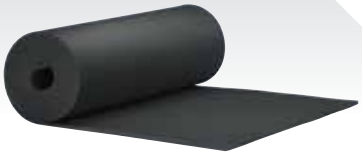
COILS

Colour - Black

Pipe max. Outside - Ø (mm)	Inner tube Ø min (mm)	Inner tube Ø max (mm)	13mm INSULATION THICKNESS		19mm INSULATION THICKNESS	
			Code	m/carton	Code	m/carton
15	16.5	18	HT-13X015/E •	26	HT-19X015/E •	16
18	19.5	21	HT-13X018/E •	22	HT-19X015/E •	14
22	23.5	25	HT-13X022/E •	18	HT-19X015/E •	12

CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - Black



Code	Thickness (mm)	Roll Length (m)	m²/carton
HT-10-99/E •	10	10	10
HT-13-99/E •	13	8	8
HT-19-99/E •	19	6	6
HT-25-99/E •	25	4	4
HT-32-99/E •	32	3	3

Other information and remarks		
Length toloerance for tubes	± 1.5%	
Thickness tolerance for tubes	10 - 13mm	± 1.5mm
	19 - 25mm	± 2.5mm
Length toloerance for sheet	± 1.5% - 5%	
Thickness tolerance for sheet	10 - 19mm	± 1.5mm
	25 - 32mm	± 2mm
• Not a stock item		

TAPE

Colour - black

Code	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton	£/roll
HT-TAPE	50	15	3	12	56.54

ArmaFlex HT625 adhesive

THE HIGH TEMPERATURE ADHESIVE FOR USE WITH HT/ARMAFLEX

- Specially formulated for a wide range of temperatures and applications
- Water-tight bonding of HT/ArmaFlex® and ArmaFlex® DuoSolar insulation systems
- For operating temperatures up to +150 °C
- High performance, one component industrial grade adhesive
- Low-viscosity air-drying contact adhesive

ARMAFLEX HT625 **One-component adhesive for high temperature applications, specifically developed for HT/ArmaFlex installations but also suitable for all ArmaFlex synthetic rubber based insulation materials.**	
Material type	Contact adhesive on polychloroprene basis, free of aromatic components.
Colour	Beige
Material special info	Liquid
Applications	Application on pipes and tanks with service temperature up to +150°C. Gluing of HT/ArmaFlex insulation materials and other ArmaFlex synthetic rubber based insulation materials (except ArmaFlex Ultima).
Special features	Specially formulated adhesive for uniform and safe seam bonding of ArmaFlex insulation materials applied on high temperature lines.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +20°C, not below 0°C. At temperatures below +5°C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is poor or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas exposed to strong sunlight.
Remarks	The adhesive achieves its final strength after 36 hours. Only then should plant be put into operation. Wait 36 hours before applying coatings (exception: ArmaFinish 99), adhesive tape, coverings etc.

Temperature Range	
Max service temperature	+150˚C (For temperatures above +110˚C please contact our technical department)
Min service temperature	-50˚C (For temperatures below -50 ˚C please contact our technical department)
Performance	
Coverage (guidance only)	Minimum consumption with the adhesive applied to both surfaces: ArmaFlex tubes (thickness > consumption unslit > consumption slit) • 10mm > 1120m per litre > 140m per litre • 20mm > 280m per litre > 70m per litre • 30mm > 175m per litre > 45m per litre • 40mm > 130m per litre > 35m per litre Sheets • 3-4 m^2 per litre
Storage & shelf life	
	12 months in an unopened container. Do not store with expolsive substances / spontaneously combusting substances. Store as cool as possible but protected from frost. In the event of frost any gelification is reversible on warming
Preparation of surfaces	
	Clean surfaces and ArmaFlex surface with ArmaFlex Cleaner. Compatibility with bases: • Very good adhesion to metallic sufaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with Asphalt, bitumen and red lead (linseed oil-based)
Woking time	
Drying time	3- 5 mins
Contact adhesion	15 - 20 mins
Setting	36 hours
	The open time depends on the quantity as well as indoor climate conditions. Before operating plant the setting time needs to be allowed to lapse.
Other technical features	
Flash point	approx -26 ˚C
Expolsion limits	Lower: approx 1.1 Vol % Upper: approx 12.8 Vol %
Hazard class	Highly flammable
Ageing stability	Very good
Resistance to weathering	Very good
Recycling	Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company. For details see relevant Safety Data Sheet. Packaging must be emptied of all residues. Packaging with traces of cured product can be recycled. Packaging with uncured product must be recycled into new product.
Transport classes	Depending on the type of transport

ARMAFLEX HT625 ADHESIVE

Code	Description	Pieces/carton
ADH-HT625/0.25 •	ArmaFlex HT625 one component adhesive, 0.25 Litre can, with brush	40
ADH-HT625/0.5	ArmaFlex HT625 one component adhesive, 0.5 Litre can, with brush	12
ADH-HT625/1.0	ArmaFlex HT625 one component adhesive, 1 Litre can, with brush	12

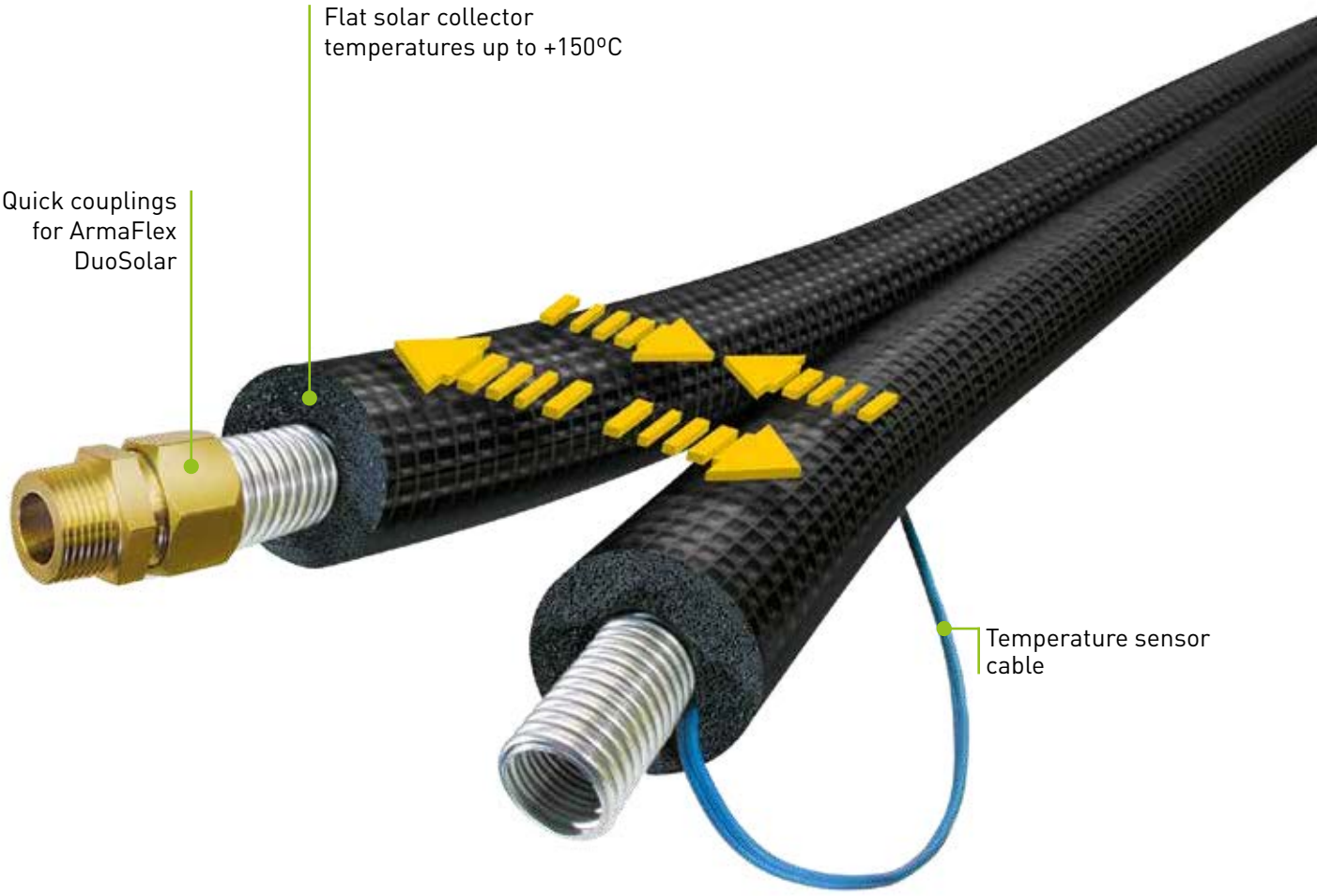
ArmaFlex® DuoSolar

THE EASY-TO-INSTALL, PRE-INSULATED PIPING SYSTEM FOR EFFICIENCY IN SOLAR HOT WATER APPLICATIONS

- Reduce cost and assembly time of solar hot water connections
- Outer layer for resistance against environmental impact
- Reduces energy loss and minimises CO2 emissions
- Wide range of accessories available for a quick and complete insulation
- Patented join split adhesive technology
- Integrated temperature sensor cable
- Polyolefin-copolymer textured coating provides good resistance to UV radiation
- Excellent resistance to water vapour diffusion combined with low thermal conductivity
- Low maintenance and repair costs

CE

PROPERTIES

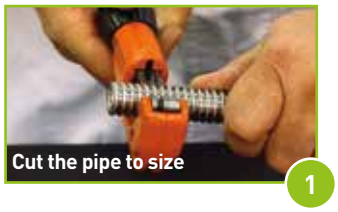


BENEFITS

- Reduce energy loss and minimise CO^2 emissions.
- Reduce installation time and costs.
- Resistant to environmental impact.
- Excellent performance in high temperature applications.
- Integrated temperature sensor cable.
- Good resistance to UV radiation.
- Easy joining and separation of pipes during installation.
- Wide range of additional accessories available.

INSTALLATION GUIDE

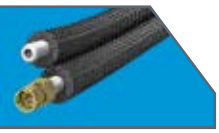
Steps for a correct installation of solar pipes with quick couplings.



RANGE

PRE-INSULATED VA PIPES

Coils



VA ACCESSORIES

Pipe hanger

RAPID CONNECTIONS

Corrugated hoses, Copper pipes, female straight interal thread, Male straight thread, Male tapered thread, Cylindrical connection, Clamping ring

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex HT625 adhesive
p. 109

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

ArmaFlex DuoSolar is a flexible pre-insulated, UV resistant insulation system used to connect solar collectors with hot-water storage tanks. The system offers a smart join-split system with twin stainless steel pipes and integrated temperature sensor cable.

Material type	**Insulation material:** Synthetic EPDM rubber based foam. **Corrugated stainless steel hose:** Austenitic stainless steel, according to EN 10088-2: X2CrNiMo 17-12-2 and DIN 17441: 1.4404. **Covering:** Polyolefin copolymer film.
Colour	Black
Material special information	The return pipe includes a temperature sensor cable (2x0.75mm²) with halogen-free, temperature resistant silicone coating (+180°C).
Applications	Tubing system to connect solar collectors with solar thermal hot water cylinders.
Remarks	The solar system and heat transfer fluid has to be well matched in order to guarantee corrosion and interference-free operation. We recommend an annual laboratory test of the fluid medium (density, concentration, pH). The heat transfer fluid has to be completely replaced in case the parameters no longer meet the requirements EC Certificate of Conformity no. 0543 of Güteschutzgemeinschaft Hartschaum e.V. , Celle

Property	Value/Assessment	Test	Standards & Remarks
Temperature Range			
Max service temperature	+150°C	EU 5670	Tested acc to EN 14706 & EN 14707
Min service temperature	-50°C		
Thermal Coductivity			
	λ 40°C ≤ 0.042 W/(m·K) [36.92+0.125· ϑ_m + 0.0008· (ϑ_m -30)²]/1000	EU 5670	Declared acc. to EN ISO 13787 Tested acc. to EN ISO 8497
Water Vapour Diffusion Resistance			
	$\mu \geq 4000$	EU 5670	Tested acc.to EN 13469
Fire Performance			
Reaction to fire	Euroclass E	EU 5670	Classified acc. to EN 13501-1 Tested acc. to EN ISO 11925-2
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1	EU 5670	Tested acc. to EN 13467
Chemical behaviour	Excellent resistance to ozone, chemicals (consult product test list) and building materials		
UV resistance	Good		
Health aspects	Dust and fibre free		
Max operating pressure (bar)	ODP zero GWP zero	EU 5197	
Pipe volume (l/m)	CU12 = 0.085 DN16 = 0.272 CU15 = 0.141 DN20 = 0.430 CU18 = 0.201 DN25 = 0.633		

ARMAFLEX DUOSOLAR PRE-INSULATED VA PIPE (COILS)

Covering colour - Black, Pre-insulated corrugated tubes made of stainless steel 1.4404 (ASTM 316 L)

Outside - Ø (mm)	Code	Thickness (mm)	Outer pipe & insulation (mm)	Coil lengh (m)
21.4 VA	SO-DV-14X16/E10	14	2 X 50	10
21.4 VA	SO-DV-14X16/E15	14	2 X 50	15
21.4 VA	SO-DV-14X16/E20	14	2 X 50	20
21.4 VA	SO-DV-14X16/E25	14	2 X 50	25
26.7 VA	SO-DV-14X20/E10 •	14	2 X 55	10
26.7 VA	SO-DV-14X20/E15 •	14	2 X 55	15
26.7 VA	SO-DV-14X20/E20 •	14	2 X 55	20
26.7VA	SO-DV-14X20/E25 •	14	2 X 55	25
31.8 VA	SO-DV-14X25/E15 •	14	2 X 60	15
31.8 VA	SO-DV-14X25/E25 •	14	2 X 60	25
21.4 VA	SO-DV-20X16/E15 •	20	2 X 61	15
21.4 VA	SO-DV-20X16/E25 •	20	2 X 61	25
26.7 VA	SO-DV-20X20/E15 •	20	2 X 67	15
26.7 VA	SO-DV-20X20/E25 •	20	2 X 67	25

VA ACCESSORIES

Code	Description	Pieces/set
SCH-DN16-FEF14 •	Pipe hanger for DN16FEF14 with hexhead screw M8X80 and raw plugs S10, insulation thickness 14mm	4
SCH-DN16-FEF20 •	Pipe hanger for DN16FEF20 with hexhead screw M8X80 and raw plugs S10, insulation thickness 20mm	4
SCH-DN20-FEF14 •	Pipe hanger for DN20FEF14 with hexhead screw M8X80 and raw plugs S11, insulation thickness 14mm	4
SCH-DN20-FEF20 •	Pipe hanger for DN20FEF20 with hexhead screw M8X80 and raw plugs S11, insulation thickness 20mm	4
SCH-DN25-FEF14 •	Pipe hanger for DN25FEF14 with hexhead screw M8X80 and raw plugs S12, insulation thickness 14mm	4
SO-VA-DNI-16 •	Double nipple ¾" for DN16	2
SO-VA-DNI-20 •	Double nipple 1" for DN20	2
SO-VA-DNI-25 •	Double nipple 1 ¼" for DN25	2
SO-VA-FIT-16/4 •	Fitting set for DN16 with 4 of each split rings, union nuts & washers	4
SO-VA-FIT-20/4 •	Fitting set for DN20 with 4 of each split rings, union nuts & washers	4
SO-VA-FIT-25/4 •	Fitting set for DN25 with 4 of each split rings, union nuts & washers	4

Other information
• Not a stock item

FITTINGS FOR CORRUGATED HOSES

Quick fitting coupling for corrugated stainless steel hoses.

Stainless steel VA	Code	Connection	Pieces/carton
DN16	SO-SDN16-DN16 •	Corrugated stainless steel hoses DN16	10
DN20	SO-SDN20-DN20 •	Corrugated stainless steel hoses DN20	10
DN25	SO-SDN25-DN25 •	Corrugated stainless steel hoses DN25	4

FITTINGS FOR COPPER PIPES

Quick fitting coupling with clamping ring for copper pipes.

Stainless steel VA	Code	Connection	Pieces/carton
DN16	SO-SDN16-CU15 •	Plain pipes Ø 15mm	10
DN16	SO-SDN16-CU18 •	Plain pipes Ø 18mm	10
DN16	SO-SDN16-CU22 •	Plain pipes Ø 22mm	10
DN20	SO-SDN20-CU15 •	Plain pipes Ø 15mm	10
DN20	SO-SDN20-CU18 •	Plain pipes Ø 18mm	10
DN20	SO-SDN20-CU22 •	Plain pipes Ø 22mm	10
DN25	SO-SDN25-CU18 •	Plain pipes Ø 18mm	4
DN25	SO-SDN25-CU22 •	Plain pipes Ø 22mm	4

FITTINGS WITH FEMALE STRAIGHT INTERNAL THREAD

Quick fitting coupling with female straight internal thread for metal to metal or flat-sealing screw joints.

Stainless steel VA	Code	Connection	Pieces/carton
DN16	SO-SDN16-I1/2 •	Inside thread G ½"	10
DN16	SO-SDN16-I3/4•	Inside thread G ¾"	10
DN16	SO-SDN16-I1 •	Inside thread G1"	10
DN20	SO-SDN20-I3/4	Inside thread G ¾"	10
DN20	SO-SDN20-I1	Inside thread G1"	10
DN25	SO-SDN25-I1	Inside thread G1"	4
DN25	SO-SDN25-I11/4	Inside thread G1 ¼"	4

Other information
• Not a stock item

FITTINGS WITH MALE STRAIGHT THREAD

Quick fitting coupling with male staright thread for flat-sealing screw joints.

Stainless steel VA	Code	Connection	Pieces/carton
DN16	SO-SDN16-F3/4 •	External thread G¾"	10
DN16	SO-SDN16-F1 •	External thread G1"	10
DN20	SO-SDN20-F3/4 •	External thread G¾"	10
DN20	SO-SDN20-F1 •	External thread G1"	10

FITTINGS WITH MALE TAPERED THREAD

Quick fitting coupling with male tapered thread for metal to metal sealing screw joints.

Stainless steel VA	Code	Connection	Pieces/carton
DN16	SO-SDN16-E1/2 •	External thread R½	10
DN16	SO-SDN16-E3/4 •	External thread R¾	10
DN16	SO-SDN16-E1 •	External thread R1	10
DN20	SO-SDN20-E3/4 •	External thread R¾	10
DN20	SO-SDN20-E1 •	External thread R1	10
DN25	SO-SDN25-E1 •	External thread R1	4
DN25	SO-SDN25-E11/4 •	External thread R¼	4

FITTINGS WITH CYLINDRICAL CONNECTION

Quick fitting coupling with cylindrical connection piece.

Stainless steel VA	Code	Connection	Pieces/carton
DN16	SO-SDN16-Z18 •	Cylindrical connection piece Ø 18mm	10
DN20	SO-SDN20-Z18 •	Cylindrical connection piece Ø 18mm	10

CLAMPING RING

Clamping ring for quick fitting coupling

Stainless steel VA	Code	Connection	Pieces/carton
DN16	SO-SDN16-CR •	Clamping ring	50
DN20	SO-SDN20-CR •	Clamping ring	50
DN25	SO-SDN25-CR •	Clamping ring	50

Passive Fire Protection

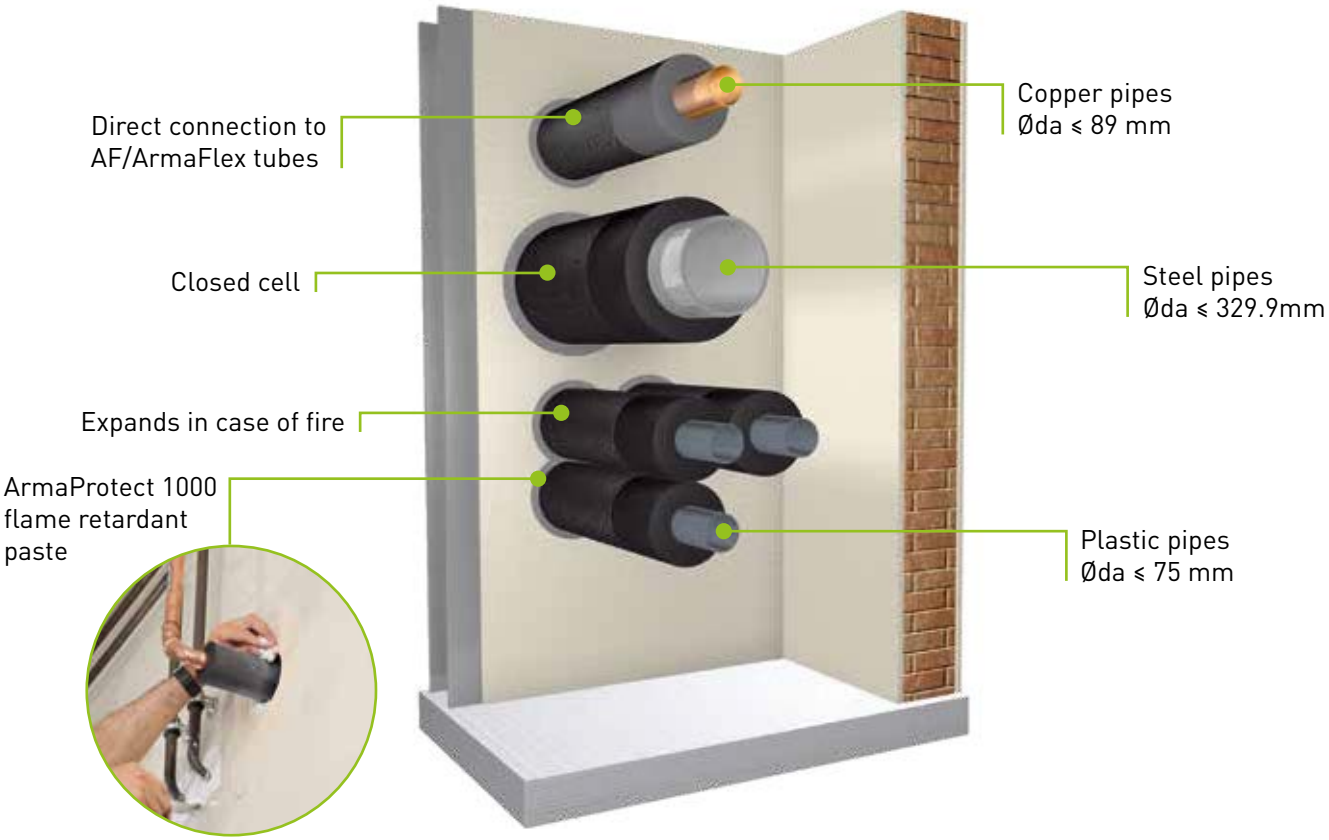
ArmaFlex® Protect

THE ALL-IN-ONE FLEXIBLE FIRE BARRIER FOR CONDENSATION CONTROL & SYSTEM COMPATIBILITY AT PIPE PENETRATIONS

- One solution for hot and cold applications
- For steel, copper and plastic pipes
- Covers rigid-walls, ceilings and light-walls
- Quick and easy installation
- Up to 120 minutes fire resistance according to EN13501

CE

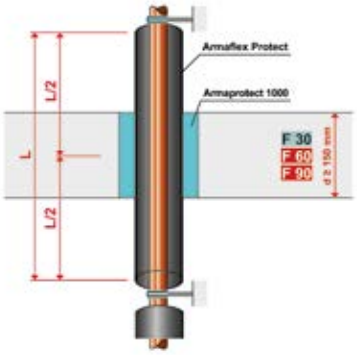
PROPERTIES



FLEXIBLE WALL

RIGID WALL

RIGID CEILINGS



The purpose of installing ArmaFlex Protect is to provide technical insulation at the point of pipe penetrations to provide fire resistance in flexible and rigid walls as well as rigid ceilings. ArmaFlex Protect must be installed centered with the opening in the wall. The annular gap is filled with ArmaProtect 1000.

COMPLETE SYSTEM

- **ArmaFlex Protect**
- **ArmaProtect 1000**
- **ArmaProtect PP**
- **ArmaFlex Adhesive 520**

RANGE

TUBE

Tubes

SHEET

Continuous sheet (rolls)

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

Flexible fire protection and insulation for non-combustible pipes, combustible pipes and pipes containing combustible medium for use through fire-resistant walls and cellings (EI30 TO EI120).

Material type	Elastomeric foam based synthetic rubber.
Colour	Black
Applications	Insulation and 120 min fire protection barrier for non-combustible pipes up to 323mm and combustible pipes up to 75mm.
Special features	Armaflex Protect fulfils fire protection requirements irrespective of adjoining insulation

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+85˚C		
Min service temperature	-50˚C		
Thermal Conductivity			
	λ 0˚C ⩽ 0.056 W/(m·K)		Tested acc. to EN 12667 & EN ISO 8497
Water Vapour Diffusion Resistance			
	μ ≧ 7000	EU 5670	Tested acc.to EN 12086 & EN 13469
Fire Performance			
Reaction to fire			
Tubes	E_L		Classified acc. to EN 13501-1 Tested acc. to EN ISO 11925-2
Sheets	E		
Practical fire behaviour	Self-extinguishing, does not drip and does not spread flames.		
Fire resistance of structural element	R30 - R90 & EI30 - EI120	EU4384 D 4226 D 4305	Classified acc. to DIN 4102-11 & EN 1366-3
Other technical features			
UV resistance	Suitable for indoor use only.		
Storage & Shelf life	3 years from production date		Stored in dry rooms at normal relative humidity (50% to 70%) and ambient temperature (0˚C - 35˚C). Cartons to be stored horizontally. Minimum temperature for transport -50˚C frost-free storage before installation.

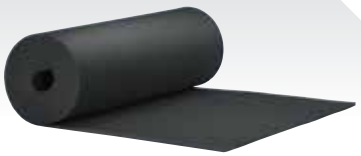
TUBES

Length - 2m, **Colour** - Black

Pipe max. Outside - Ø (mm)	Thickness (mm)	Code	m/carton
10	19	PRO-AX-19X010 •	18
12	19	PRO-AX-19X012 •	17
15	19	PRO-AX-19X015 •	16
16	20	PRO-AX-20X016 •	14
18	20	PRO-AX-20X018 •	13
20	20	PRO-AX-20X020 •	12
22	20	PRO-AX-20X022 •	12
25	20	PRO-AX-20X025 •	11
28	25	PRO-AX-25X028 •	9
32	25	PRO-AX-25X032 •	8
35	25	PRO-AX-25X035 •	8
40	25	PRO-AX-25X040 •	6
42	25	PRO-AX-25X042 •	6
48	25	PRO-AX-25X048 •	5
50	25	PRO-AX-25X050 •	5
54	25	PRO-AX-25X054 •	5
60	25	PRO-AX-25X060 •	4
64	25	PRO-AX-25X063 •	4
76	25	PRO-AX-25X076 •	4
89	25	PRO-AX-25X089 •	4

CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - Black



Code	Roll Length (m)	Width (m)	Thickness (mm)	m²/carton	Rolls/carton
PRO-AX-13MM/E	6	0.5	13	2X3	2

Other information
• Not a stock item
For sealing purposes at least two layers of sheet material must be installed

ArmaProtect 1000

QUICK AND EASY TO APPLY FIRESTOP FILLER FOR PIPE PENETRATIONS INSULATED WITH ARMAFLEX PROTECT

- Ready to use straight from the tub
- Easy to apply by hand - no tools or formwork needed
- Resealable container, no material waste
- System solution for pipe and cable penetrations
- Non-combustible A1 EN 13501
- Melting point > 1000 °C

RANGE

FIRE STOP FILLER

TECHNICAL DATA

Armaprotect 1000 firestop filler is a practical, ready-to-use, mortar with excellent fire-protection, thermal insulation and noise control properties. It's self-hardening and very easy to apply by hand. Use to seal around gaps, with no formwork required and easy to apply in tight spaces

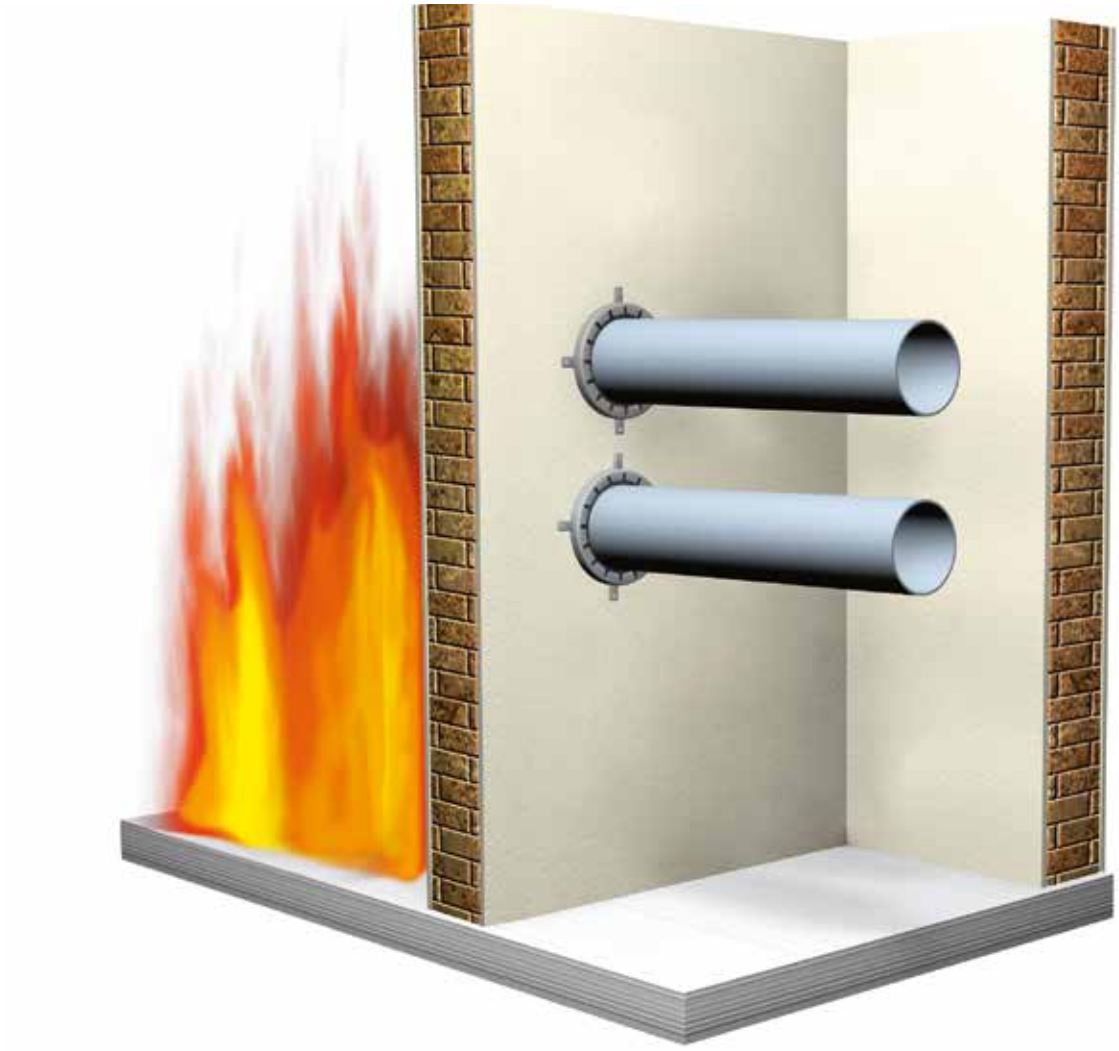
Material type	High temperature resistant mortar with hollow microspheres and inorganic binding agents.
Colour	Light grey
Applications	Ideal system solution for sealing annular gaps in applications using ArmaFlex Protect, ArmaProtect 1000 can be used for penertrations with individual pipes and electricity cables. Only for indoor use.
Special features	Can be used in combination with ArmaFlex Protect systems.
Assembly	The ready-to-use, ArmaProtect 1000 firestop filler is supplied in tubs and can be applied using either a spatula or by hand. The substrate must be dry and free of dust and grease. The room temperature must not fall below -5°C during application. Once it has dried hard, the firestop filler can be sanded, drilled and cut.

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Thermal Conductivity			
	λ 10°C ⩽ 0.052 W/(m·K)	EU 5738	Tested acc. to EN 12667
Fire Performance			
Reaction to fire	Non combustible (UK), Euroclass A1	D5738	Classified acc. to EN 13501-1 Tested acc. to EN ISO 1182 & EN ISO 1716
Other technical features			
Density	Approx 180kg/m^3 (after drying)		
Compression strengh	0.4 N/mm^2		Tested acc. to EN 1015-11
Drying time	48 hours		Drying time takes longer in high humidity, low temperature and limited air flow condidtions.
Melting point	>1000°C	D5738	Tested acc. to DIN 4102-17
Water-soluble chlorides	<0.001%		Tested acc. to DIN EN 1015-17
Yield	1:1		
Storage & Shelf life	24 months in original sealed container		Store in a cool, dry place. Protect from temperatures below +5°C.

ARMAPROTECT 1000

Code	Packaging Units	Pieces/carton
PRO-1000-0.5B	0.5l	20
PRO-1000-1.0	1l	27
PRO-1000-2.5	2.5l	12
PRO-1000-5.0	5l	8

ArmaProtect PP



THE FIRE SLEEVE TO STOP FIRE SPREADING THROUGH PLASTIC PIPES INSULATED WITH ARMAFLEX

- Ready to use straight from the tub
- Approved for plastic pipes with ArmaFlex insulation
- Approved for beverage pipes (python)
- Easy to apply and meets regulations
- Free of heavy metal bonds

RANGE

ARMAPROTECT PP SLEEVES

ARMAPROTECT PP MOUNTING KIT

TECHNICAL DATA

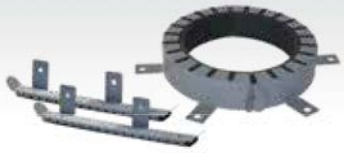
Pipe collar for plastic pipe penetration seals to meet fire resistance class R90.

Material type	Solid metal sleeve equipped with several layers of high performance intumescent material. In the event of a fire, the intumescent material expands with high pressure to hermetically seal the opening against flames and smoke.
Colour	Light grey
Applications	Fire resistant collar for pipe penetrations in solid walls and ceilings made of concrete, aerated concrete or lightweight partition walls. Two pieces required for walls, one piece for ceilings.
Special features	Identification sign included. Particulary suited for multiple-use beverage lines (python tubing).
Assembly	For fire resistant seals on combustible supply / drainage pipes with/without insulation: • PVC, PP PE-HD, LDPE, PB, PE-X, ABS, ASA pipes up to Ø 200mm • Multi-layer composite pipes up to Ø 110mm • Pipe-in-pipe system up to Ø 160mm • PVDF pipes up to Ø 90mm • Sound-reducing wastewater pipes (Friaphon, Geberit dB20 + Silent PP, Georg Fischer COOL-FIT, POLO-KAL NG + XS, Rehau Raupiano plus, Wavin AS + Si Tech, Ostendorf Skolan dB) up to Ø 200mm • Beverage lines up to Ø 108mm • PE/PVC pipes with AF/ArmaFlex Class 0 or SH/ArmaFlex insulation up to Ø 160mm Can be installed on pipe sleeves/inclined penetrations.
Remarks	The collar may only be used for the pipe materials and dimensions defined by the general building authorities.

Property	**Value/Assessment**		**Test**	**Standards & Remarks**
Fire Performance				
Fire resistance of structural element	Wall penetrations	≤R90	D3968	Tested acc. to DIN 4102, Part 11
	Ceiling penetrations			
Other technical features				
Start of reaction / volume expansion	Approx. + 170°C / 18 times in the event of fire			
Health aspects	Free of fibres and compounds containing heavy materials.			

ARMAPROTECT PP SLEEVES

For flameproof sealing of combustible supply and sewage pipes with/without insulation.



Code	Height	Outer Ø pipe or insulation (mm)	Pieces/carton
PRO-PP-032	26	32/34	5
PRO-PP-040	26	40/42	5
PRO-PP-050	26	50/52	5
PRO-PP-063 •	26	63/65	10
PRO-PP-075	26	75/77	10
PRO-PP-090	26.6	90/92	10
PRO-PP-110	26.6	110/112	10
PRO-PP-125 •	40	125	2
PRO-PP-140 •	40	140	2
PRO-PP-160 •	40	160	2
PRO-PP-200 •	40	200	2

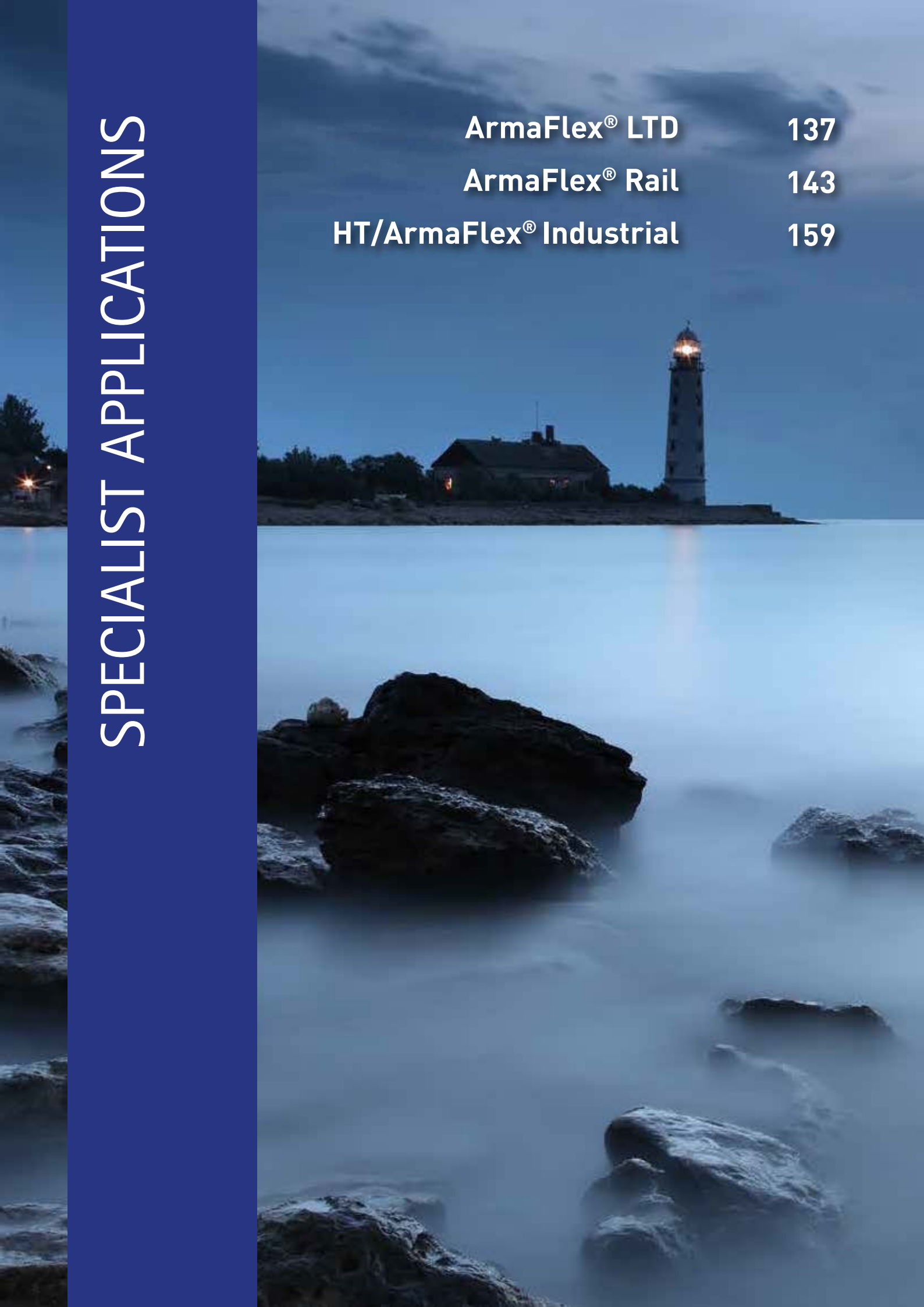
ARMAPROTECT PP MOUNTING KIT

Accessories for fixing ArmaProtect collars through solid walls and ceilings.

Code	For Armaprotect PP	Pieces/carton
PRO-PP-032-052	32-52	1
PRO-PP-063-125	63-125	1
PRO-PP-140-160	140-160	1
PRO-PP-180-200	180-200	1

Other information
• Not a stock item

SPECIALIST APPLICATIONS



ArmaFlex® LTD

FLEXIBLE INSULATION FOR CRYOGENIC AND LOW TEMPERATURE APPLICATIONS DOWN TO -180 °C

- Insulation that maintains its flexibility at very low temperatures
- Reduces the risk of crack development and propagation
- Reduces the risk of corrosion under insulation (CUI)
- Protects against mechanical impact and shock
- Low thermal conductivity
- Low glass transition temperature
- Easy installation even for complex shapes
- Less wastage compared to rigid / pre-fabricated pieces

TUBE

Pre-covered continuous sheet (rolls), pre-covered continuous self-adhesive sheet (rolls)

SHEET

Self-adhesive tape

ANTI-ABRASIVE FOIL

Self-adhesive tape

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex HT625 adhesive
p. 234

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

Armaflex LTD is a flexible, high density and mechanically robust, closed cell cryogenic thermal insulation material based on extruded elastomeric foam. The product has been specially developed for use on the import/export pipelines and process areas of LNG facilities.

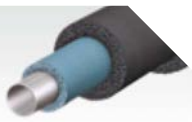
Material type	Synthetic Diene Terpolymer based rubber foam. Factory made flexible elastomeric foam (FEF) according to EN 14304.
Colour	Blue
Material special information	ArmaFlex LTD is suitable for a range of operating conditions down to -180˚C including liquefied natural gas (LNG) installations. However, it is not recommended for application on process pipelines and equipment carrying liquid oxygen or to gaseous oxygen lines and equipment running above 1.5MPa (218 psi) pressure or running above +60˚C (+140˚F) operating temperature.
Applications	Insulation/Protection for pipes, tanks, vessels (incl. elbows, flanges etc) in petrochemical, industrial gas and agricultural chemical production plants. Product specially designed for use in import/export pipelines and process areas of LNG facilities.
Special features	A high-performance thermal insulation material designed to meet the demands of cryogenic-temperature environments. ArmaFlex LTD is part of the ArmaFlex Cryogenic multi-layer configuration, providing low temperature flexibility to the system.
Assembly	For industrial applications it is recommended to consult the relevant Armacell installation instructions and application manuals. Please consult our customer service centre.
Remarks	EN 14304 (harmonized construction product standard for FEF) Lloyds approval.

Property	**Value/Assessment**									**Test**	**Standards & Remarks**
Temperature Range											
Max service temperature	+110˚C (+230˚F)										Tested acc to EN 14706, EN 14707 & EN 14304
Min service temperature	-180˚C (-292˚F)										
Thermal Conductivity											
Tube and Sheets (25mm)	$\lambda_d \leq 0.040$ W/(m·K) at 0˚C									EU 5698	Declared acc. to EN ISO 13787 Tested acc. to EN12667 & EN ISO 8497 (Equivalent methods ASTM C177 & C518
	θ_m	-180	-100	-50	0	+50	+100	+110	˚C		
	$\lambda_d \leq$	0.031	0.039	0.040	0.040	0.044	0.053	0.056	[W/(m·K)]		
Equation of declared thermal conductivity as a function of temperature	$\lambda_d(\theta_m)=0.04+3x10^{-5}x\theta_m+6x10^{-7}x\theta_m^2+4x10^{-9}x\theta_m^3$ W/(m·K), where θ_m is mean temperature in ˚C										
Water Vapour Diffusion Resistance											
	For details on system performance please contact our customer service centre.										
Fire Performance											
Reaction to fire	Surface spread of flames Euroclass E									ES 6385	Classified acc. to EN 13501-1 Tested acc. to EN 13823 EN ISO 11925-2
International standards	Class A < 25 flame spread index									ES 6723	Tested acc. to ASTM E84
	Class 1									ES 6141 ES 6658	Tested acc. to BS 476 part 7 Approved by Lloyds
Practical	Self-extinguishing, does not drip, does not spread flames.										

Property	Value/Assessment	Test	Standards & Remarks
Mechanical properties			
Compression deflection	≥ 10kPa at 25% deflection ≥ 1.5 psi		Tested acc. to ISO 6916-1 (equivalent method ASTM D1056)
Corrosion mitigation			
Leachable (water-soluble) chlorides	≤ 80 ppm (mg/kg or µg/g)		Tested acc. to EN 13468 &ASTM C871
pH-value	7 - 9		Tested acc. to ISO 10523
Other technical features			
Density	65 - 80kg/m^3 4.1 - 5lb/ft^3		Tested acc. to ISO 845 & ASTM D1622
Dimensions & tolerances	In accordance with EN 14304. For detailed values please refer to product range table.		Tested acc. to EN 822, EN 823 & EN 13467
Water resistance	In all industrial applications the outer layer of the material must be protected with an adequate covering such as Arma-Chek R, metal jacketing or preformed UV-cured GRP (Glass-Reinforced Plastic) cladding. For further details please contact our customer service centre.		
Health aspects	Neutral, MSDS available on request.		
Water absorption	≤ 0.1% by volume (total submersion for 2 hours)		Tested acc. to ASTM C209
Closed cell content	≥ 90% declared on the basis of the water absorption test.		
Glass transition temperature	Below -70˚C (-94F)		
Application conditions	Ambient temperature: +5˚C to +35˚C Max: relative humidity: 80%		
sealing & adheshion	ArmaFlex adhesive 520 or HT625 shall be used for reliable adhesion of joints and seams.		
Storage & shelf life	3 years		Material shall be stored indoors, in clean dry conditions, away from direct sunlight.

TUBES

Length - 2m



Steel pipes					25mm INSULATION THICKNESS	
Nominal Pipe size (")	Nominal Ø	Outside Ø (mm)	Pipe max. Outside Ø (mm)	Inner Ø min/ max (mm)	Code	m/carton
⅜	10	17.2	18	19.5 - 21	LTD-25X018 •	36
½	15	21.3	22	23.5 - 25	LTD-25X022 •	32
¾	20	26.9	28	29.5 - 31.5	LTD-25X028 •	24
1	25	33.7	35	36.5 - 38.5	LTD-25X035 •	24
1¼	32	42.4	42.4	44 - 46	LTD-25X042 •	20
1½	40	48.3	48.3	50 - 52	LTD-25X048 •	18
2	50	60.3	60.3	62 - 64	LTD-25X060 •	12
2½	65	76.1	76.1	78 - 80	LTD-25X076 •	10
3	80	88.9	89	91 - 94	LTD-25X089 •	8

SHEET

Code	Thickness (mm)	Roll length (m)	m²/carton
LTD-25-99/E •	25	4	4

ANTI-ABRASIVE FOIL

Colour - silver, aluminium vapour barrier foil, **Thickness** - 12 µ

Code	Width (mm)	Roll length (m)	Rolls/carton	m²/carton
LTD-1/50-ALU •	1,000	50	1	50

Other information
• Not a stock item

ArmaFlex® Rail

THE WORLD'S FIRST CLOSED-CELL INSULATION TO MEET EN 45545-2 FIRE PROTECTION REQUIREMENTS

- The leading and most innovative closed-cell thermal insulation available to the railway industry worldwide
- High-tech insulation with advanced fire protection for railway vehicles
- Closed cell insulation with built-in water vapour barrier reduces risk of corrosion under insulation (CUI)
- Extremely low smoke density, no burning droplets in the event of fire
- Reduced risk of mould and mildew contributes to improved indoor air quality
- First flexible closed-cell insulation to meet hazard level 2 & 3 according to EN 45545

CE

Armaflex® Rail
EN 45545
★★★
CERTIFIED

HAZARD LEVEL OF A VEHICLE

Fire safety requirements are part of the European Directive on the interoperability of the trans-European high-speed rail system. The seven-part standard EN 45545 'Railway applications - Fire protection on railway vehicles' has been developed to harmonise classifications and fire testing.

EN 45545 introduces a new concept – the hazard level of a vehicle (HL). This is obtained by combining the operation and design categories of the vehicle:

Operation category	Design category			
	N: Standard vehicles	A: Automatic vehicles	D: Double decked vehicles	S: Sleeping & couchette cars
Surface operation	HL1	HL1	HL1	HL2
Metro - Tunnel operation	HL2	HL2	HL2	HL2
Inter-City Tunnel operation	HL2	HL2	HL2	HL3
Metro - Tunnel operation, restricted	HL3	HL3	HL3	HL3

EN 45545-2:2013 classifies all onboard materials in groups which have to fulfil specific requirement sets which often includes several test methods. The most important fire tests used in EN 45545-2 are the flame propagation, the cone calorimeter and the smoke and toxicity tests. For requirement set R1 they are all based on radiant panels with heat fluxes 50 kW/m².

REQUIREMENTS FOLLOW THE FIRST PRINCIPLES:

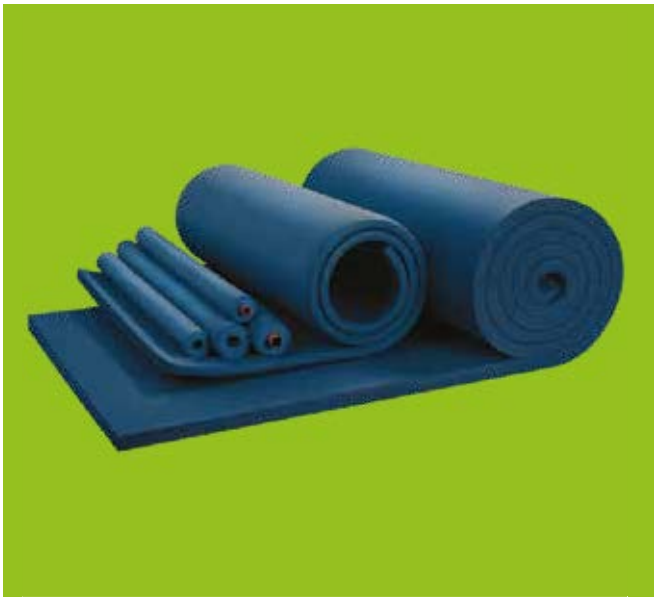
- Flame Spread
- Ignitability
- Heat Release
- Smoke Emissions
- Toxic Gas Emissions

Requirment set	Test method reference	Parameter unit	Requirement definition	HL1	HL2	HL3
R1 (for insulation material)	Spread of flame ISO 5658-2	CFE kWm^{-2}	Minimum	20	20	20
	Heat release, smoke production & mass loss rate ISO 5660-1	MAHRE kWm^{-2}	Maximum		90	60
		Ds(4) dimensionless	Maximum	600	300	150
		V0F4 Minutes	Maximum	1200	600	300
		CITG dimensionless	Maximum	1.2	0.9	0.75

ARMAFLEX RAIL SD

The first closed cell insulation for increased people & fire safety in railway vehicles.

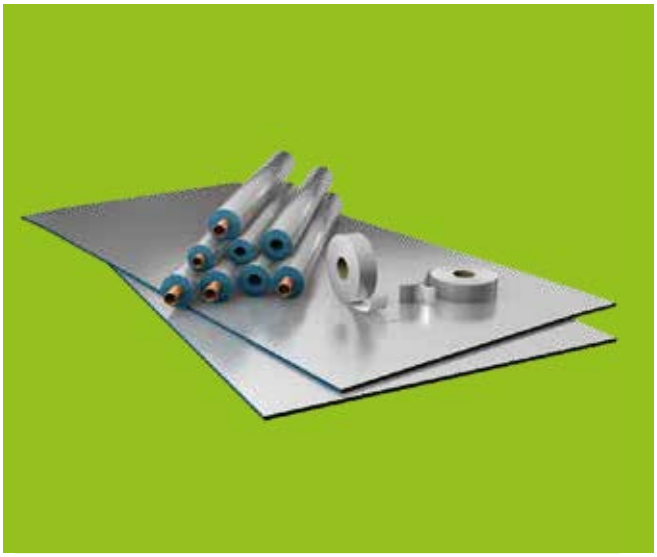
- Extremely low smoke density and superior fire behaviour
- Built-in Microban® antimicrobial protection reduces mould and bacteria growth
- Complies with most international railway standards for insulation materials
  - EN 45545 – HL2, R1
  - NFPA 130
  - DIN 5510-2
  - GOST 12.1.044-89
  - United Nations ECE R-118 p. 6-8



ARMAFLEX RAIL SD- C

The first closed-cell insulation material for use in areas requiring the highest hazard level – HL3

- With Microban® antimicrobial product protection
- Excellent mechanical protection and high degree of stability under exposure to ultraviolet light
- Wash-down waterproof and easy to clean
- Meets highest hazard level requirements
  - EN 45545 – HL3, R1

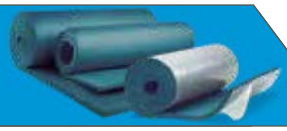


TUBE

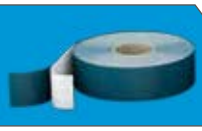
Tube, Pre-covered tube

SHEET

Continuous sheet, self-adhesive continuous sheet, self-adhesive pre-covered sheet



TAPE



RECOMMENDED PRODUCTS

For a complete installation

ArmaFix Ultima pipe supports
p. 63

ArmaFlex Ultima 700 adhesive
p. 232

ArmaFlex Ultima RS850 adhesive
p. 232

ArmaFlex SF Cleaner
p. 238

TECHNICAL DATA

Armaflex Rail SD A highly flexible, closed cell insulation foam with improved retardant properties, low smoke generation and built in Mircroban® antimicrobial protection for railway vechicles.	
Material type	Elastomeric foam based rubber; manufactured with Armaprene® patented technology; US patent no. 8 163 811, EU patent no. 2 261 305.
Colour	Blue
Material special information	The pressure-sensitive adhesive coating is based on modified acrylate basis with mesh structure and covered with polyethylene foil. Traces of silicone can be found on the protection paper/foil used to protect self-adhesive closures.
Applications	Insulation / protection for air ducts and pipes (incl. elbows, fittings, flanges etc.) of air-conditioning / refrigeration systems to prevent condensation.
Remarks	ArmaFlex® Rail SD is not designed for outdoor applications exposed to sunlight / not UV stable.

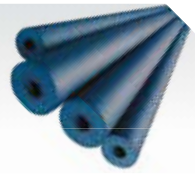
Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110°C (+85°C if sheet or tape is glued to the object with its whole surface)	EU5654	Tested acc. to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C		
Thermal Conductivity			
	λ 0°C ≤ 0.040 W/(m·K) [40+0.1· ϑ_m + 0.0009· ϑ_m^2]/1000	EU 5654	Declared acc. to EN ISO 13787 Tested acc. to EN 12667 & EN ISO 8497
Water vapour diffusion resistance			
	μ ≥ 5000	EU 5654	Tested acc.to EN 12086 & EN 13469
Fire Performance			
Reaction to fire			
Hazard levels	HL2, R1 (3 mm sheets & tape: HL3, R1)	EU 5838 EU 5786 EU 6268 EU 6422	Declared acc. to EN 45545-2
Fire behaviour & fire side effects	S4, ST2, SR2, FED < 1	D 5882	Classified acc to DIN 5510-2 Tested acc to DIN 54837
Russian Federation Certificate of conformity	G1, B2, D2, T2	RUS 6866	Declared acc to: GOST 12.1.044-89
Burning behaviour for use in motor vecicles (ECE Regulations)	Passed Annex 9, Passed Annex 6,7,8	D 5842 D 5612 D5578	ECE R-118 p. 6-8, ECE -R18 annex.9
NFPA 130 American fire test to railway components	Is≤ 25 Ds(4.0) ≤100	D 6905 D 6906 D 6907 D 6908	Classified acc to NFPA 130:2014 Tested acc to ASTM E 162 & ASTM E 662
Other Fire Performance			
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames		
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1	EU 5654	Tested acc. to EN 822, EN 823, EN 13467
Health aspects			
	Fulfills hygiene requirements of Russian Rail Industry	RUS 6567	
Storage & Shelf life	Self-adhesive tapes, self-adhesive sheets: 1 year		Store in dry, clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

ArmaFlex Rail SD-C A highly flexible, closed cell insulation foam with improved retardant properties, low smoke generation and built in Mircroban® antimicrobial protection for railway vechicles.	
Material type	Elastomeric foam based rubber with high-tech coating; manufactured with Armaprene® patented technology; US patent no. 8 163 811, EU patent no. 2 261 305.
Colour	Blue with silver metallic look coating.
Material special information	The pressure-sensitive adhesive coating is based on modified acrylate basis with mesh structure and covered with polyethylene foil. Traces of silicon can be found on the protection paper/foil used to protect self-adhesive closures.
Applications	Insulation / protection for air ducts and pipes (incl. elbows, fittings, flanges etc.) of air-conditioning / refrigeration equipment to prevent condensation.
Special features	The covering offers an excellent durability, even under UV exposure when used for outdoor applications and is easy to clean.
Remarks	When dimensioning the insulation thickness, please calculate with an external suface coefficient of 8 W/(m^2·K).

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temerature Range			
Max service temperature	+110°C (+ 85°C if sheet or tape is glued to the object with its whole surface)		Tested acc. to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C		
Thermal Coductivity			
	λ 0°C < 0.040 W/(m·K) [40+0.1 · ϑ_m + 0.0009 · ϑ_m^2]/1000		Declared acc. to EN ISO 13787 Tested acc. to EN 12667 & EN ISO 8497
Water vapour diffusion resistance			
	μ ⩾ 10000		Tested acc.to EN 12086 & EN 13469
Fire Performance			
Reaction to fire			
Hazard levels	HL3, R1	EU 6362 EU 6253	Declared acc. to EN 45545-2
Other Fire Performance			
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames		
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1		
Storage & Shelf life	Self-adhesive tapes, self-adhesive sheets: 1 year		Can be stored in dry, clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

ARMAFLEX RAIL SD TUBE

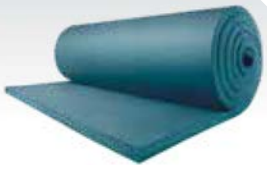
Width - 2m, **Colour** - Blue



Pipe max. Outside - Ø (mm)	9mm INSULATION THICKNESS			13mm INSULATION THICKNESS	
	Code	m/carton	£/m	Code	m/carton
12	RA-09X012	192	4.24	RA-13X012	130
15	RA-09X015	164	4.34	RA-13X015	112
18	RA-09X018	150	4.55	RA-13X018	98
22	RA-09X022	122	4.75	RA-13X022	88
28	RA-09X028	90	4.98	RA-13X028	64
35	RA-09X035	68	5.61	RA-13X035	56
42	RA-09X042	56	6.16	RA-13X042	48

ARMAFLEX RAIL SD CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - Blue



Code	Thickness (mm)	Roll Length (m)	m²/carton
RA-03-99/E	3	30	30
RA-06-99/E	6	15	15
RA-09-99/E	9	10	10
RA-13-99/E	13	8	8
RA-19-99/E	19	5	5
RA-25-99/E	25	4	4

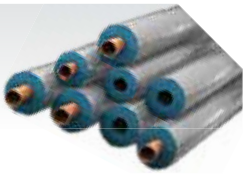
ARMAFLEX RAIL SD SELF-ADHESIVE CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - Blue

Code	Thickness (mm)	Roll Length (m)	m²/carton
RA-03-99/EA	3	30	30
RA-06-99/EA	6	15	15
RA-09-99/EA	9	10	10
RA-13-99/EA	13	8	8
RA-19-99/EA	19	5	5
RA-25-99/EA	25	4	4

ARMAFLEX RAIL SD-C PRE-COVERED TUBE

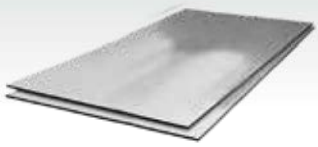
Width - 1m, **Colour** - Blue, **Covering Colour** - Silver



Pipe max. Outside - Ø (mm)	Inner Ø min/max (mm)	9mm INSULATION THICKNESS	
		Code	m/carton
12	13 - 14.5	SDC-09X012	96
15	16 - 17.5	SDC-09X015	82
18	19 - 20.5	SDC-09X018	75
22	23 - 24.5	SDC-09X022	61
28	29 - 30.5	SDC-09X028	45
35	36 - 38	SDC-09X035	34
42	43.5 - 45.5	SDC-09X042	28

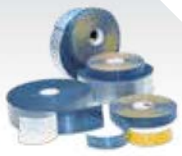
ARMAFLEX RAIL SD-C SELF-ADHESIVE PRE-COVERED SHEET

Width - 1m, **Colour** - Blue, **Covering Colour** - Silver



Code	Thickness (mm)	m²/carton
SDC-06MM/A	6	50
SDC-09MM/A	9	34
SDC-13MM/A	13	24
SDC-19MM/A	19	16
SDC-25MM/A	25	12

TAPE

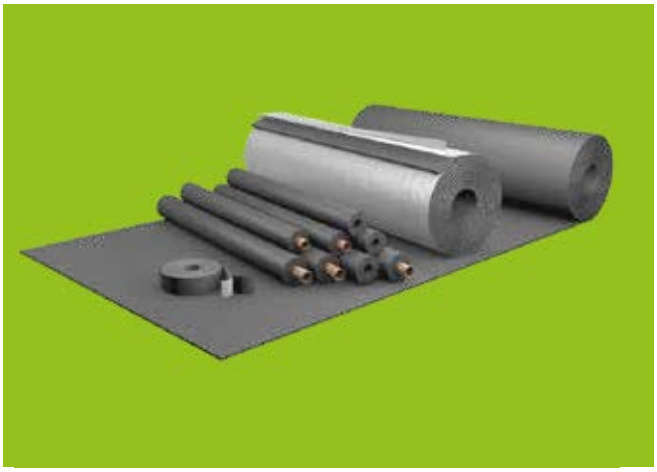


Code	Colour	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
RA-TAPE	Blue	50	15	3	12
ACH-PSATAPES-30	Silver	30	25	0.08	10
ACH-PSATAPES-50	Sliver	50	50	0.08	6

ARMAFLEX RAIL ZH

The first halogen-free, closed-cell insulation material to achieve the classification HL2, R1 under EN 45545.

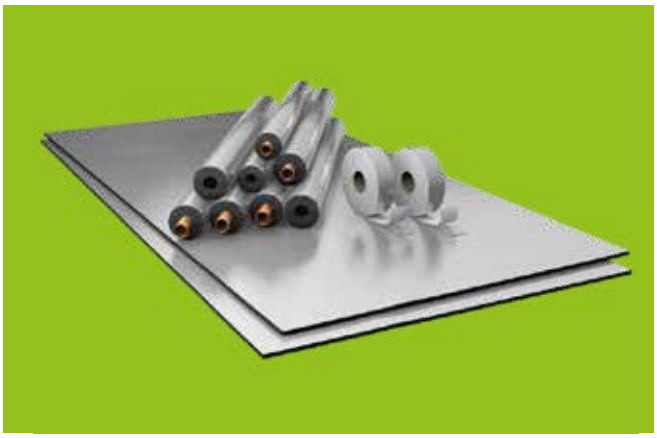
- The protective halogen-free insulation to reduce corrosive effects and smoke toxicity in a fire
- Low smoke density, superior fire behaviour
- Dust and fibre free material with low thermal conductivity
- High-tech insulation with built-in fire protection for railway vehicles
  - EN 45545 – HL2, R1



ARMAFLEX RAIL ZH – C

The first halogen-free, closed-cell insulation material for rail applications with the highest hazard level requirements.

- Halogen-free insulation reduces toxicity and corrosive effects on people and equipment
- Resistant to UV, salt water and chemicals
- Wash-down waterproof and easy to clean
- The revolutionary insulation product has a factory-applied, silver-metallic look, reinforced coating for increased hygienic requirements
  - EN 45545 – HL3, R1



RANGE

TUBE

Tube, Pre-covered tube

SHEET

Continuous sheet, self-adhesive continuous sheet, self-adhesive pre-covered sheet

TAPE

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

Armaflex Rail ZH Halogen free, flexible closed-cell insulation foam with improved fire retardant properties and low smoke generation for railway vehicles.	
Material type	Elastomeric foam based on synthetic rubber.
Colour	Dark grey
Material special information	The pressure-sensitive adhesive coating is based on modified acrylate basis with mesh structure and covered with polyethylene foil. Traces of silicon can be found on the protection paper/foil used to protect self-adhesive closures.
Applications	Insulation / protection for air ducts and pipes (incl. elbows, fittings, flanges etc.) of air-conditioning / refrigeration equipment to prevent condensation.
Special features	Without halogens (chloride, bromide) acc. to DIN/VDE 0472, part 815. Fulfils DIN 1988 Parts 200.
Remarks	Armaflex® Rail ZH is not designed for applications exposed to sun light and is not UV stable.

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110°C (+85°C if sheet or tape is glued to the object with its whole surface)		Tested acc. to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C		
Thermal Conductivity			
	λ 0°C ≤ 0.040 W/(m·K) [40+0.1· ϑ_m + 0.0009· ϑ_m^2]/1000		Declared acc. to EN ISO 13787 Tested acc. to EN 12667 & EN ISO 8497
Water Vapour Diffusion Resistance			
	$\mu \geq 1000$		Tested acc.to EN 12086 & EN 13469
Fire Performance			
Reaction to fire			
Hazard levels	HL2, R1	EU 5816 EU 5857 EU 5896 EU 6665	Declared acc. to EN 45545-2
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames		
Other technical features			
Storage & Shelf life	Self-adhesive tapes, self-adhesive sheets: 1 year		Stored in dry clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

Armaflex Rail ZH-C Halogen free, flexible closed-cell, pre-covered insulation foam with improved fire retardant properties and low smoke generation for railway vehicles.	
Material type	Elastomeric foam based on synthetic rubber with patented high-tech multi-layer coating. EU patent no. 2 522 502.
Colour	Dark grey with silver metallic look covering.
Material special information	The pressure-sensitive adhesive coating is based on modified acrylate basis with mesh structure and covered with polyethylene foil. Traces of silicon can be found on the protection paper/foil used to protect self-adhesive closures.
Applications	Insulation / protection for air ducts and pipes (incl. elbows, fittings, flanges etc.) of air-conditioning / refrigeration equipment to prevent condensation.
Special features	Without halogens (chloride, bromide) acc. to DIN/VDE 0472, part 815. Fulfils DIN 1988 Parts 200. The covering offers an excellent durability even under UV exposure when used for outdoors applications. The insulation system is designed for easy cleaning.
Remarks	When dimensioning the insulation thickness, please calculate with an external surface coefficient of 8 W/(m^2·K).

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110°C (+85°C if sheet or tape is glued to the object with its whole surface)		Tested acc. to EN 14706, EN 14707 & EN 14304
Min service temperature	-50°C		
Thermal Conductivity			
	λ 0°C ≤ 0.040 W/(m·K) $[40+0.1 \cdot \vartheta_m + 0.0009 \cdot \vartheta_m^2]/1000$		Declared acc. to EN ISO 13787 Tested acc. to EN 12667 & EN ISO 8497
Water Vapour Diffusion Resistance			
	$\mu \geq 10000$		Tested acc.to EN 12086 & EN 13469
Fire Performance			
Reaction to fire			
Hazard levels	HL3, R1	EU 6364 EU 5818	Declared acc. to EN 45545-2
Practical fire behaviour	Self-extinguishing, does not drip, does not spread flames		
Other technical features			
Storage & Shelf life	Self-adhesive tapes, self-adhesive sheets: 1 year		Stored in dry clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

ARMAFLEX RAIL ZH TUBE

Width - 2m, **Colour** - Dark grey,

Pipe max. Outside - Ø (mm)	Inner - Ø min/max (mm)	9mm INSULATION THICKNESS	
		Code	m/carton
12	13 - 14.5	ZH-09X012	192
15	16 - 17.5	ZH-09X015	164
18	19 - 20.5	ZH-09X018	150
22	23 - 24.5	ZH-09X022	122
28	29 - 30.5	ZH-09X028	90
35	36 - 38	ZH-09X035	68
42	43.5 - 45.5	ZH-09X042	56

ARMAFLEX RAIL ZH CONTINUOUS SHEET (ROLLS)

Colour - Dark grey

Code	Thickness (mm)	Roll Length (m)	m²/carton
ZH-03-99/E	3	30	30
ZH-06-99/E	6	15	15
ZH-10-99/E	10	10	10
ZH-13-99/E	13	8	8
ZH-19-99/E	19	6	6
ZH-25-99/E	25	4	4

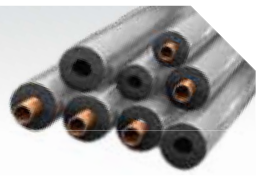
ARMAFLEX RAIL ZH SELF-ADHESIVE CONTINUOUS SHEET (ROLLS)

Colour - Dark grey

Code	Thickness (mm)	Roll Length (m)	m²/carton
ZH-03-99/EA	3	30	30
ZH-06-99/EA	6	15	15
ZH-10-99/EA	10	10	10
ZH-13-99/EA	13	8	8
ZH-19-99/EA	19	6	6
ZH-25-99/EA	25	4	4

ARMAFLEX RAIL ZH-C PRE-COVERED TUBE

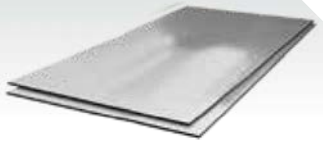
Width - 1m, Colour - **Dark grey**, **Covering Colour** - Silver



Pipe max. Outside - Ø (mm)	Inner - Ø min/max (mm)	9mm INSULATION THICKNESS	
		Code	m/carton
12	13 - 14.5	ZHC-09X012	96
15	16 - 17.5	ZHC-09X015	82
18	19 - 20.5	ZHC-09X018	75
22	23 - 24.5	ZHC-09X022	61
28	29 - 30.5	ZHC-09X028	45
35	36 - 38	ZHC-09X035	34
42	43.5 - 45.5	ZHC-09X042	28

ARMAFLEX RAIL ZH-C SELF-ADHESIVE PRE-COVERED SHEET

Width - 2m, **Colour** - Dark grey, **Covering colour** -Silver



Code	Thickness (mm)	m²/carton
ZHC-06MM/A	6	50
ZHC-10MM/A	10	34
ZHC-13MM/A	13	24
ZHC-19MM/A	19	16
ZHC-25MM/A	25	12

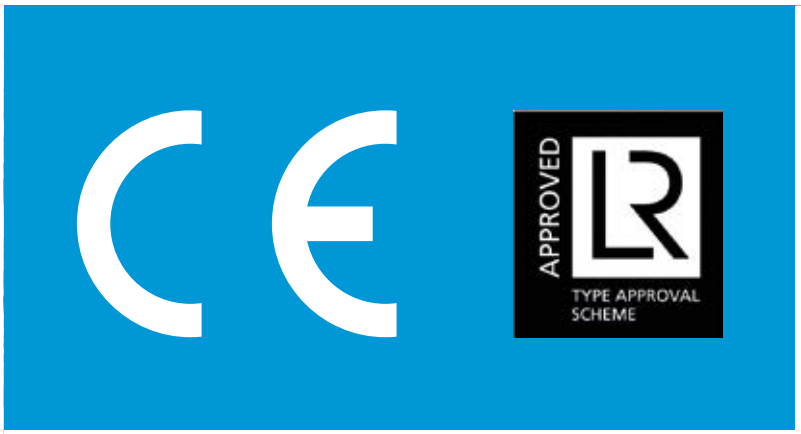
TAPE

Code	Colour	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
ZH-TAPE	Dark grey	50	15	3	12
ACH-PSATAPES-30	Silver	30	25	0.08	10
ACH-PSATAPES-50	Sliver	50	50	0.08	6

HT/ArmaFlex® Industrial

HIGH DENSITY INDUSTRIAL GRADE FEF INSULATION FOR ELEVATED TEMPERATURES

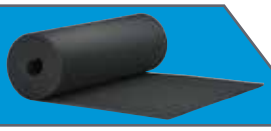
- High density and mechanically robust for superior stability and multi-layer applications
- Suitable for operating temperatures to +125°C
- Built-in vapour barrier reduces risk of corrosion under insulation (CUI)
- Retains physical characteristics throughout service life
- Low maintenance and repair costs
- Low leachable chloride content (< 30 ppm) to minimise stress corrosion cracking (SCC)
- Low thermal conductivity to minimise energy losses


APPROVED
TYPE APPROVAL
SCHEME

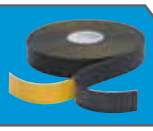
RANGE

TUBE
Tubes

SHEET
Continuous sheet (rolls)



TAPE



RECOMMENDED PRODUCTS
For a complete installation

ArmaFlex HT625 adhesive
p. 234

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

HT/ArmaFlex Industrial is a flexible, high density and mechanically robust, closed cell thermal insulation material based on extruded elastomeric foam. The product has been specially developed to provide enhanced thermal resistance for industrial applications.

Material type	Synthetic EPDM rubber based foam. Factory made flexible elastomeric foam (FEF) according to EN 14304.
Colour	Black
Special features	HT/ArmaFlex Industrial is resistant to elevated operating temperatures. The product is suitable for use in multi-layer applications including ArmaSound Industrial Systems.
Product range	Tubes, 13, 19 and 25mm thickness, for pipes outer diameters ranging from 18 to 89mm (⅜" to 3" NB). Sheets in rolls, 10, 13, 19 and 25mm thickness.
Applications	Thermal insulation / protection of pipes, vessels and ducts (incl. elbows, fittings, flanges etc.) in offshore, industrial (typically oil & gas) and process equipment facilities. HT/ArmaFlex Industrial is also used as a component of ArmaSound Industrial Systems to provide acoustic insulation on industrial pipework and vessels ensuring reduction of sound transmission.
Installation	For industrial applications it is recommended to consult the relevant Armacell installation instructions and application manuals. Please consult our Customer Service Centre.
Regulation / approval compliance	EN 14304 (harmonised construction product standard for FEF) IMO 2010 FTP (Fire Test Procedure) Code part 5 (surface flammability)

Property	**Value/Assessment**							**Standards & Remarks**
Temperature Range*[1]								
Service temperature	Max service temperature +125°C +257°F Min service temperature -50°C -58°F							Tested acc. to EN 14706, EN 14707 & EN 14304
Thermal Conductivity								
Declared thermal conductivity (metric units)	$\lambda_d \leq$ 0.041 W/(m·K) at 0°C							Declared acc. to EN ISO 13787 Tested according to EN 12667 and EN ISO 8497 (Equivalent methods ASTM C177 and C518)
	θ_m	-50	0	+50	+100	+125	[°C]	
	$\lambda_d \leq$	0.039	0.041	0.047	0.057	0.063	[W/(m•K)]	
	Equation of declared thermal conductivity as a function of temperature: $\lambda_d(\theta_m) = 0.04028 + 1.25 \times 10^{-4} \times \theta_m + 8 \times 10^{-7} \times (\theta_m - 30)^2$ W/(m•K), where θ_m is mean temperature in °C							
Declared thermal conductivity (imperial units)	$\lambda_d \leq$ 0.284 Btu•in/(h•ft²•°F) at 32 °F							
	θ_m	-58	+32	+122	+212	+257	[°F]	
	$\lambda_d \leq$	0.271	0.284	0.325	0.393	0.438	[Btu•in/(h•ft²•°F)]	
Water Vapour Diffusion (transmission) Resistance*[2]								
Water vapour diffusion resistance factor	$\mu \geq$ 3,000 (sheets)							Tested acc.to EN 12086 & EN 13469 (equivalent method ASTM E96)
Sheet	sheets: $\leq 6.51 \times 10^{-7}$ g/(m•s•Pa) ≤ 0.045 Perm inch							
Fire Performance & approvals								
International standards	Class A, < 25 Flame Spread Index*[3]							Tested acc. to ASTM E84
	Class 1							Tested acc. to BS 476 part 7
Reaction to fire (Euroclass)	D-s3, d0 / DL-s3, d0							Classified acc. to EN 13501-1 Tested acc. to EN 13823 (SBI) and EN ISO 11925-2
General fire performance	Self-extinguishing, does not drip, does not spread flames							
Density								
Density	sheets: 70 to 85 kg/m³ 4.4 to 5.3 lb/ft³ tubes: 60 to 75 kg/m³ 3.7 to 4.7 lb/ft³							Tested acc. to ISO 845, ASTM D1622

Property	Value/Assessment	Standards & Remarks
Acoustic performance		
Acoustic insertion loss*[4]	When used as part of a system: HT/ArmaFlex Industrial complies to ISO 15665 Classes A to C and Shell DEP 31.46.00.31-Gen Class D Minimum acoustic service temperature (interface temperature to pipework or underlying thermal insulation layers) is -40˚C (-40 ˚F)	Tested according to ISO 3741 (equivalent method ASTM E1222) Classified according to ISO 15665
Mechanical properties		
Compression deflection	⩾ 15 kPa ⩾2.2 psi at 25% deflection	Tested acc. to ISO 6916-1 (equivalent method ASTM D1056)
Tear strength	⩾ 0.4 kN/m ⩾2.3 lbf/in	Tested acc. to ISO 34-1*[5]
Corrosion mitigation		
Leachable (water soluble) chlorides	⩽ 30 ppm (mg/kg or µg/g)	Tested*[6] acc. to EN 13468 and ASTM C871
pH-value*[3]	7 to 9	Tested acc. to ISO 10523
Stress corrosion cracking	No cracks under magnifying glass on test coupons after evening, cleaning and rebending. *[7 & 3]	Tested acc. to ASTM C692
Other technical features		
Dimensional tolerances	According to EN 14304, for detailed values please refer to product range tables.	Tested according to EN 822, EN 823 and EN 13467
Weather resistance	In all industrial applications the outer layer of the material must be protected with an adequate covering like Arma-Chek R, metal jacketing or preformed UV-cured GRP (Glass Reinforced Plastic) cladding. For further information please consult our Customer Service Centre.	
Health aspects	Neutral, MSDS available on request	
Water absorption*[3]	⩽ 0.1% by volume (total submersion for 2 hours)	Tested acc. to ASTM C209
Closed cell content	⩾90% declared on the basis of the water absorption test	
Vacuum water absorption	⩽ 4% by mass total submersion for 2 x 180 seconds, vacuum pressure 17.2 kPa (2.5 psi)	Tested acc. to ASTM D1056
Application conditions*[8]	**Ambient temperature:** +5 °C to +35 °C, +41 F to +95 °F. **Max. relative humidity:** 80%	
Sealing and adhesion*[9]	ArmaFlex adhesive HT625 shall be used for reliable adhesion of joints and seams.	
Tape*[10]	HT/ArmaFlex tape can be used for application	
Storage	Material shall be stored indoors, in clean and dry conditions, away from direct sunlight	
Shelf (storage) life* [11]	Max 3 years	

1. For temperatures below or above those published please contact our Customer Service Centre to request the corresponding technical information.
2. For further information on water vapour transmission resistance of HT/ArmaFlex Industrial tubes please contact our Customer Service Centre.
3. Based on single test results which are not monitored in regular frequency. Can be used for information / reference only.
4. For further details on acoustic classes according to ISO 15665 please consult our leaflet on ArmaSound Industrial Systems.
5. Minimum value in Machine Direction (MD) and in Cross Direction (CD). Angle test piece with a nick.
6. Specimen preparation in accordance with EN 13486: neither cut nor blended. Test temperature +100°C, leaching time 0.5 hours as specified in the standard for product maximum service temperature.
7. The coupons from type 304 stainless steel sheet, 1.5 mm thick. 28 days drip test using deionized or distilled water at around +100 °C.
8. For environmental conditions outside the given range please contact our Customer Service Centre.
9. During storage of the product, blooming on the surfaces may occur, especially at wall thickness below 19 mm. This blooming does not affect the technical properties of the material, but can affect the adhesion properties. Therefore, the surface needs to be cleaned before adhesives can be applied.
10. For further information and application instructions please contact our Customer Service Centre.
11. 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.

TUBE

Length - 2m, Colour - Black

Steel pipes					13mm INSULATION THICKNESS	
Nominal Pipe size (“)	Nominal Ø	Outside Ø (mm)	Pipe max. Outside Ø (mm)	Inner Ø min/ max (mm)	Code	m/carton
⅜	10	17.2	18	19.5 - 21	HTI-13X018 •	98
½	15	21.3	22	23.5 - 25	HTI-13X022 •	84
¾	20	26.9	28	29.5 - 31.5	HTI-13X028 •	64
1	25	33.7	35	36.5 - 38.5	HTI-13X035 •	50
1¼	32	42.4	42.4	44 - 46	HTI-13X042 •	40
1½	40	48.3	48.3	50 - 52	HTI-13X048 •	32
		54	54	56 - 58	HTI-13X054 •	32
2	50	60.3	60.3	62 - 64	HTI-13X060 •	28
2½	65	76.1	76.1	78 - 80	HTI-13X076 •	24
3	80	88.9	89	91 - 94	HTI-13X089 •	18

Steel pipes					19mm INSULATION THICKNESS	
Nominal Pipe size (“)	Nominal Ø	Outside Ø (mm)	Pipe max. Outside Ø (mm)	Inner Ø min/ max (mm)	Code	m/carton
⅜	10	17.2	18	19.5 - 21	HTI-19X018 •	98
½	15	21.3	22	23.5 - 25	HTI-19X022 •	84
¾	20	26.9	28	29.5 - 31.5	HTI-19X028 •	64
1	25	33.7	35	36.5 - 38.5	HTI-19X035 •	50
1¼	32	42.4	42.4	44 - 46	HTI-19X042 •	40
1½	40	48.3	48.3	50 - 52	HTI-19X048 •	32
		54	54	56 - 58	HTI-19X054 •	32
2	50	60.3	60.3	62 - 64	HTI-19X060 •	28
2½	65	76.1	76.1	78 - 80	HTI-19X076 •	24
3	80	88.9	89	91 - 94	HTI-19X089 •	18

Steel pipes					25mm INSULATION THICKNESS	
Nominal Pipe size (“)	Nominal Ø	Outside Ø (mm)	Pipe max. Outside Ø (mm)	Inner Ø min/ max (mm)	Code	m/carton
⅜	10	17.2	18	19.5 - 21	HTI-25X018 •	98
½	15	21.3	22	23.5 - 25	HTI-25X022 •	84
¾	20	26.9	28	29.5 - 31.5	HTI-25X028 •	64
1	25	33.7	35	36.5 - 38.5	HTI-25X035 •	50
1¼	32	42.4	42.4	44 - 46	HTI-25X042 •	40
1½	40	48.3	48.3	50 - 52	HTI-25X048 •	32
		54	54	56 - 58	HTI-25X054 •	32
2	50	60.3	60.3	62 - 64	HTI-25X060 •	28
2½	65	76.1	76.1	78 - 80	HTI-25X076 •	24
3	80	88.9	89	91 - 94	HTI-25X089 •	18

CONTINUOUS SHEET (ROLLS)

Width - 1m, Colour - Black

Item	Nominal Thickness (mm)	Nominal Roll Length (m)	m^2/carton
HTI-10-99/E •	10	10	10
HTI-13-99/E •	13	8	8
HTI-19-99/E •	19	6	6
HTI-25-99/3.5 •	25	3.5	3.5

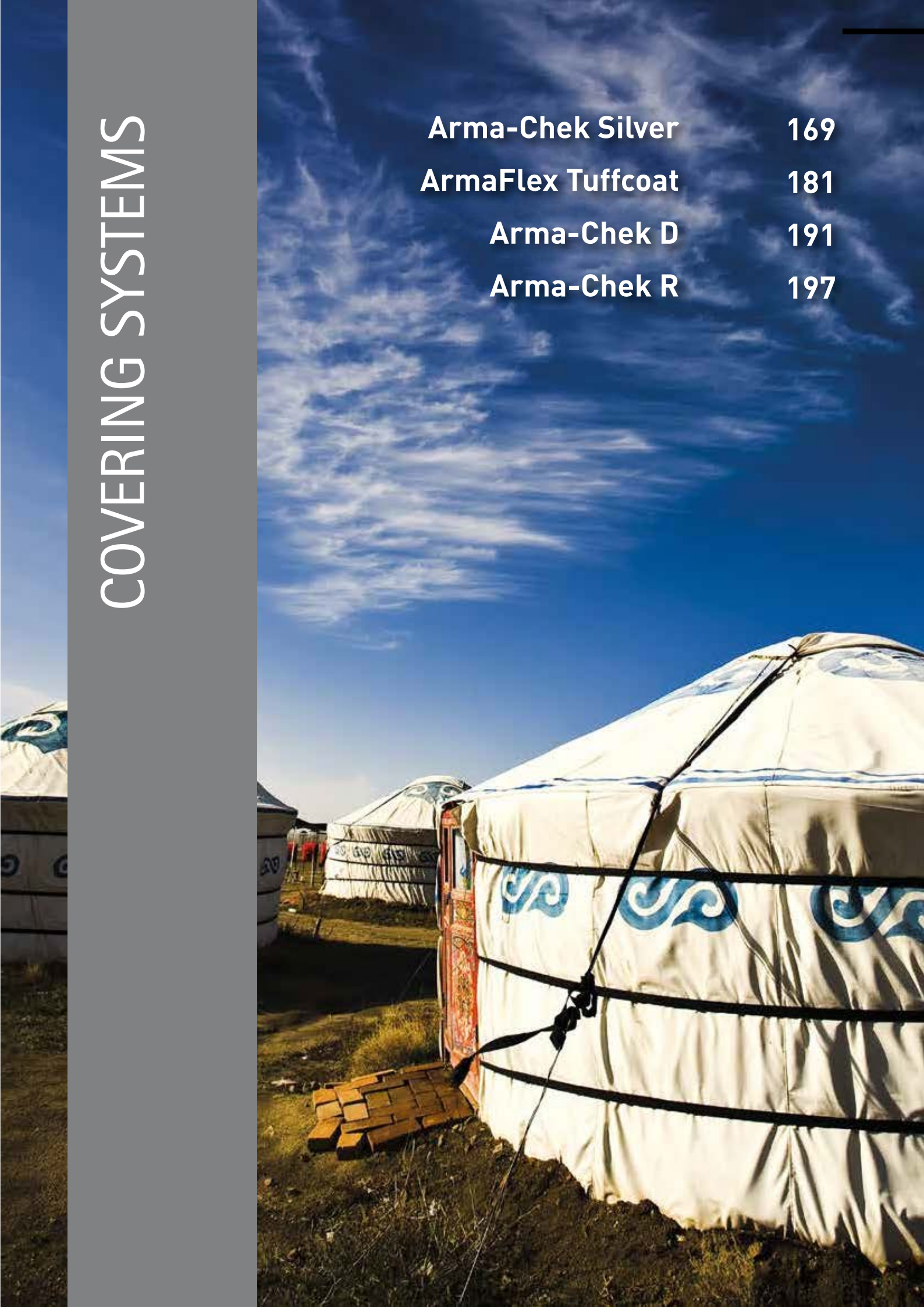
Other information and remarks		
Thickness tolerance for tubes	13 - 19mm	± 1.5mm
	25mm	± 2.5mm
Thickness tolerance for sheets	10 - 19mm	± 1.5mm
	25mm	± 2mmw
Length tolerance for tubes & sheets	± 1.5mm	
• Not a stock item		
* In accordance with European standards for steel pipes with the exception of Outside Diameter 54 for copper pipe. For further dimensions please contact our Customer Service Centre.		

TAPE

Colour - black

Code	Description	Rolls /carton
HT-TAPE	Tape 3mm thick x 50mm wide (15m long roll)	12

COVERING SYSTEMS



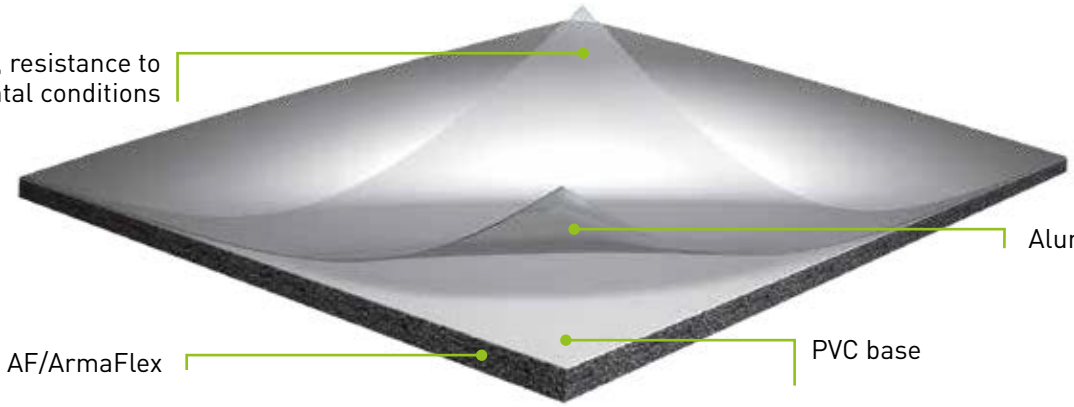
Arma-Chek® Silver

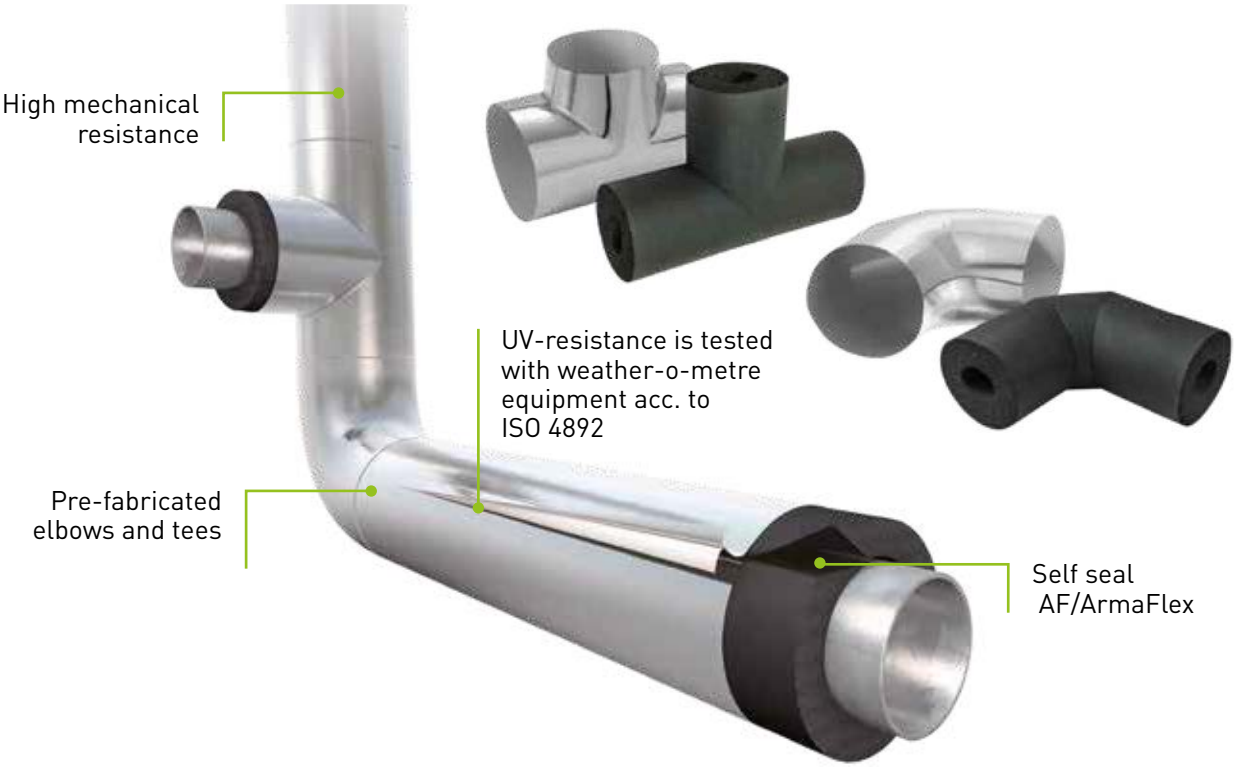
THE PRE-COVERED ARMAFLEX INSULATION DESIGNED FOR FAST INSTALLATION, DURABILITY AND EASY CLEANING

- Suitable for food production areas
- 2-in-1 pre-covered system, saves installation time compared to traditional cladding
- System solution with matching tape and pre-formed elbow and tee parts
- Easy to clean aesthetic surface in metallic look
- Light weight and flexible
- Strong and resistant surface
- Good chemical resistance

CE

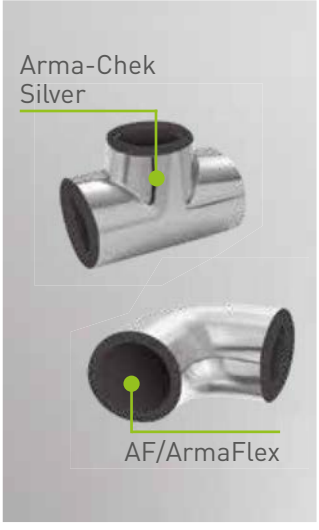
PROPERTIES





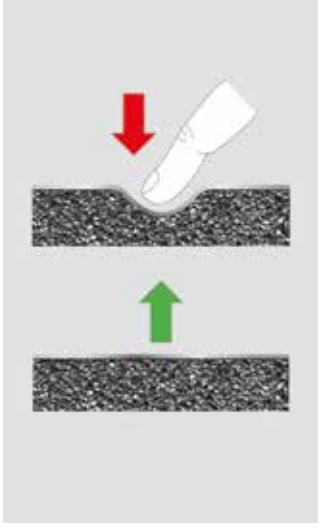
PREFORMED PIECES

Specially designed pre-formed Arma-Chek Silver elbows and bends allow additional savings in installation time.



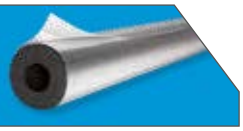
RESISTANCE TO SURFACE PRESSURE

Unlike traditional metal coatings, Arma-Chek Silver recovers its original shape by itself after being subjected to surface pressure. This property prevents permanent dents and guarantees a durable installation



RANGE

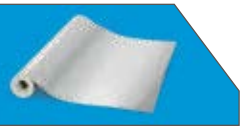
TUBE
Pre-covered self-adhesive tube



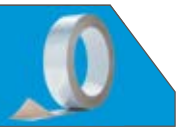
SHEET
Pre-covered continuous sheet, Self-adhesive pre-covered continuous sheet, Covering foil

TEES & ELBOWS
Pre-fabricated tees and elbows (insulation and covering)

COVERING



TAPE



RECOMMENDED PRODUCTS
For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

Arma-Chek Silver is a covering system featuring a double layer laminate of aluminium, coated with special UV protection and a PVC backing. As a covering for Armaflex substrates, Arma-Chek Silver jacketing is highly puncture and tear resistant as well as flame retardant. Arma-Chek Silver can be used for insulation and protection of HVAC and Refrigeration systems inside or outside.

Material type	Insulation: Highly flexible, closed-cell elastomeric foam material based on synthetic rubber. Covering: double layer laminate of aluminium, coated with a special UV protection and a PVC backing.
Colour	Silver (covering)
Applications	Insulation and protection of pipes, ducts, valves and vessels of refrigeration and air conditioning equipments, clean room environments, food industries etc.
Special features	Declaration of Performance is available in accordance with Article 7(3) of Regulation (EU) No 305/2011 on our homepage: www.armacell.com/DoP"
Assembly	The ArmaFlex and Arma-Chek installation manuals should be consulted before assembly. We offer special installation courses for the application of Arma-Chek. Please consult our Customer Service centre.
Remarks	For outdoor use please note: Testing regarding UV resistance of these materials showed excellent results. When used on outdoor applications the materials showed very good durability even under UV exposition. However, due to the unpredictable nature of outdoor conditions there might be occasional weathering influences on the material consistency, which cannot be tested in advance. Therefore, installations in extreme environments (regions of extreme weather conditions like high mountains etc.) are not recommended. In case of doubt please contact our Customer Service centre.

Property	Value/Assessment		Test	Standards & Remarks
Temperature Range				
Max service temperature	+110°C for substrate (+85°C if used on flat surfaces) +75°C for the silver jacketing			Tested acc to EN 14706 & EN 14707 & EN 14304
Min service temperature	-50°C			
Thermal Conductivity				
	Depends on the Armaflex substrate used.		EU 5695 EU 6430	Tested acc. to EN ISO 13787 DIN EN 12086 & EN ISO 8497
Water Vapour Diffusion Resistance				
	μ ≥ 15,000		EU 5695 EU 6430	Tested acc.to EN ISO 12086 & EN 13469
Fire Performance				
Reaction to fire	Arma-Chek Silver (AF) tubes	C_L-s3, d0	EU 5695	EN 13823 EN ISO 11925-2
	Arma-Chek Silver (AF) sheets 13 - 25 mm	C-s3, d0		
	Arma-Chek Silver (AF) sheets 32 - 50 mm	D-s3, d0		
	Covering foil	Class 1	GB 5902	Tested acc. to BS 476-7
		Class 0	GB 5903	Tested acc. to BS 476-6
Other technical features				
Dimensions & tolerances	In accordance with EN 14304, table 1		EU 5695 EU 6430	Tested acc. to EN 822, EN 823 & EN 13467
Weight	approx. 340 g/m² (covering)			Tested acc. to EN 22286
Material thickness	approx. 230 μm			Tested according to EN 22286
UV resistance	Excellent			Tested according to EN ISO 4892-2 (Xenon-Test)
Resistance to mechanical impact	Good puncture and tear resistance.			
Health aspects	Dust and fibre free			
Storage & Shelf life	Tape, sheets, tubes, self-adhesive: 1 year			Stored in clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0°C - 35°C)

PRE-COVERED SELF-ADHESIVE TUBES

Length - 1m, Colour - black, Covering colour - Silver

Pipe max. Outside - Ø (mm)	Inner tube Ø min/max (mm)	AF-2 INSULATION THICKNESS 11.5 - 16 (mm)			AF-4 INSULATION THICKNESS 17 - 25 (mm)		
		Thickness (mm)	Code	m/carton	Thickness (mm)	Code	m/carton
15	16 - 17.5	11.5	AFSI-2-015 • •	62	17	AFSI-4-015 •	40
18	19 -20.5	11.5	AFSI-2-018 •	60	17.5	AFSI-4-018 •	30
22	23 - 24.5	12	AFSI-2-022 •	48	18	AFSI-4-022 •	28
28	29 - 30.5	12.5	AFSI-2-028 •	40	19	AFSI-4-028 •	24
35	36 - 38	13	AFSI-2-035 •	30	19.5	AFSI-4-035 •	18
42	43.5 - 45.5	13.5	AFSI-2-042 •	20	20.5	AFSI-4-042 •	16
48	49.5 - 51.5	13.5	AFSI-2-048 •	20	21	AFSI-4-048 •	12
54	55 - 57	13.5	AFSI-2-054 •	16	21	AFSI-4-054 •	12
60	61.5 - 63.5	14	AFSI-2-060 •	16	21.5	AFSI-4-060 •	10
64	65 - 67.5	14	AFSI-2-064 •	14	21.5	AFSI-4-064 •	9
76	77 - 79.5	14	AFSI-2-076 •	14	22	AFSI-4-076 •	8
89	90.5 - 93.5	14.5	AFSI-2-089 •	10	22.5	AFSI-4-089 •	6
114	116 - 120	15	AFSI-2-114 • •	8	23.5	AFSI-4-114 • •	5
140	142 - 146	15.5	AFSI-2-140 • •	4	24.5	AFSI-4-140 • •	3
168	170 - 176	16	AFSI-2-168 • •	3	25	AFSI-4-168 • •	2

Pipe max. Outside - Ø (mm)	Inner tube Ø min/ max (mm)	AF-5 INSULATION THICKNESS 25 - 33 (mm)		
		Thickness (mm)	Code	m/carton
18	19 - 20.5	25	AFSI-5-018 •	21
22	23 - 24.5	25	AFSI-5-022 •	18
28	29 - 30.5	25	AFSI-5-028 •	18
35	26 - 38	27	AFSI-5-035 •	12
42	43.5 - 45.5	27	AFSI-5-042 •	11
48	49.5 - 51.5	27.5	AFSI-5-048 •	8
54	55 - 57	28.5	AFSI-5-054 •	8
60	61.5 - 63.5	29	AFSI-5-060 •	6
64	65 - 67.5	29	AFSI-5-064 •	6
76	77 - 79.5	30	AFSI-5-076 •	5
89	90.5 - 93.5	30.5	AFSI-5-089 •	4
114	116 - 120	31.5	AFSI-5-114 • •	3
140	142 - 146	32	AFSI-5-140 • •	3
168	170 - 176	33	AFSI-5-168 • •	2

Other information and remarks
• This item is not self-adhesive, radial cut surface.
• Not a stock item

PRE-COVERED CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - black, **Covering colour** - Silver

Code	Thickness (mm)	Roll Length (m)	m²/carton
AFSI-13MM/E •	13	8	8
AFSI-19MM/E •	19	6	6
AFSI-25MM/E •	25	4	4
AFSI-32MM/E •	32	3	3

SELF-ADHESIVE PRE-COVERED CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - black, **Covering colour** - Silver

Code	Thickness (mm)	Roll Length (m)	m²/carton
AFSI-13MM/EA •	13	8	8
AFSI-19MM/EA •	19	6	6
AFSI-25MM/EA •	25	4	4
AFSI-32MM/EA •	32	3	3

COVERING FOIL (ROLLS)

Colour - Silver

Code	Width (mm)	Roll Length (m)	Rolls carton	m²/carton
ACH-SI25 •	1040	25	2	52
ACH-SI25/100 •	100	25	4	10

Other information and remarks	
Length tolerance for tubes	± 1.5%
Length tolerance for sheet	± 1.5% to 5%
Thickness tolerance for tubes	⩽ 8mm ± 1mm 9 - 18mm ± 1.5mm 19-31 ± 2.5mm > 31mm ± 3mm
Thickness tolerance for sheet	⩽ 6mm ± 1mm 7-19mm ± 1.5mm > 19mm ± 2mm
• This item is not self-adhesive, radial cut surface.	
• Not a stock item	

PRE-FABRICATED ELBOW COVERING

Colour - **Silver, Elbow fitting (covering without insulation)**

Pipe max. Outside - Ø (mm)	AF-2 INSULATION THICKNESS 11.5 - 16 (mm)		AF-4 INSULATION THICKNESS 15.5 - 25 (mm)	
	Code	m/carton	Code	m/carton
15	ACHB-040 •	1	ACHB-050 •	1
18	ACHB-040 •	1	ACHB-060 •	1
22	ACHB-050 •	1	ACHB-060 •	1
28	ACHB-050 •	1	ACHB-070 •	1
35	ACHB-060 •	1	ACHB-080 •	1
42	ACHB-070 •	1	ACHB-080 •	1
48	ACHB-080 •	1	ACHB-090 •	1
54	ACHB-080 •	1	ACHB-100 •	1
60	ACHB-090 •	1	ACHB-110 •	1
64	ACHB-100 •	1	ACHB-110 •	1
76	ACHB-110 •	1	ACHB-120 •	1
89	ACHB-130 •	1	ACHB-140 •	1
114	ACHB-150 •	1	ACHB-160 •	1
140	ACHB-180 •	1	ACHB-200 •	1
168	ACHB-210 •	1	ACHB-220 •	1

Pipe max. Outside - Ø (mm)	AF-5 INSULATION THICKNESS 25 - 32 (mm)	
	Code	m/carton
18	ACHB-070 •	1
22	ACHB-080 •	1
28	ACHB-080 •	1
35	ACHB-090 •	1
42	ACHB-100 •	1
48	ACHB-100 •	1
54	ACHB-110 •	1
60	ACHB-120 •	1
64	ACHB-120 •	1
76	ACHB-130 •	1
89	ACHB-160 •	1
114	ACHB-180 •	1
140	ACHB-210 •	1
168	ACHB-230 •	1

PRE-FABRICATED T-PIECES COVERING

Colour - Silver, Elbow fitting (covering without insulation)

Pipe max. Outside - Ø (mm)	AF-2 INSULATION THICKNESS 11.5 - 16 (mm)		AF-4 INSULATION THICKNESS 17 - 25 (mm)	
	Code	m/carton	Code	m/carton
18			ACHT-052 •	1
22	ACHT-052 •	1	ACHT-057 •	1
28	ACHT-052 •	1	ACHT-067 •	1
35	ACHT-057 •	1	ACHT-073 •	1
42	ACHT-067 •	1	ACHT-082 •	1
48	ACHT-073 •	1	ACHT-093 •	1
54	ACHT-082 •	1	ACHT-100 •	1
60	ACHT-088 •	1	ACHT-102 •	1
64	ACHT-100 •	1	ACHT-108 •	1
76	ACHT-102 •	1	ACHT-120 •	1
89	ACHT-116 •	1	ACHT-136 •	1
114	ACHT-149 •	1	ACHT-156 •	1
140	ACHT-176 •	1	ACHT-189 •	1
168	ACHT-214 •	1	ACHT-214 •	1

Pipe max. Outside - Ø (mm)	AF-5 INSULATION THICKNESS 25 - 33 (mm)	
	Code	m/carton
18	ACHT-067 •	1
22	ACHT-073 •	1
28	ACHT-082 •	1
35	ACHT-093 •	1
42	ACHT-093 •	1
48	ACHT-100 •	1
54	ACHT-102 •	1
60	ACHT-116 •	1
64	ACHT-120 •	1
76	ACHT-128 •	1
89	ACHT-140 •	1
114	ACHT-169 •	1
140	ACHT-194 •	1
168	ACHT-245 •	1

PRE-FABRICATED ELBOWS

Colour - Black, AF/Armaflex insulation (matching elbow covering sold separately)

Pipe max. Outside - Ø (mm)	AF-2 INSULATION THICKNESS				AF-4 INSULATION THICKNESS			
	Code	Thickness (mm)	Article description	Pieces/ carton	Code	Thickness (mm)	Article description	Pieces/ carton
15	AF-2-015-C90 •	11.5	3 segment	3	AF-4-015-C90 •	17	3 segment	3
18	AF-2-018-C90 •	11.5	3 segment	3	AF-4-018-C90 •	17.5	3 segment	3
22	AF-2-022-C90 •	12	3 segment	3	AF-4-022-C90 •	18	3 segment	3
28	AF-2-028-C90 •	12.5	3 segment	3	AF-4-028-C90 •	19	3 segment	3
35	AF-2-035-C90 •	13	3 segment	3	AF-4-035-C90 •	19.5	3 segment	3
42	AF-2-042-C90 •	13.5	3 segment	3	AF-4-042-C90 •	20.5	4 segment	3
48	AF-2-048-C90 •	13.5	3 segment	3	AF-4-048-C90 •	21	4 segment	3
54	AF-2-054-C90 •	13.5	3 segment	3	AF-4-054-C90 •	21	4 segment	3
60	AF-2-060-C90 •	14	3 segment	3	AF-4-060-C90 •	21.5	4 segment	3
64	AF-2-064-C90 •	14	4 segment	3	AF-4-064-C90 •	21.5	4 segment	3
76	AF-2-076-C90 •	14	4 segment	3	AF-4-076-C90 •	22	4 segment	3
89	AF-2-089-C90 •	14.5	4 segment	3	AF-4-089-C90 •	22.5	4 segment	3

Pipe max. Outside - Ø (mm)	AF-5 INSULATION THICKNESS			
	Code	Thickness (mm)	Article description	Pieces/carton
15	AF-5-015-C90 •	25	3 segment	3
18	AF-5-018-C90 •	25	3 segment	3
22	AF-5-022-C90 •	25	3 segment	3
28	AF-5-028-C90 •	25	4 segment	3
35	AF-5-035-C90 •	27	4 segment	3
42	AF-5-042-C90 •	27	4 segment	3
48	AF-5-048-C90 •	27.5	4 segment	3
54	AF-5-054-C90 •	28.5	4 segment	3
60	AF-5-060-C90 •	29	4 segment	3
64	AF-5-064-C90 •	29	4 segment	3
76	AF-5-076-C90 •	30	4 segment	3
89	AF-5-089-C90 •	30.5	4 segment	3
114	AF-5-114-C90 •	31.5	4 segment	3

Other information and remarks
• Not a stock item

PRE-FABRICATED T - PIECES

Colour - Black, AF/Armaflex insulation (matching t-piece covering sold separately)

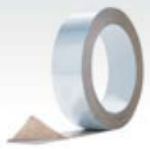
Pipe max. Outside - Ø (mm)	AF-2 INSULATION THICKNESS				AF-4 INSULATION THICKNESS			
	Code	Thickness (mm)	Article description	Pieces/ carton	Code	Thickness (mm)	Article description	Pieces/ carton
15	AF-2-015-T90 •	11.5	2 segment	3	AF-4-015-T90 •	17	2 segment	3
18	AF-2-018-T90 •	11.5	2 segment	3	AF-4-018-T90 •	17.5	2 segment	3
22	AF-2-022-T90 •	12	2 segment	3	AF-4-022-T90 •	18	2 segment	3
28	AF-2-028-T90 •	12.5	2 segment	3	AF-4-028-T90 •	19	2 segment	3
35	AF-2-035-T90 •	13	2 segment	3	AF-4-035-T90 •	19.5	2 segment	3
42	AF-2-042-T90 •	13.5	2 segment	3	AF-4-042-T90 •	20	2 segment	3
48	AF-2-048-T90 •	13.5	2 segment	3	AF-4-048-T90 •	21	2 segment	3
54	AF-2-054-T90 •	13.5	2 segment	3	AF-4-054-T90 •	21	2 segment	3
60	AF-2-060-T90 •	14	2 segment	3	AF-4-060-T90 •	21.5	2 segment	3
64	AF-2-064-T90 •	14	2 segment	3	AF-4-064-T90 •	21.5	2 segment	3
76	AF-2-076-T90 •	14	2 segment	3	AF-4-076-T90 •	22	2 segment	3
89	AF-2-089-T90 •	14.5	2 segment	3	AF-4-089-T90 •	22	2 segment	3

Pipe max. Outside - Ø (mm)	AF-5 INSULATION THICKNESS			
	Code	Thickness (mm)	Article description	Pieces/carton
15	AF-5-015-T90 •	25	2 segment	3
18	AF-5-018-T90 •	25	2 segment	3
22	AF-5-022-T90 •	25	2 segment	3
28	AF-5-028-T90 •	25	2 segment	3
35	AF-5-035-T90 •	27	2 segment	3
42	AF-5-042-T90 •	27	2 segment	3
48	AF-5-048-T90 •	27.5	2 segment	3
54	AF-5-054-T90 •	28.5	2 segment	3
60	AF-5-060-T90 •	29	2 segment	3
64	AF-5-064-T90 •	29	2 segment	3
76	AF-5-076-T90 •	30	2 segment	3
89	AF-5-089-T90 •	30.5	2 segment	3
89	AF-5-089-T90 •	30.5	2 segment	3

Other information and remarks	
Thickness tolerance for tubes	AF-2 ± 1mm AF-4 ± 1.5mm AF-5 ± 2.5mm
• Not a stock item	

TAPE

Colour - Silver, Composite aluminium tape

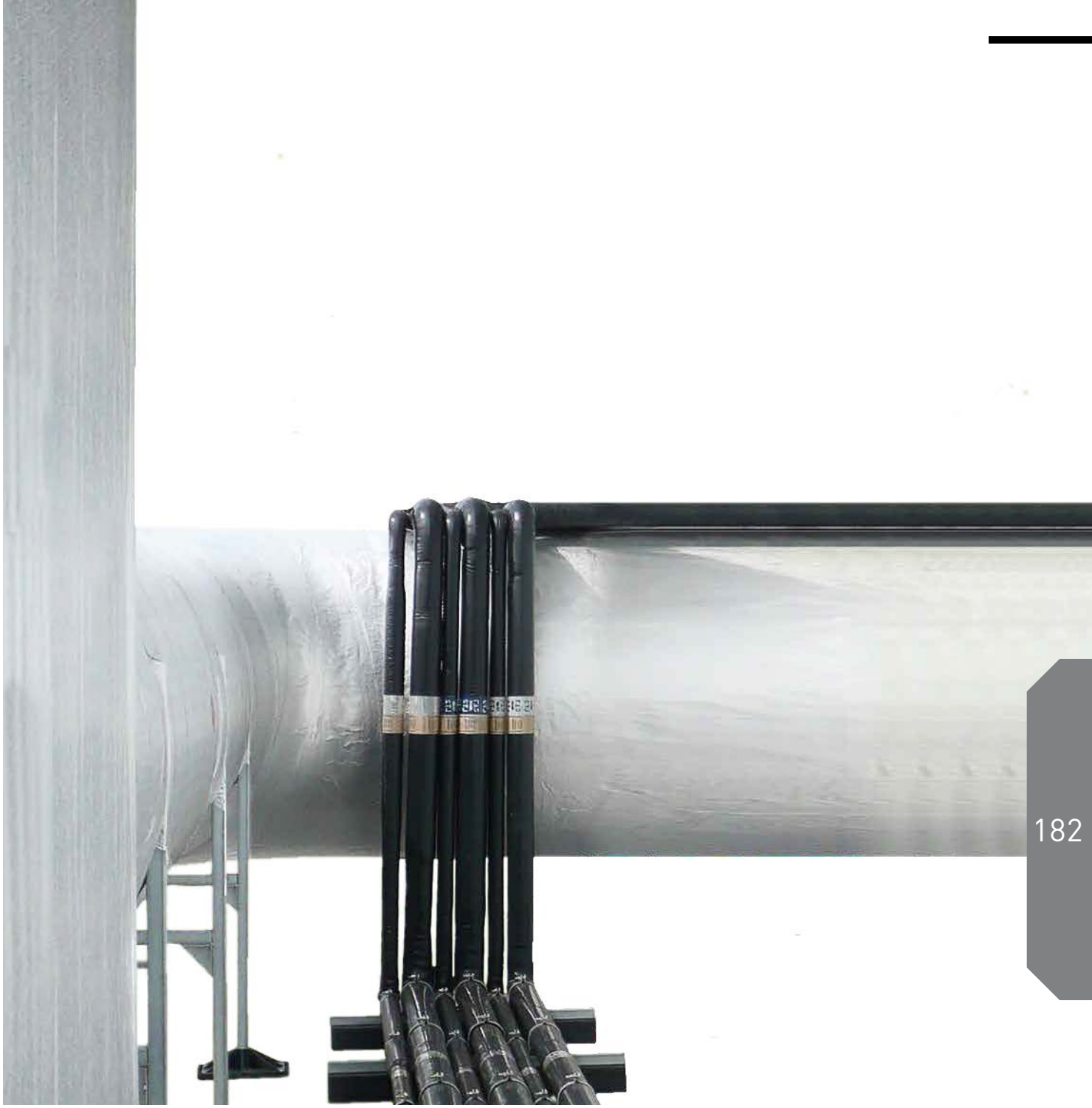


Code	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
ACH-PSATAPES-30	30	25	0.08	10
ACH-PSATAPES-50	50	50	0.08	6

ArmaFlex® Tuffcoat

FLEXIBLE ARMAFLEX INSULATION WITH OUTER COVERING TO WITHSTAND MECHANICAL IMPACT

- Protection against mechanical damage
- Can be used on underground pipework, including mains cold water and ground source heat pump pipes
- Washdown waterproof and easy to clean
- Built-in vapour barrier prevents condensation
- No additional painting required
- UV resistant reduces energy losses with a low thermal conductivity
- Microban® antimicrobial protection

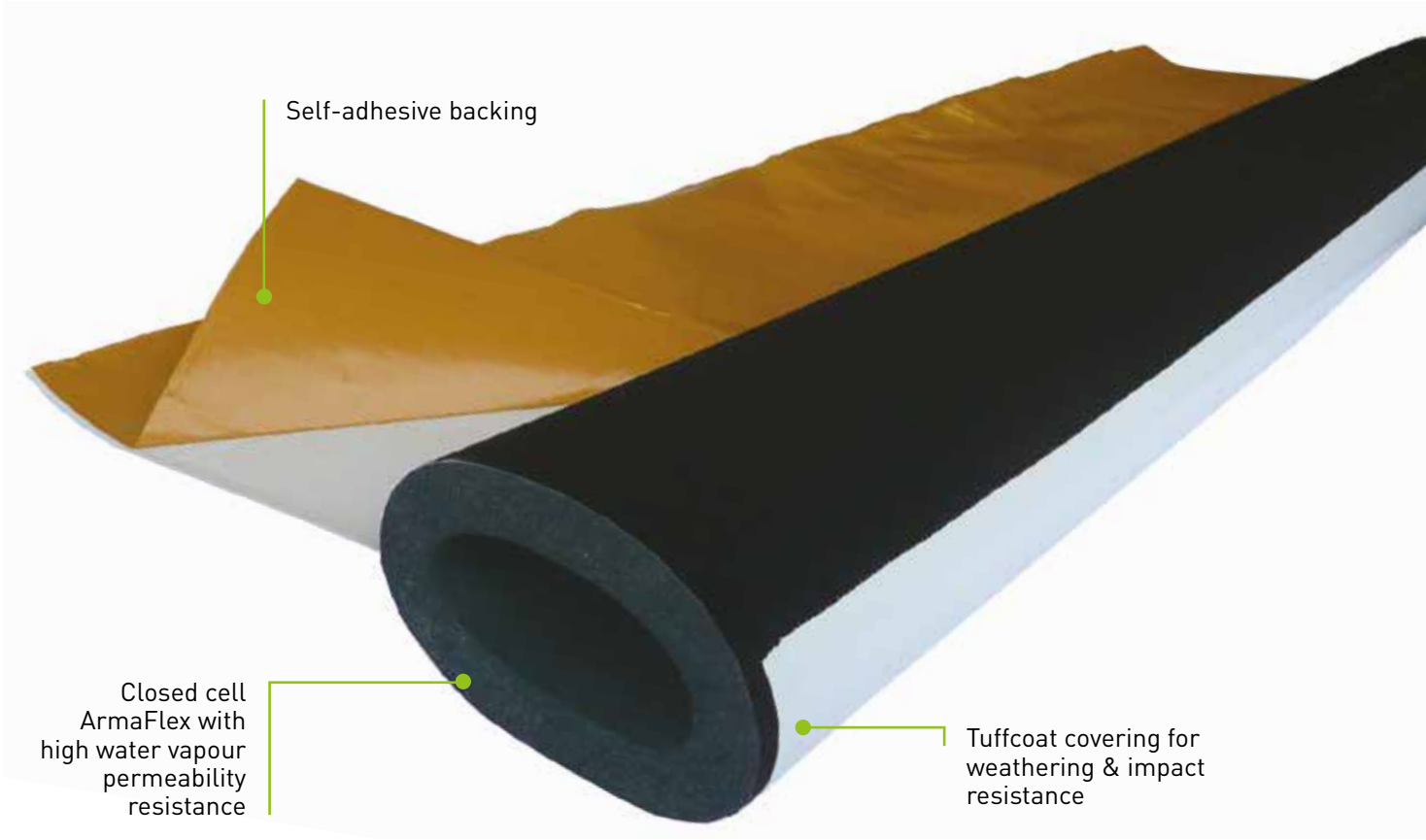


CE

PROTECTION THAT LIVES ON

MICROBAN®

PROPERTIES



EXTERNAL APPLICATIONS

IMPACT RESISTANT

COMPLETE SYSTEM

For outdoor installations

- ArmaFlex Tuffcoat tubes & sheet for pipe & ductwork applications
- Tuffcoat tapes and mastics for finishing seams
- Compatible with all ArmaFlex adhesives & cleaners

RANGE

TUBE
Pre-covered self-adhesive tube

SHEET
Flat shet, Self-adhesive flat sheet, Continuous sheet, Self-adhesive continuous sheet

COVERING

TAPE

MASTIC

RECOMMENDED PRODUCTS
For a complete installation

ArmaFlex 520 adhesive
p.230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

Flexible closed cell elastomeric insulation with polymeric covering for protection against mechanical impact

Material type	Foamed nitrile rubber with polymeric covering
Colour	Black or white
Applications	Insulation for hot and cold water services, chilled water lines, heating systems, air conditioning and refrigerated pipework to provide condensation control, energy conservation and frost protection. Easy to wipe clean and washdown - suitable for food manufacturing, hospitals and schools. Suitable for outdoor use since covering provides additional protection against UV damage and bird attack. Can be used underground - including on mains cold water and ground source heat pump pipes.
Special features	For outside applications NO additional coating is necessary.
Safety and environment	ODP zero GWP sero Dust & fibre free

Property	Value/Assessment	Test	Standards & Remarks
Temperature Range[1]			
Max service temperature	+110˚C (For temperatures above 110˚C please contact our technical department)	EU 5699	Tested acc. to EN 14706, EN 14707 & EN14304
Min service temperature	-50˚C		
Thermal Conductivity			
Tubes 6-19mm	λ 0˚C ⩽ 0.033 W/(m·K) [33+0.1· ^{9}m + 0.0008· ^{9}m^{2}]/1000	EU 5699	Tested acc. to EN ISO 8497 & EN 12667
Tubes 25mm	λ 0˚C ⩽ 0.036 W/(m·K) [36+0.1· ^{9}m + 0.0008· ^{9}m^{2}]/1000		
Sheets 13-25mm	λ 0˚C ⩽ 0.033 W/(m·K) [33+0.1· ^{9}m + 0.0008· ^{9}m^{2}]/1000		
Water Vapour Diffusion Resistance			
Mu value	μ ⩾ 15,000	EU 5699	Tested acc.to EN 12086 & EN 13469
Fire Performance			
Reaction to fire	Euroclass (tubes & sheets) E Surface spread of flames Class 1* Fire propagation Total Index Performance (I) ⩽ 12 Sub Index (i_1) ⩽ 6 Fire Performance acc. to Building Regulation Class 0* Euroclass E **AF/ArmaFlex Class 0 insulation and Tuffcoat covering both Class 0 fire rated**	GB 5730	Tested acc. to BS476 Part 7: 1997 Classified acc. to EN 13501-1 Tested acc. to EN 13823 EN ISO 11925-2
Other technical features			
Dimensions & tolerances	In accordance with EN 14304, table 1		
Resistance to mechanical impact	Very good		
Chemical behaviour	Consult product test list		
UV resistance	Excellent		
Antimicrobial behaviour	In-built Microban® antimicrobial protection		

TUBE

Length - 1m, Colour - White or Black Tuffcoat covering

Pipe max. Outside - Ø (mm)	Inner tube Ø min/ max (mm)	White 13mm INSULATION THICKNESS		Black 13mm INSULATION THICKNESS	
		Code	m/carton	Code	m/carton
10	11 - 13	CO-13X010/WH-1M •	94	CO-13X010/BK-1M •	94
12	13 - 15	CO-13X012/WH-1M •	81	CO-13X012/BK-1M •	81
15	16 - 18	CO-13X015/WH-1M •	68	CO-13X015/WH-1M •	68
20	21 - 23	CO-13X020/WH-1M •	56	CO-13X020/WH-1M •	56
22	23 - 25	CO-13X022/WH-1M •	52	CO-13X022/WH-1M •	52
28	29 - 31.5	CO-13X028/WH-1M •	39	CO-13X028/WH-1M •	39
35	36 - 38.5	CO-13X035/WH-1M •	30	CO-13X035/WH-1M •	30
42	43 - 46	CO-13X042/WH-1M •	28	CO-13X042/WH-1M •	28
48	49 - 51.5	CO-13X048/WH-1M •	20	CO-13X048/WH-1M •	20
54	55 - 58	CO-13X054/WH-1M •	21	CO-13X054/WH-1M •	21
60	61 - 64	CO-13X060/WH-1M •	18	CO-13X060/WH-1M •	18
67	68 - 71	CO-13X067/WH-1M •	17	CO-13X067/WH-1M •	17

Pipe max. Outside - Ø (mm)	Inner tube Ø min/ max (mm)	White 19mm INSULATION THICKNESS		Black 19mm INSULATION THICKNESS	
		Code	m/carton	Code	m/carton
12	13 - 15	CO-19X012/WH-1M •	46	CO-19X012/BK-1M •	46
15	16 - 18	CO-19X015/WH-1M •	39	CO-19X015/BK-1M •	39
20	21 - 23	CO-19X020/WH-1M •	35	CO-19X020/BK-1M •	35
22	23 - 25	CO-19X022/WH-1M •	32	CO-19X022/BK-1M •	32
28	29 - 31.5	CO-19X028/WH-1M •	25	CO-19X028/BK-1M •	25
35	36 - 38.5	CO-19X035/WH-1M •	20	CO-19X035/BK-1M •	20
42	43 - 46	CO-19X042/WH-1M •	16	CO-19X042/BK-1M •	16
48	49 - 51.5	CO-19X048/WH-1M •	15	CO-19X048/BK-1M •	15
54	55 - 58	CO-19X054/WH-1M •	12	CO-19X054/BK-1M •	12
60	61 - 64	CO-19X060/WH-1M •	12	CO-19X060/BK-1M •	12
67	68 - 71	CO-19X067/WH-1M •	10	CO-19X067/BK-1M •	10
76	77 - 80	CO-19X076/WH-1M •	9	CO-19X076/BK-1M •	9
80	81 - 84	CO-19X080/WH-1M •	8	CO-19X080/BK-1M •	8
89	90 - 93	CO-19X089/WH-1M •	8	CO-19X089/BK-1M •	8
93	94 - 97	CO-19X093/WH-1M •	8	CO-19X093/BK-1M •	8
108	110 -114	CO-19X108/WH-1M •	6	CO-19X108/BK-1M •	6
114	116 -120	CO-19X114/WH-1M •	6	CO-19X114/BK-1M •	6

Other information and remarks		
Thickness tolerance for tubes	13 - 19mm	± 1.5mm
	25mm	± 2.5mm
Length tolerance for tubes	± 1.5mm	
• Not a stock item		

TUBE

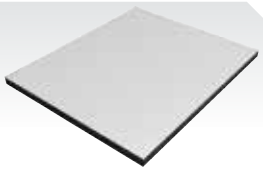
Length - 1m, **Colour** - White or Black Tuffcoat covering

Pipe max. Outside - Ø (mm)	Inner tube Ø min/ max (mm)	White 25mm INSULATION THICKNESS		Black 25mm INSULATION THICKNESS	
		Code	m/carton	Code	m/carton
12	13 - 15	CO-25X012/WH-1M •	25	CO-25X012/BK-1M •	25
15	16 - 18	CO-25X015/WH-1M •	24	CO-25X015/BK-1M •	24
20	21 - 23	CO-25X020/WH-1M •	20	CO-25X020/BK-1M •	20
22	23 - 25	CO-25X022/WH-1M •	20	CO-25X022/BK-1M •	20
28	29 - 31.5	CO-25X028/WH-1M •	16	CO-25X028/BK-1M •	16
35	36 - 38.5	CO-25X035/WH-1M •	12	CO-25X035/BK-1M •	12
42	43 - 46	CO-25X042/WH-1M •	12	CO-25X042/BK-1M •	12
48	49 - 51.5	CO-25X048/WH-1M •	11	CO-25X048/BK-1M •	11
54	55 - 58	CO-25X054/WH-1M •	9	CO-25X054/BK-1M •	9
60	61 - 64	CO-25X060/WH-1M •	9	CO-25X060/BK-1M •	9
67	68 - 71	CO-25X067/WH-1M •	8	CO-25X067/BK-1M •	8
76	77 - 80	CO-25X076/WH-1M •	7	CO-25X076/BK-1M •	7
80	81 - 84	CO-25X080/WH-1M •	6	CO-25X080/BK-1M •	6
89	90 - 93	CO-25X089/WH-1M •	6	CO-25X089/BK-1M •	6
93	94 - 97	CO-25X093/WH-1M •	6	CO-25X093/BK-1M •	6
108	110 -114	CO-25X108/WH-1M •	4	CO-25X108/BK-1M •	4
114	116 -120	CO-25X114/WH-1M •	4	CO-25X114/BK-1M •	4

Other information and remarks		
Thickness tolerance for tubes	13 - 19mm	± 1.5mm
	25mm	± 2.5mm
Length tolerance for tubes	± 1.5mm	
• Not a stock item		

SHEET (FLAT)

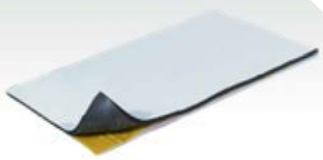
Length - 2m, **Colour** - White or Black Tuffcoat covering



Black					White				
Code	Thickness (mm)	Width (m)	Pieces/ carton	m²/carton	Code	Thickness (mm)	Width (m)	Pieces/ carton	m²/carton
CO-13MM/BK •	13	0.5	9	9	CO-13MM/WH •	13	0.5	9	9
CO-19MM/BK •	19	0.5	7	7	CO-19MM/WH •	19	0.5	7	7
CO-25MM/BK •	25	0.5	5	5	CO-25MM/WH •	25	0.5	5	5

SELF-ADHESIVE SHEET (FLAT)

Length - 2m, **Colour** - White or Black Tuffcoat covering



Black					White				
Code	Thickness (mm)	Width (m)	Pieces/ carton	m²/ carton	Code	Thickness (mm)	Width (m)	Pieces/ carton	m²/ carton
CO-13MM/A-BK •	13	0.5	9	9	CO-13MM/A-WH •	13	0.5	9	9
CO-19MM/A-BK •	19	0.5	7	7	CO-19MM/A-WH •	19	0.5	7	7
CO-25MM/A-BK •	25	0.5	5	5	CO-25MM/A-WH •	25	0.5	5	5

Other information and remarks	
Thickness tolerance for sheets	13 - 19mm ± 1.5mm 25 mm ± 2mm
Length tolerance for sheets	± 1.5% - 5%
• Not a stock item	

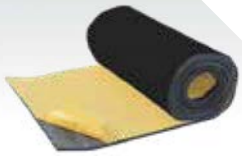
CONTINUOUS SHEET (ROLLS)

Width - 1m, **Colour** - White or Black Tuffcoat covering

Black				White			
Code	Thickness (mm)	Length (m)	m2/carton	Code	Thickness (mm)	Length (m)	m2/carton
CO-13MM/E-BK •	13	8	8	CO-13MM/E-WH •	13	8	8
CO-19MM/E-BK •	19	6	6	CO-19MM/E-WH •	19	6	6
CO-25MM/E-BK •	25	4	4	CO-25MM/E-WH •	25	4	4

CONTINUOUS SHEET SELF-ADHESIVE (ROLLS)

Width - 1m, **Colour** - White or Black Tuffcoat covering



Black				White			
Code	Thickness (mm)	Length (m)	m2/carton	Code	Thickness (mm)	Length (m)	m2/carton
CO-13MM/EA-BK •	13	8	8	CO-13MM/EA-WH •	13	8	8
CO-19MM/EA-BK •	19	6	6	CO-19MM/EA-WH •	19	6	6
CO-25MM/EA-BK •	25	4	4	CO-25MM/EA-WH •	25	4	4

Other information and remarks	
Thickness tolerance for sheets	13 - 19mm ± 1.5mm 25 mm ± 2mm
Length tolerance for sheets	± 1.5% - 5%
• Not a stock item	

COVERING ROLLS

Code	Thickness (mm)	Colour	Width (mm)	m2/roll
TC-BK-1M/100M •	1	Black	1000	100
TC-WH-1M/100M •	1	White	1000	100

TAPE

Code	Thickness (mm)	Colour	Width (mm)	Length (m)	Rolls/carton
TUFF-TP-12.5/BK •	2	Black	12.5	50	16
TUFF-TP-12.5/WH •	2	White	12.5	50	16
TUFF-TP-25/BK •	2	Black	25	50	8
TUFF-TP-25/WH •	2	White	25	50	8
TUFF-TP-50/BK •	2	Black	50	50	4
TUFF-TP-50/WH •	2	White	50	50	4

MASTIC

Code	Description	Pieces / carton
ACH-MASTICD •	Black mastic. Sealing compound, 290ml	12
TC-MASTIC •	White mastic. Sealing compound, 310ml	6

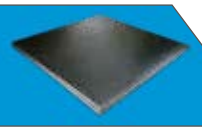
Arma-Chek® D

THE DURABLE PRE-COVERED ARMAFLEX SYSTEM TO WITHSTAND MECHANICAL STRESS

- Strongly reduces the risk of damage and corrosion under insulation (CUI)
- Resistant to UV, oil and chemicals
- Easy to maintain
- No risk of galvanic corrosion
- Strong and resistant surface
- Non-combustible (covering)

RANGE

SHEET
Pre-covered sheet



COVERING

TAPE

MASTIC

RECOMMENDED PRODUCTS
For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

Arma-Chek D is a flexible, woven glass fibre covering system for long-term mechanical protection of ArmaFlex substrates.

Material type	Insulation: Highly flexible, closed-cell elastomeric foam material based on synthetic rubber. Covering: woven, glass fibre, flexible material.
Colour	Black (covering)
Applications	Insulation and protection of pipes, ducts, valves and vessels of refrigeration and air conditioning systems, clean room environments, food industries etc.
Assembly	The Armaflex and Arma-Chek installation manuals should be consulted before assembly. We offer special installation courses for the application of Arma-Chek. Please consult our Customer Service centre.
Remarks	Declaration of Performance is available in accordance with article 7(3) of regulation (EU) No 305/2011

Property	**Value/Assessment**	**Test**	**Standards & Remarks**
Temperature Range			
Max service temperature	+110˚C for substrate (+85˚C if used on flat surfaces)		Tested acc to EN 14706 & EN 14707 & EN 14304 The surface may wrinkle slightly when there are fluctations in temperature since elastomeric products expand and contract in these circumstances. However, these changes are superficial and do not impact the performance of the material. Wrinkles usually disappear once equipment returns to its original operating temperature.
Min service temperature	-50˚C (for temperatures below -50 ˚C please contact our technical department)		
Thermal Conductivity			
	Depends on the ArmaFlex substrate used.	EU 5688	Tested acc. to EN ISO 8497
Water Vapour Diffusion Resistance			
	Depends on the ArmaFlex substrate used.	EU 5688	Tested acc.to EN ISO 12086 & EN 13469
Fire Performance			
Reaction to fire	Depends on the ArmaFlex substrate used.	EU 5688	Classified acc.to EN 13501-1 Tested acc. to DIN EN 13823 & DIN EN ISO 11925-2
Acoustic performance			
Reduction of structure-borne sound tranmission	Depends on the ArmaFlex substrate used.		
Other technical features			
Density	1,200 kgm^3 (covering)		
Dimensions & tolerances	In accordance with EN 14304, table 1 (ArmaFlex substrate)	EU 5688	Tested acc. to EN 822, EN 823 & EN 13467
UV resistance	Good, suitable for outdoor application		Colour may fade when used in outdoor applications. This does not have any impact on the functionality of the covering or the insulation material.
Resistance to mechanical impact	Good		
Health aspects	ODP & GWP rating 0 Dust and fibre free		
Storage & Shelf life	Tape, sheets, tubes, self-adhesive: 1 year		Stored in clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0˚C - 35˚C)

PRE-COVERED SHEETS (AF/ARMAFLEX)

Length - 2m, **Colour** - Black

Code	Thickness (mm)	Width (m)	Pieces/carton	m²/carton
AFD-13MM •	13	0.5	9	9
AFD-19MM •	19	0.5	7	7
AFD-25MM •	25	0.5	5	5

PRE-COVERED SHEETS (NH/ARMAFLEX)

Length - 2m, **Colour** - Black

Code	Thickness (mm)	Width (m)	Pieces/carton	m²/carton
NHD-13-99 •	13	0.5	9	9
NHD-19-99 •	19	0.5	7	7
NHD-25-99 •	25	0.5	5	5

COVERING (ROLLS)

Colour - Black, Woven glass fibre

Code	Width (mm)	Roll Length (m)	Rolls carton	m²/carton
ACH-D25 •	1100	25	1	27.5
ACH-D25/100 •	100	25	3	7.5

Other information and remarks	
Thickness tolerance for sheet	≤ 6mm ± 1mm 7 - 19mm ± 1.5mm > 19mm ± 2mm
Length toloerance for sheet	± 1.5%
• Not a stock item	

MASTIC

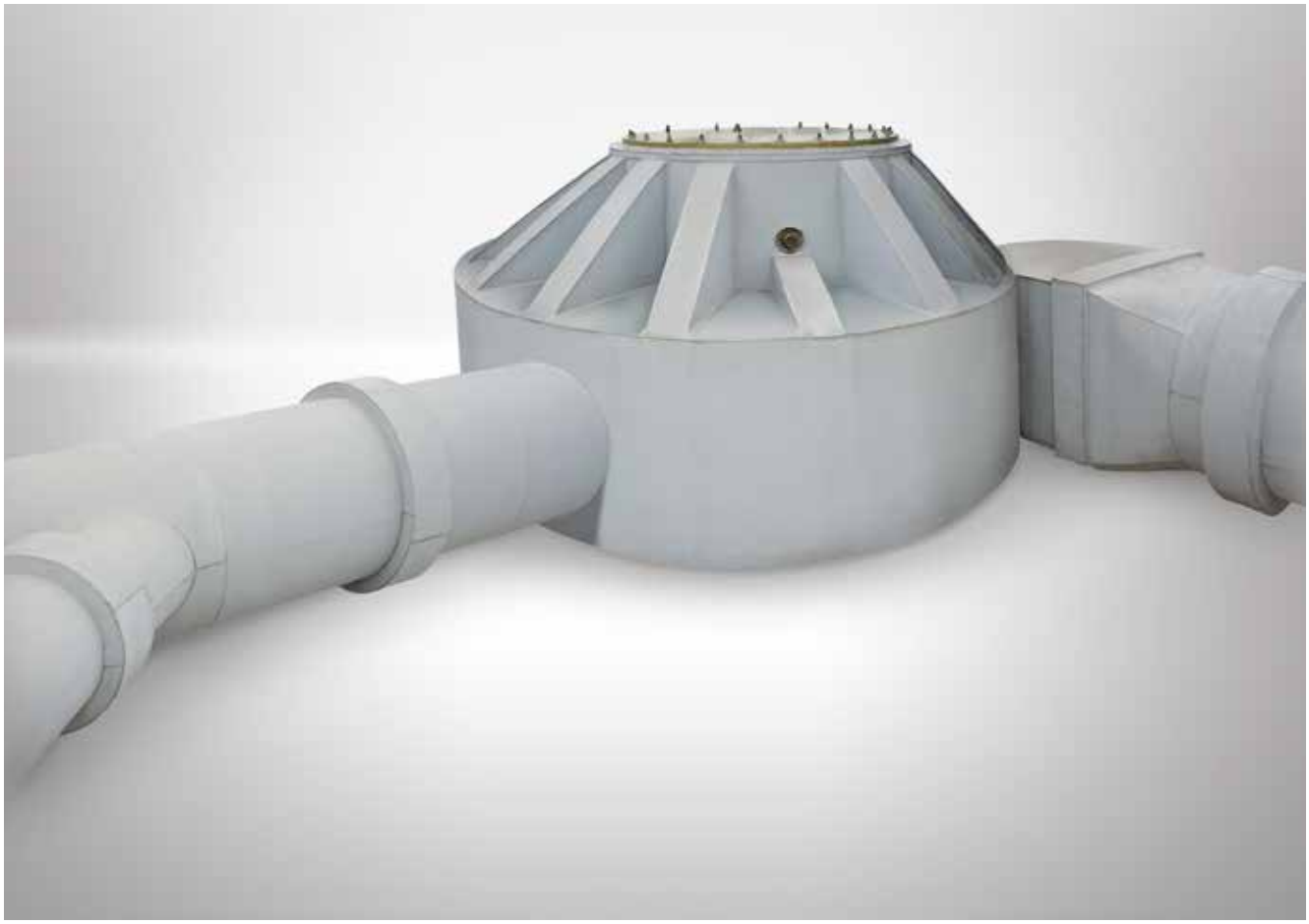
Code	Description	Pieces/carton
ACH-MASTICD •	Sealing compound for installing Arma-Chek R, Cartridge 290 ml	12

TAPE

Colour - Black, Woven glassfibre

Code	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
ACH-TAPED2025 •	20	25	0.18	12
ACH-TAPED5050 •	50	50	0.18	6
ACH-TAPED10025 •	100	25	0.18	3

Arma-Chek® R



FLEXIBLE NON-METALLIC COVERING FOR INDUSTRIAL INSULATION

- Flexible polymeric covering formulated with CSM (CSPE) with combined acoustic barrier performance, ISO 15665 compliant
- Excellent mechanical and weathering protection
- Specially developed for use in offshore and industrial environments
- Reduces the risk of corrosion under insulation (CUI)
- Resistant to UV, salt water and chemicals
- In-built water vapour barrier μ>50.000
- Works in harmony with ArmaFlex®, expanding and contracting as required
- IMO certified

TYPE APPROVED PRODUCT
DNV·GL
DNVGL.COM/AF

COVERING

MASTIC

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex HT625 adhesive
p. 234

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

Arma-Chek R is a flexible covering system for elastomeric and other insulation materials. Especially developed for use in offshore and industrial environments.

Material type	Flexible polymer based rubber formulated with Chlorosulphonated Monomer (CSPE).
Colour	Grey
Applications	Protection of insulated pipework, fittings, vessels and equipment in Offshore, heavy industry, chemical and petrochemical environments which need protection against damage in situations of high mechanical stress.
Assembly	The ArmaFlex® and Arma-Chek installation manuals should be consulted before assembly. Please consult our Customer Service Centre.
Special Features	Exceptional resistance to UV attack, salt water and mechanical impact. Reduces the risk of Corrosion Under Insulation (CUI). Excellent acoustic performance with natural dampening properties to reduce re-radiation effects.

Property	**Value/Assessment**	**Standards & Remarks**
Temperature Range		
Max service temperature	+100˚C	(For temperatures above +100˚C & below -50˚C please contact our technical department)
Min service temperature	-50˚C	
Thermal Conductivity		
	Depends on the Armaflex substrate used.	
Water Vapour Diffusion Resistance		
	μ ⩾ 50,000 per m inch ⩽ 0003	Tested acc.to EN 2086 & ASTM E96 Procedure A
Fire performance		
Reaction to fire	Euroclass B-s3,d0	Calssified acc.to EN 13501-1 Tested acc. to EN 13823 & EN ISO 11925-2
Fire class		
Part 2 & Part 5 (IMO 2010 FTP Code) ASTM E 84 BS 476 Part 6 & 7 NFP 92-507	Pass Class A (< 25 flame spread index) Class 0 & Class 1 M1	IMO Approved by DNV & Bureau Veritas
Other technical features		
Density	1650 -1750 kgm^3	
Tear strengh	> 7 N/mm	Tested acc. to ISO 31-1
Tensile strengh	> 5 MPa	Tested acc. to ISO 37
Resistance to mechanical impact	Good	
Elongation	> 200%	Tested acc. to ISO 37
Exposure	UV resistant, Ozone resistant	UV resistance assessed acc. to Allunga Exposure Lab
Acoustic insertion loss	When used as part of a system Arma-Chek R complies to ISO classes A - C & Shell DEP 31.46.00.31-Gen	Tested acc. to ISO 3741 & ISO 15665 (equivalent method ASTM E1222)

COVERING (ROLLS)

Colour - Grey

Code	Thickness (mm)	Width (mm)	Length (m)	m^2roll
RCS-R10/2-07-GY	2	700	10	7
RCS-R20/1-07-GY	1	700	20	14

MASTIC

Code	Description	Pieces/carton
ACH-MASTICS	Sealing compound for installing Arma-Chek R, Cartridge 290 ml	12
ADH-HT625/1,0	Armaflex® HT625 one-component adhesive, 1,0 litre cans	12
CLEANER/1,0	Special cleaner for use with Armaflex® 520 Adhesive and Armaflex® HT625 Adhesive.	4

PROJECT

BP Clair Ridge Oil Platform
North Sea

PRODUCTS USED

Arma-Chek R
HT/ArmaFlex Industrial

ACOUSTICS

ArmaComfort®

ACOUSTIC INSULATION FOR COMMERCIAL AND DOMESTIC DRAINAGE APPLICATIONS

- Extraordinary acoustic absorption and damping performance for increased comfort on drainage pipes
- Specially designed to reduce airborne and structural noise from cast iron and plastic rain water and waste pipes
- Thin acoustic solution - requires minimal space and is flexible for easy installation on pipe connections

CSTB
le futur en construction

ARMACOMFORT AB PLUS

ArmaFlex elastomeric foam with flexible acoustic barrier. Available as self-adhesive sheets

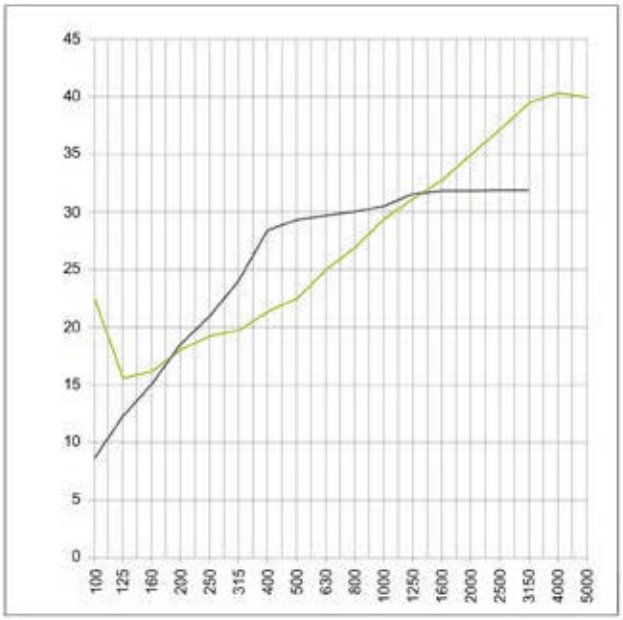
- Black ArmaFlex foam with EPDM acoustic barrier
- Excellent corrosion resistance
- C-S2, d0 fire performance for increase fire safety

ARMACOMFORT AB ALU PLUS

ArmaFlex elastomeric foam with acoustic EPDM- EVA barrier and aluminium foil.

- Black ArmaFlex foam with EPDM acoustic barrier & aluminium foil covering
- Halogen free for data centres & electrical equipment
- Excellent corrosion resistance
- B-S1, d0 fire performance highest rating possible for flexible insulation

SOUND REDUCTION INDEX RW (EN ISO 717-1 & EN 150 10140-2



RANGE

SHEET

Continuous sheet, Self-adhesive continuous sheet

TAPE

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

ArmaComfort® combines excellent acoustic performance with excellent fire performance for increased safety.

Material type	**ArmaComfort AB Plus -** Multilayer consists of an acoustic EPDM-EVA barrier of 2 mm thickness with a 9mm decoupling ArmaFlex elastomeric foam. **ArmaComfort AB Alu Plus -**Multilayer consists of an acoustic EPDM-EVA barrier of 2 mm thickness with an aluminium foil and a 9mm decoupling polyurethane foam.
Colour	**ArmaComfort AB Plus** - Black EPDM acoustic barrier combined with black elastomeric foam. **ArmaComfort AB Alu Plus -** Aluminium foil covering a black EPDM acoustic barrier combined with black elastomeric foam.
Material special information	ArmaComfort® offers outstanding durability.
Applications	ArmaComfort® is widely used as an acoustic insulation on waste water, rain water and sewage pipes. It has been specially designed for apartment buildings, offices, hotels, hospitals, school buildings, retirement homes, shopping centres and conference centres.
Assembly	The ArmaComfort application guide, available at www.armacell.co.uk, should be consulted
Remarks	Declaration of Performance is available in accordance with Article 7 (3) of Regulation (EU) No 305/2011 on our homepage: www.armacell.com/DoP

Property	**Value/Assessment**		**Test**	**Standards & Remarks**
Temperature Range				
Max service temperature	+110°C			
Min service temperature	-50°C (for temperatures below -50°CP Please contact our technical department)			
Thermal Conductivity				
	λ 0°C ≤ 0.042 W/(m·K)	[42+0.1 · ^{9}m + 0.0009 · ^{9}m^{2}]/1000	EU 5934	Declared acc. to EN ISO 13787 Tested acc. to EN 12667
Fire Performance				
Reaction to fire	**ArmaComfort AB Plus**	C-s2, d0	EU 5934	Tested acc. to EN 13823 & EN ISO 11925-2
	ArmaComfort AB Alu Plus	B-s1, d0		
Acoustic performance				
Reduction of structure-borne sound transmission	on Gerberit Silent dB 20 ≤ 18 dB(A)		EU 6733	Tested acc. to EN 14366
Weighted sound reduction index				
Calculated broadband insertion loss	RW = 26dB		EU 6412	UNI EN ISO 10140-1-2012 /-2-2010 UNI ISO 717-1:2003
Other technical features				
	ArmaComfort AB Plus	Thickness 11 mm = 3.9 - 5.3 kg/m^{2}		
Density	**ArmaComfort AB Alu Plus**			
Dimensions & tolerances	Thickness: 11 mm ± 1,6 mm Width: 1000 mm ± 1,5% Length: 2000 mm ± 1,5%			

ARMACOMFORT AB PLUS SHEET

Colour - Black (elastomeric foam)

Code	Thickness (mm)	Width (mm)	Length (m)	m²/carton
AO-11-99/E-AB+	11	1000	2	2

ARMACOMFORT AB PLUS SELF-ADHESIVE SHEET

Colour - Black (elastomeric foam)

Code	Thickness (mm)	Width (mm)	Length (m)	m²/carton
AO-11-99/EA-AB+	11	1000	2	2

ARMACOMFORT AB ALU PLUS SHEET

Colour - Black with Aluminium foil covering (polyurethane foam)

Code	Thickness (mm)	Width (mm)	Length (m)	m²/carton
AO-11-99/E-AB-AL+	11	1000	2	2

TAPE

Code	Colour	Width (mm)	Roll Length (m)	Thickness (mm)	Rolls/carton
TAPE-PE-FE904	Black	30	25	3	10
ACH-PSATAPES-30	Silver	30	25	0.08	10

ArmaSound® RD 240

HIGH PERFORMANCE ACOUSTIC INSULATION FOR A QUIETER ENVIRONMENT

- Optimal performance at lower thickness
- Excellent sound absorption behaviour
- Combined acoustic and thermal properties
- Easy application and low maintenance
- Designed for use in demanding environments
- Compliant to ISO 15665 Classes A to C and Shell DEP 31.46.00.31-Gen Class D
- Satisfies acoustic classes 6, 7 and 8 according to NORSOK R-004
- Highly hydrophobic, open-cell structure designed to resist water ingress
- Optimum density, air-flow resistivity and complex pore geometry for maximum acoustic benefit

APPROVED
TYPE APPROVAL SCHEME

SHEET

Sheet, Self-adhesive sheet

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex 520 adhesive
p. 230

ArmaFlex RS850 adhesive
p. 230

ArmaFlex Cleaner
pg. 238

TECHNICAL DATA

ArmaSound RD 240 is a highly-flexible, hydrophobic, open-cell acoustic insulation material with complex pore geometry.

Material type	Elastomeric foam based on synthetic rubber.
Colour	Black
Applications	In general applications ArmaSound® RD240 is used as acoustic insulation material with excellent sound absorption performance in a variety of different applications, e.g. fan-coil units, duct linings, cabinet linings, chiller systems, enclosures, pipelines. In industrial applications ArmaSound® RD240 is used as an important component of ArmaSound Industrial Systems to provide acoustic insulation on industrial pipework and vessels ensuring reduction of sound transmission.
Installation	For industrial applications it is recommended to consult the ArmaSound Industrial Systems application manual and other relevant Armacell installation instructions and application manuals. Please consult our Customer Service Centre.
Special features	Excellent sound absorption performance.

Property	**Value/Assessment**	**Standards & Remarks**
Temerature Range		
Max service temperature	+85°C	Tested acc. to EN 14706 and EN 14304
Min service temperature	-20°C	
Thermal Conductivity		
	λ ≤ 0.062 W/(m·K) at 0°C	Tested acc. to EN 12667 (Equivalent methods ASTM C177 and C518)
Fire Performance		
Reaction to fire	Euroclass E	D4225
International standards	Class 1	ES6591 Tested acc. to BS 476 Part 7 Approved by Lloyds
	<25 Flame Spread Index*1	Tested acc. to ASTM E84
Practical Fire Behaviour	Self-extinguishing, does not drip, does not spread flames	
Density		
	220 to 360 kg/m^3	Tested acc. to ISO 845, ASTM D1622
Mechanical properties		
Tear strength	0.4 to 1.4 kN/m	Tested acc. to ISO 34-1*3
Tensile strength	70 to 190 kPa 10.2 to 27.6 psi	Tested acc.to ISO 1798
Elongation	50 to 90 %	Tested acc. to ISO 1798
Other technical features		
Weather resistance	In all industrial applications, except for enclosures and other similar sound absorption applications, the outer layer of the material must be protected with an adequate covering like Arma-Chek R, metal jacketing or preformed UV-cured GRP (Glass-Reinforced Plastic) cladding. For further information please consult our Customer Service Centre.	
Health aspects	Fibre dust free	
Water absorption*1	4.4% by volume	Tested acc. to AGI Q 136
Application & handling conditions*4	Ambient temperature: Max. relative humidity: +5 °C to +35 °C 80%	
Sealing and adhesion	Use ArmaFlex 520 or HT625 adhesive for reliable adhesion of joints and seams. In some configurations 19mm wide stainless steel bands with wing clips (or blind rivets) can be used for fixing and final securing.	
Storage & Shelf life*5	3 years	Store indoors, in dry conditions, away from direct sunlight.

<table>
<tr><th>Property</th><th>Value/Assessment</th><th>Test & Special Remarks</th></tr>
<tr><td colspan="3">Acoustic Performance</td></tr>
<tr><td>Acoustic insertion loss</td><td>When used as part of a system ArmaSound RD 240 complies to ISO 15665 Classes B to C and Shell DEP 31.46.00.31-Gen Class D</td><td>Tested according to ISO 3741 (equivalent method ASTM E1222) Classified according to ISO 15665</td></tr>
<tr><td rowspan="3">Sound absorption (typical values)*2</td><td>Octave band sound absorption coefficients, αs:</td><td>Tested according to ISO 354.
Rated according to EN ISO 11654</td></tr>
<tr><td>
<table>
<tr><th rowspan="2">Thickness (mm)</th><th colspan="6">Frequency (Hz)</th></tr>
<tr><th>125</th><th>250</th><th>500</th><th>1000</th><th>2000</th><th>4000</th></tr>
<tr><td>6</td><td>0.01</td><td>0.03</td><td>0.07</td><td>0.18</td><td>0.39</td><td>0.74</td></tr>
<tr><td>10</td><td>0.01</td><td>0.04</td><td>0.15</td><td>0.46</td><td>0.87</td><td>0.94</td></tr>
<tr><td>15</td><td>0.03</td><td>0.11</td><td>0.38</td><td>0.80</td><td>1.03</td><td>0.89</td></tr>
<tr><td>25</td><td>0.09</td><td>0.28</td><td>0.77</td><td>1.03</td><td>0.94</td><td>0.90</td></tr>
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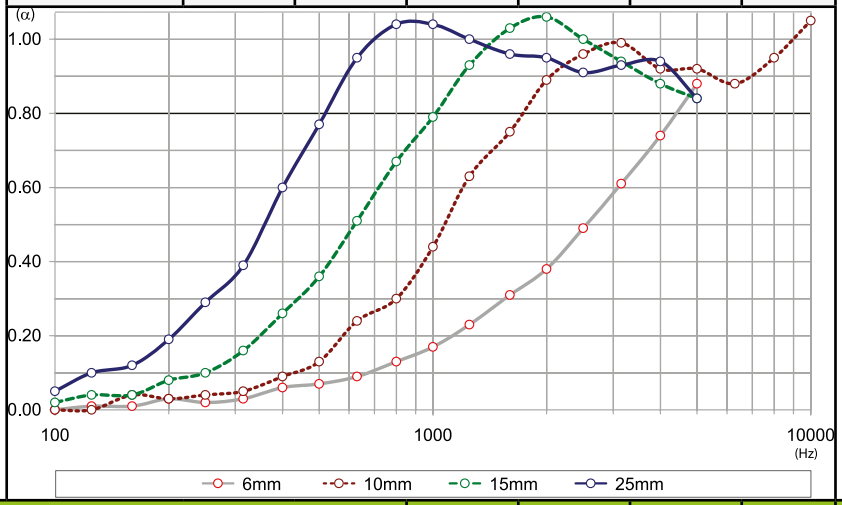


</td><td>Tested according to ISO 354.
Rated according to EN ISO 11654</td></tr>
<tr><td colspan="2">
<table>
<tr><th>Thickness (mm)</th><th>6</th><th>10</th><th>15</th><th>25</th></tr>
<tr><td>absorption coefficients, α_w:</td><td>α_w</td><td>0.15 (H)</td><td>0.25 (H)</td><td>0.40 (H)</td><td>0.55 (H)</td></tr>
<tr><td></td><td>Class</td><td>E</td><td>E</td><td>D</td><td>C</td></tr>
<tr><td>Noise reduction coefficients (NRC):</td><td>NRC</td><td>0.15</td><td>0.40</td><td>0.60</td><td>0.70</td></tr>
</table>
</td><td>Tested according to ISO 354
Rated according to EN ISO 11654

Calculated according to ASTM C423-01</td></tr>
</table>

*1. Based on single test results which are not monitored in regular frequency. Can be used for information / reference only.
*2. The octave band and 1/3rd octave band sound absorption coefficients shown in the table and chart respectively, are provided as examples which are based on single test results. The values presented can be used for information / reference only.
*3. Angle test piece with a nick.
*4. For environmental conditions outside the given range please contact our Customer Service Centre.
*5. 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.

SHEET

Colour - Black

Code	Thickness (mm)	Width (m)	Length (m)	m²/carton
ASD-240-06 •	6	1	1	8
ASD-240-10 •	10	1	1	5
ASD-240-15 •	15	1	1	3
ASD-240-20 •	20	1	1	2
ASD-240-25 •	25	1	1	2

SELF-ADHESIVE SHEET

Colour - Black

Code	Thickness (mm)	Width (m)	Length (m)	m²/carton
ASD-240-06/A •	6	1	1	8
ASD-240-10/A •	10	1	1	5
ASD-240-15/A •	15	1	1	3
ASD-240-20/A •	20	1	1	2
ASD-240-25/A •	25	1	1	2

Other information
• Not a stock item
Further dimensions and insulation thicknesses are available on request.

ArmaSound® Barrier E

HIGH PERFORMANCE NOISE BARRIER FOR ARMASOUND INDUSTRIAL SYSTEMS

- Excellent at reducing the transmission of airborne sound
- Enhances the insertion loss performance of pipe insulation
- Flexible, easy to install
- Mean sound reduction index RW ≥ 28 dB
- Free of lead, unrefined aromatic oils and bitumen
- Integral component of ArmaSound Industrial Systems
- Compliant to ISO 15665 Class C and Shell DEP 31.46.00.31-Gen Class D
- Satisfies acoustic class 8 according to NORSOK R-004

RANGE

SHEET

Continuous sheet (rolls)

RECOMMENDED PRODUCTS

For a complete installation

ArmaFlex HT625 adhesive
p. 234

ArmaFlex Cleaner
p. 238

TECHNICAL DATA

High performance mass loaded sound barrier for a quieter environment.

Material type	Vinyl sound barrier mat. Thermoplastic polymer compound.
Colour	Black
Special features	The material is free of lead, unrefined aromatic oils and bitumen.
Product range*[1]	Sheets / rolls, 2, 3 and 4 mm thickness.
Applications	Flexible sheet for noise control in industrial applications - designed as an integral component of the ArmaSound Industrial Systems.
Installation	The ArmaSound® Industrial Systems installation manual should be consulted before installation. Please consult our Customer Service Centre.

Property	**Value/Assessment**		**Standards & Remarks**
Temperature Range			
Service temperature	Max service temperature Min service temperature	+65˚C +149˚F -20˚C -4˚F	Tested acc. to EN 14706, EN 14707 & EN 14304
Fire Performance & approvals			
International standards	The ArmaSound® Industrial Systems installation manual should be consulted before installation. Please consult our Customer Service Centre.		Tested according to FMVSS 302
Weight			
Mass per unit area	2 mm thickness: 4.8 to 5.5 kg/m2	0.98 to 1.13 lb/ft2	
	3 mm thickness: 7.2 to 8.25 kg/m2	1.47 to 1.69 lb/ft2	
	4 mm thickness: 9.7 to 11.0 kg/m2	1.99 to 2.25 lb/ft2	
Acoustic performance			
Acoustic insertion loss	When used as part of a system ArmaSound Barrier E complies to ISO 15665 Class C and Shell DEP 31.46.00.31-Gen Class D.		Tested according to ISO 3741 (Equivalent method ASTM E1222) Classified according to ISO 15665
Reduction of structure-borne sound transmission	2 mm thickness: Mean sound reduction index RW ≥ 22 dB 3 mm thickness: Mean sound reduction index R ≥ 25 dB 4 mm thickness: Mean sound reduction index RW ≥ 28 dB		Tested according to ISO 10140-2
Mechanical properties			
Tensile strength (MD/CD)	≥ 1.8 MPa	≥ 261 psi	Tested acc. to ISO 37
Elongation (MD/CD)	≥ 25 %		
Other technical features			
Health aspects	Free of lead		
Application and handling conditions*[2]	Ambient temperature: Max. relative humidity:	5 °C to +35 °C +41 °F to +95 °F 80%	
Adhesion and fixing*[9]	Armaflex Adhesive 520 or Adhesive HT625 shall be used for reliable adhesion. 19 mm wide stainless steel bands with wing clips (or blind rivets) shall be used for fixing and final securing. 50 mm long x 0.5 mm thick x 19 mm wide - stainless steel 'S' clips are also required on vertical piping and vessels.		
Storage	Material shall be stored indoors, in clean and dry conditions, away from direct sunlight		
Shelf (storage) life*[3]	Max 3 years		

1. Nominal values.
2. For environmental conditions outside the given range please contact our Customer Service Centre.
3. 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.

All data and technical information are based on results achieved under typical application conditions. Recipients of this information should, in their own interest and responsibility, clarify with us in due time whether or not the data and information apply to the intended application area. 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. However, Armacell cannot guarantee that the data is 100 % accurate. Furthermore, minor deviations in colour, quality and dimensions are unavoidable and in most cases do not influence the performance of the product. Armacell expressly disclaims any and all liability in relation to any results obtained or arising from any use of the product or reliance on such information. No warranty of fitness for any particular purpose, warranty of merchantability or any other warranty, expressed or implied, is made concerning the goods described or the information provided herein. Please consult our Customer Service Centre before insulating stainless steels. Installation instructions are available in our Armaflex installation manual. All the statements and technical information within this document should be read in conjunction with the customer's own specification. It is the responsibility of the recipient to inform all involved parties about the content of these documents. The described and recommended methods should be strictly followed. If there is a requirement to deviate from our recommendations, please contact us in advance to discuss possible suitable alternatives. Armacell will not be liable for any claim resulting from a failure to observe our specification or any other agreed solutions and from non-observance of the customer's specification.

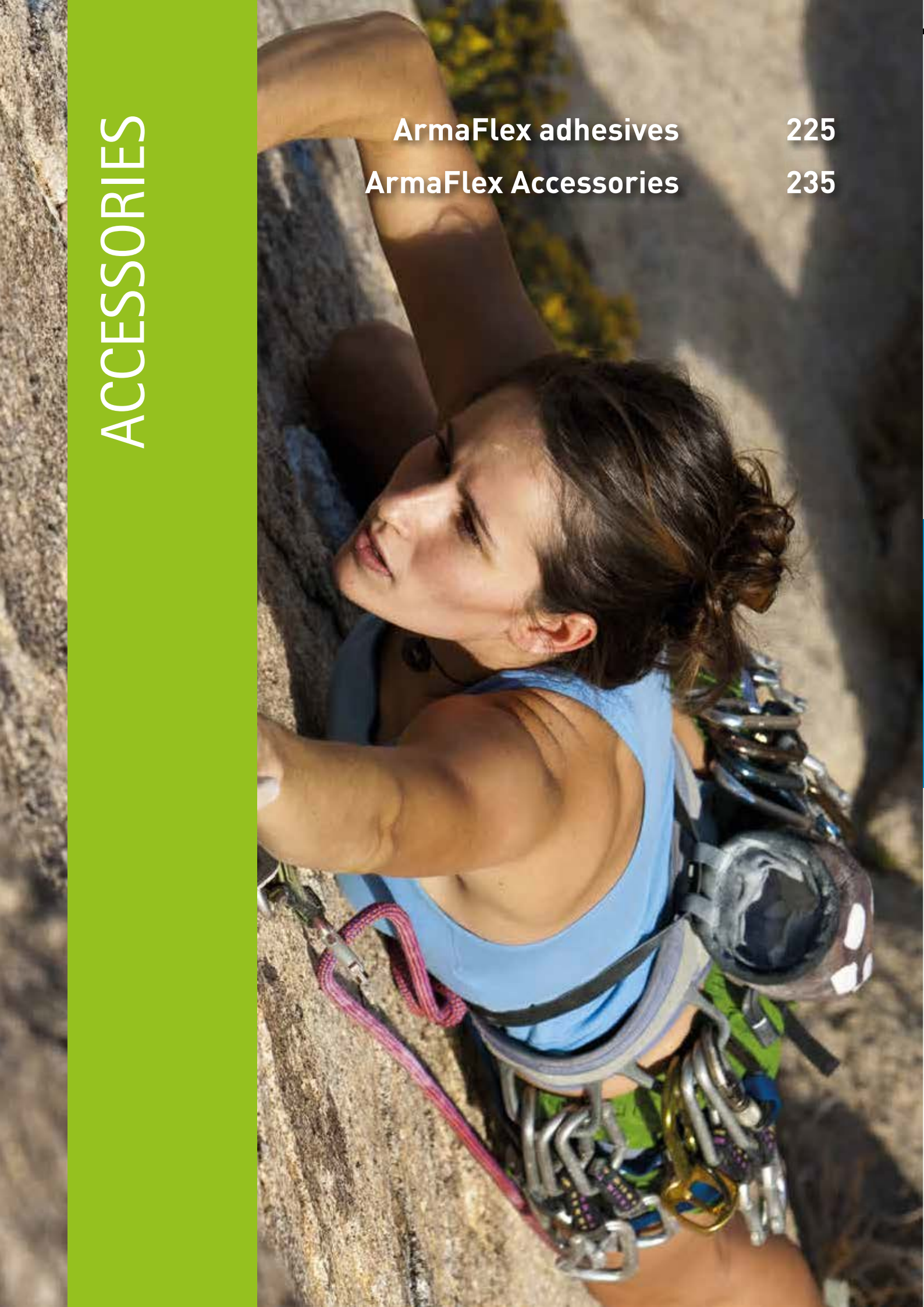
CONTINUOUS SHEET (ROLLS)

Colour - Black

Item	Nominal Thickness (mm)	Nominal Roll Length (m)	Nominal Roll Width (m)	m^2/carton
ASD-BAR-E-02 •	2	2	1.25	2.5
ASD-BAR-E-03 •	3	2	1.25	2.5
ASD-BAR-E-04 •	4	2	1.25	2.5
ASD-BAR-E-04/50 •	4	40	1.25	50

Other information and remarks
• Not a stock item
ArmaSound Barrier E is part of the ArmaSound Industrial System and should only be installed as part of it.

ACCESSORIES



ArmaFlex® adhesives

A FULL RANGE OF OF CONTACT ADHESIVES FOR COMPATIBILITY WITH ALL TYPES OF ARMAFLEX

- **ArmaFlex RS850 & Ultima RS850**
  Non-drip for faster & cleaner applications. Ideal for hard to access areas with reduced solvent content to meet the requirements for sustainable building projects.
- **ArmaFlex 520 & Ultima 700**
  Tried & tested for superior ArmaFlex reliability
- **ArmaFlex HT625**
  Specially formulated to perform at higher temperatures for HT/ArmaFlex products. Can also be used on all ArmaFlex materials, excluding ArmaFlex Ultima.

RS850

High viscosity non-drip thixotropic adhesives, ArmaFlex RS850 and ArmaFlex Ultima RS850 ensure faster and cleaner application. They offer a longer shelf life once stored and emit minimum emission of solvents when they are not being used.

SOLVENT FREE CLEANER

ArmaFlex SF Cleaner can be used to clean the surfaces of technical insulation materials and the application surface. It comes in a practical spray bottle.

HT625

HT625 is a one-component adhesive which has been developed to bond ArmaFlex insulation applied on high temperature lines. Compatible with HT/ArmaFlex, it guarantees a homogeneous and safe bonding at joins and seams

520

ArmaFlex 520 adhesive is a polychloroprene based solvent. The material has low viscosity for ease of application and quick drying characteristics. In its dry state, ArmaFlex 520 adhesive is not flammable. The adhesive is particularly suitable for joining ArmaFlex flexible elastomeric insulation and for bonding the material to clean surfaces. When properly cured the adhesive maintains the resistance to water vapour expected of ArmaFlex.

TECHNICAL DATA

ARMAFLEX 520 Specially formulated adhesive developed for ArmaFlex insulation materials. 	
Material type	Contact adhesive on polychloroprene basis, free of aromatic components.
Colour	Beige
Material special info	Liquid
Applications	Gluing of all flexible ArmaFlex insulation materials (except HT/ArmaFlex & ArmaFlex Ultima).
Special features	Specially formulated adhesive for uniform and safe seam bonding of ArmaFlex insulation materials.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +20˚C, not below 0˚C. At temperatures below +5˚C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is poor or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas exposed to strong sunlight. Shake and stir well before use. Apply thinly to the areas to be bonded with a brush or spatula. For contact adhesion press together with force during the contact adhesion time. Detailed application guidance is available.
Remarks	The adhesive achieves its final strength after 36 hours. Only then should plant be put into operation. Never insulate plant which is in operation or work in strong sunlight. Wait 36 hours before applying coatings (exception: ArmaFinish 99), adhesive tape, coverings etc.

ARMAFLEX RS850 Non-drip one component adhesive in gel form. Specifically developed for ArmaFlex insulation materials based on synthetic rubber. 	
Material type	Thixotropic contact adhesive on polychloroprene basis.
Colour	Beige
Material special info	Gel form
Applications	Application on pipes, ducts and tanks with service temperature up to +70˚C. Gluing of all flexible ArmaFlex insulation materials (except HT/ArmaFlex & ArmaFlex Ultima).
Special features	Specially formulated adhesive for uniform and safe seam bonding of ArmaFlex insulation materials.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +20˚C, not below 0˚C. At temperatures below +5˚C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is poor or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas expossed to strong sunlight. Shake and stir well before use. Apply thinly to the areas to be bonded with a brush or spatula. For contact adhesion press together with force during the contact adhesion time. Detailed application guidance is avalable.
Remarks	The adhesive achieves its final strength after 24 hours. The system should never be operated during this time and any self-adhesive tape or protective coating (exception: ArmaFinish 99), should only be applied after the time has elapsed.

	ArmaFlex 520 adhesive	ArmaFlex RS850 adhesive
Temperature Range		
Max service temperature	+105˚C	+70˚C
Min service temperature	-50˚C (for temperatures below -50 ˚C please contact our technical department)	-40˚C
Performance		
Coverage (guidance only)	Minimum consumption with the adhesive applied to both surfaces: ArmaFlex tubes (thickness > consumption unslit > consumption slit) • 10mm > 1,120m per litre > 140m per litre • 20mm > 280m per litre > 70m per litre • 30mm > 175m per litre > 45m per litre • 40mm > 130m per litre > 35m per litre Sheets • 3-4 m^2 per litre	
Storage & shelf life		
	12 months Store as cool as possible but protected from frost. In the event of frost any gelification is reversible on warming	36 months in an unopened container. Store between 0˚C and 35˚C in a dry place. Do not store with explosive substances or spontaneosly combusting substances. Store as cool as possible but protected from frost. Cold or frozen adhesive (under 5˚C) will become fully useable if slowly acclimatised up to working temperature (approx 20˚C)
Preparation of surfaces		
	Clean surfaces and ArmaFlex Ultima surface with Armaflex Cleaner. Compatibility with bases: • Very good adhesion to metallic sufaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with asphalt, bitumen and red lead (linseed oil-based)	Clean surfaces and ArmaFlex Ultima surface with Armaflex Cleaner. Compatibility with bases: • Very good adhesion to metallic surfaces. • The adhesive's compatibility with colour coated surfaces needs to be tested. • Incompatible with asphalt, bitumen, red lead (linseed oil-based), polystyrene and plasticated PVC
Woking time at 20 ˚C		
Wet adhesion time	Up to 2 minutes	
Drying time	3- 5 mins	2 min
Contact adhesion	15 - 20 mins	10 - 15 mins
Setting	36 hours	24 hours
The open time depends on the quantity as well as indoor climate conditions. Before operating plant the setting time needs to be allowed to elapse.		
Other technical features		
Flash point	approx -20 ˚C	-17˚C
Expolsion limits	Lower: approx 1 Vol % Upper: approx 13 Vol %	Lower: approx 1.1 Vol % Upper: approx 11.5 Vol %
Hazard class	Highly flammable, Regulation of inflammable liquids.	
Ageing stability	Very good	
Resistance to weathering	Very good	
Recycling	Allocation of a waste code number, according to the European Waste Catalouge, should be carried out in agreement with the regional waste disposal company. For details see relevant Safety Data Sheet. Packaging must be emptied of all residues. Packaging with traces of cured product can be recycled. Packaging with uncured product must be recycled into new product.	
Transport classes	Depending on the type of transport	

ARMAFLEX RS850

Code	Description	Pieces/carton
ADH-RS850/0.5	ArmaFlex RS850 0.5 Litre can	6

ARMAFLEX 520

Code	Description	Pieces/carton
ADH-520/0.25E	ArmaFlex 520 0.25 Litre can with brush	24
ADH-520/0.5E	ArmaFlex 520 0.5 Litre can	12
ADH-520/1.0E	ArmaFlex 520 1.0 Litre can	12
ADH-520/2.5E	ArmaFlex 520 2.5 Litre can	8

ARMAFLEX ULTIMA 700 One-component adhesive specifically developed for ArmaFlex Ultima and insulating materials based on Armaprene® synthetic rubbers. 	
Material type	Contact adhesive on polychloroprene basis, free of aromatic components.
Colour	Blue
Applications	Application on pipes and tanks with service temperature up to +110˚C. Gluing of ArmaFlex Ultima and insulation materials based on Armaprene® synthetic rubbers.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +15˚C to +20˚C, not below 0˚C. At temperatures below +5˚C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is poor or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas expossed to strong sunlight.
Remarks	The adhesive achieves its final strength after 36 hours. Only then should plant be put into operation. Wait 36 hours before applying coatings (exception: Armafinish 99), adhesive tape, coverings etc.

ARMAFLEX ULTIMA RS850 Non-drip one component adhesive gel form. Specifically designed for processing ArmaFlex and insulating materials based on Armaprene® synthetic rubbers 	
Material type	Thixotropic one component contact adhesive based on polychloroprene.
Colour	Blue
Material special information	Gel based
Applications	Application on pipes and tanks with service temperature up to +70˚C. Gluing of ArmaFlex Ultima and insulation materials based on Armaprene® synthetic rubbers.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +15˚C to +20˚C, not below +10˚C. At temperatures below +5˚C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is bad or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas expossed to strong sunlight.
Remarks	The adhesive achieves its final strength after 24 hours. The system should not be operated during this period and any self-adhesive tape or protective coatings should only be applied after this period has elapsed.

	ULTIMA 700	**ULTIMA RS850**
Temperature Range		
Max service temperature	+110˚C (for temperatures above +110˚C please contact our technical department)	+70˚C
Min service temperature	-50˚C (for temperatures below -50 ˚C please contact our technical department)	-40˚C (for temperatures below -40 ˚C please contact our technical department)
Performance		
Coverage (guidance only)	Minimum consumption with the adhesive applied to both surfaces: ArmaFlex tubes (thickness > consumption unslit > consumption slit) • 10mm > 1,120m per litre > 140m per litre • 20mm > 280m per litre > 70m per litre • 30mm > 175m per litre > 45m per litre • 40mm > 130m per litre > 35m per litre Sheets • 3-4 m^2 per litre	
Storage & shelf life		
	12 months in an unopened container. Store as cool as possible but protected from frost. In the event of frost any gelification is reversible on warming	18 months in an unopened container. Store between 0˚C and 35˚C in a dry place. Do not store with explosive substances or spontaneously combusting substances. In the event of frost any gelling is reversible on warming

	ULTIMA 700	ULTIMA RS850
Preparation of surfaces		
	Clean surfaces and ArmaFlex Ultima surface with ArmaFlex Cleaner. Compatibility with bases: • Very good adhesion to metallic sufaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with asphalt, bitumen and red lead (linseed oil-based)	Clean surfaces and ArmaFlex Ultima surface with ArmaFlex Cleaner. Compatibility with bases: • Very good adhesion to metallic surfaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with asphalt, bitumen, red lead (linseed oil-based), polystyrene and plasticated PVC
Working time		
Drying time	3- 5 mins	2 min
Contact adhesion	15 - 20 mins	10 - 15 mins
Setting	36 hours	24 hours
The open time depends on the quantity as well as indoor climate conditions. Before operating plant the setting time needs to be allowed to elapse.		
Other technical features		
Flash point	approx -26 °C	
Expolsion limits	Lower: approx 1.1 Vol % Upper: approx 12.8 Vol %	
Hazard class	Highly flammable	
Ageing stability	Very good	
Resistance to weathering	Very good	
Recycling	Allocation of a waste code number, according to the European Waste Catalouge, should be carried out in agreement with the regional waste disposal company. For details see relevant Safety Data Sheet. Packaging must be emptied of all residues. Packaging with traces of cured product can be recycled. Packaging with uncured product must be recycled into new product.	
Transport classes	Depending on the type of transport	

ARMAFLEX ULTIMA 700

Code	Description	Pieces/carton
AHU-700/1.0	ArmaFlex Ultima 700 Adhesive, 1 Litre cans	12

ARMAFLEX ULTIMA RS850

Code	Description	Pieces/carton
AHU-RS850/0.5	ArmaFlex Ultima RS850 Adhesive, 0.75 Litre cans	6

ARMAFLEX HT625 One-component adhesive for high temperature applications, specifically developed for HT/ArmaFlex insulations but also suitable for all ArmaFlex synthetic rubber based insulation materials.	
Material type	Contact adhesive on polychloroprene basis, free of aromatic components.
Colour	Beige
Material special info	Liquid
Applications	Application on pipes and tanks with service temperature up to +150˚C. Gluing of HT/ArmaFlex insulation materials and other Armaflex synthetic rubber based insulation materials (except Armaflex Ultima).
Special features	Specially formulated adhesive for uniform and safe seam bonding of ArmaFlex insulation materials applied on high temperature lines.
Assembly	Please observe our installation instructions/product data sheets. Application temperature: ideally +20˚C, not below 0˚C. At temperatures below +5˚C or high humidity approx above 80%), increased condensation may form on the surfaces to be glued or adhesive films. In these cases bonding is poor or impossible. This can be tested by using absorbent paper (blotting or crepe paper). Work should not be carried out on operating plant or areas expossed to strong sunlight.
Remarks	The adhesive achieves its final strength after 36 hours. Only then should plant be put into operation. Wait 36 hours before applying coatings (exception: ArmaFinish 99), adhesive tape, coverings etc.

Temperature Range	
Max service temperature	+150˚C (For temperatures above +110˚C please contact our technical department)
Min service temperature	-50˚C (For temperatures below -50 ˚C please contact our technical department)
Performance	
Coverage (guidance only)	Minimum consumption with the adhesive applied to both surfaces: ArmaFlex tubes (thickness > consumption unslit > consumption slit) • 10mm > 1120m per litre > 140m per litre • 20mm > 280m per litre > 70m per litre • 30mm > 175m per litre > 45m per litre • 40mm > 130m per litre > 35m per litre Sheets • 3-4 m^2 per litre
Storage & shelf life	
12 months in an unopened container. Do not store with expolsive substances / spontaneously combusting substances. Store as cool as possible but protected from frost. In the event of frost any gelification is reversible on warming	
Preparation of surfaces	
Clean surfaces and ArmaFlex surface with ArmaFlex Cleaner. Compatibility with bases: • Very good adhesion to metallic sufaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with Asphalt, bitumen and red lead (linseed oil-based)	
Woking time	
Drying time	3- 5 mins
Contact adhesion	15 - 20 mins
Setting	36 hours
The open time depends on the quantity as well as indoor climate conditions. Before operating plant the setting time needs to be allowed to lapse.	

Other technical features	
Flash point	approx -26 °C
Expolsion limits	Lower: approx 1.1 Vol %; Upper: approx 12.8 Vol %
Hazard class	Highly flammable
Ageing stability	Very good
Resistance to weathering	Very good
Recycling	Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company. For deatils see relevant Safety Data Sheet. Packaging must be emptied of all residues. Packaging with traces of cured product can be recycled. Packaging with uncured product must be recycled into new product.
Transport classes	Depending on the type of transport

ARMAFLEX HT625 ADHESIVE

Code	Description	Pieces/carton
ADH-HT625/0.25	ArmaFlex HT625 one component adhesive, 0.25 Litre can, with brush	40
ADH-HT625/0.5	ArmaFlex HT625 one component adhesive, 0.5 Litre can, with brush	12
ADH-HT625/1.0	ArmaFlex HT625 one component adhesive, 1 Litre can, with brush	12

ArmaFlex® accessories

ARMAFLEX TOOLS FOR THE PROFESSIONALS!

- When it comes to preventing condensation and energy losses on equipment, not only high-quality insulation material is crucial, but also the installation.
- ArmaFlex insulation materials not only have the required technical properties, they can also be installed quickly and easily. Armacell already offers various tools and aids such as the ArmaFlex Application Manual and installation videos.
- Now all the tools and aids are available in a lightweight, robust, lockable aluminium case!

PROPERTIES

ARMAFINISH 99

THE ELASTIC PAINT DESIGNED FOR PROTECTION & COVERING OF ARMAFLEX

- **Resistant to weathering and ageing**
- **Coating remains elastic**
- **Drip-free paint**
- **Specially developed for covering Armaflex®**
- **Protection of Armaflex® insulation materials**

ArmaFinish 99 is a water-based coating using an advanced terpolymer resin system. When properly applied the coating is suitable for the protection of ArmaFlex flexible thermal insulation materials against sunlight, UV radiation and chemical attack. The coating, when fully cured, maintains the flexibility, resistance to water vapour and fire performance of ArmaFlex material. Where resistance to damage is a particular requirement, the coating may be further strengthened using a mesh glass fibre scrim.

ARMAFLEX SF CLEANER

Solvent free cleaner

ArmaFlex SF Cleaner can be used to clean the dirty surfaces of technical installations as well as the surfaces of insulating materials. It comes with a very practical spray bottle.

ARMAFLEX CLEANER

SURFACE CLEANER PREPARATION FOR ARMAFLEX® INSTALLATIONS

- **Ensures a clean surface before the use of ArmaFlex® Adhesives**
- **Removal of dirt from surfaces**
- **Cleaning of brushes and tools contaminated with ArmaFlex® adhesive**

ArmaFlex cleaner is a clear, colourless liquid. It is used for the removal of grease oils and dirt from surfaces prior to the use of ArmaFlex adhesives or ArmaFinish 99 paint. The cleaner may also be used to clean ArmaFlex adhesive from tools and brushes.

TECHNICAL DATA

	ARMAFLEX SF Cleaner Water-soluble cleaner	**ARMAFLEX Cleaner** Special cleaner for use with all ArmaFlex adhesives
Colour	Beige	Clear
Material special info	Liquid	Liquid
Applications	Cleaning of surfaces where ArmaFlex is to be installed.	Cleaning of surfaces where ArmaFlex is to be installed.
Assembly	To ensure a perfect adhesion all contaminated sufaces, including ArmaFlex, must be cleaned.	To ensure a perfect adhesion all contaminated sufaces, including ArmaFlex, must be cleaned. In addition the cleaner can be used to sufaces where ArmaFinish 99 is being applied.
Remarks	ArmaFlex SF cleaner to be spayed onto areas that require cleaning and allowed to settle (time depending on the amount of dirt) before washing off.	Can also be used to clean tools.
Storage & shelf life	12 months sealed in original container. Keep container tightly closed in a cool, well ventilated place. Protect from frost and do not store below +5 °C.	12 months sealed in original container. Keep container tightly closed in a cool, well ventilated place. Protect from heat & direct sunlight. Do not store together with explosive substances or spontaneously combusting subtances.
Preparation of surfaces	Clean surfaces and ArmaFlex surface with ArmaFlex Cleaner. Compatibility with bases: • Very good adhesion to metallic sufaces. • The adhesive's compatibility with colour coated sufaces needs to be tested. • Incompatible with asphalt, bitumen and red lead (linseed oil-based)	
Flash point	>100 °C	approx -20 °C
Explosion limits		Lower: approx 1% Vol, Upper: approx 13 % Vol. Regulation of inflammable liquids.
Recycling	Dispose of waste according to applicable legislation, for more details see the relevant safety data sheets.	Allocation of a waste code number, according to the European Waste Catalouge, should be carried out in agreement with the regional waste disposal company. For details see relevant Safety Data Sheet. Packaging must be emptied of all residues. Cans must be emptied prior to recycling. Cans containing adhesive must be recycled into new product.
Transport classes	Non hazardous material as defined by the transport regulations.	Dependent on the transport sector

ARMAFINISH 99 UV resistant paint that remains permanently elastic, resistant to weathering and with good ageing resistance.	
Colour	Black, White (RAL 9001) OR GREY (RAL 7037)
Material type	Non-drip
Material special info	Normal consumption: 0.55 Litres per M^2 when two coats applied (corresponds to a dry film thickness of 0.26mm)
Applications	Protection of ArmaFlex insulation materials when installed outdoors and for marking purposes when used indoors.
Assembly	ArmaFlex insulation (except HT/ArmaFlex & ArmaFlex Ultima, see product data sheets) installed outdoors, should be covered with two coats. Application temperature: +10°C to +30 °C, Drying time: 2 hours (+20 °C), Max relative humidity: 80%. It's necessary to allow 2 hours between each coat and the second coat must be applied within 7 days. The paint may be applied with a brush or roller and tools cleaned with with water or ArmaFlex cleaner.
Remarks	Unprotected ArmaFlex must not be exposed to weathering for more than 3 days and ArmaFinish 99 paint should be applied as soon as possible. The protective coating should be inspected at regular intervals. After 2 years at the latest a further two coats should be applied.
Storage & shelf life	12 months in unopened container. Once open keep container tightly closed in a cool, well ventilated place and potect from frost.
Explosion limits	None
Recycling	Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company. For details see relevant Safety Data Sheet. Cans must be emptied prior to recycling. Cans containing adhesive must be recycled into new product.

ARMAFLEX CLEANER

Code	Description	Pieces/carton
CLEANER/1.0	Special cleaner for use with ArmaFlex Adhesive	4
SF-CLEANER/1.0	Solvent free cleaner for use with ArmaFlex Adhesive	6

ARMAFINISH 99 PAINT

Code	Description	Pieces/carton
FINISH/BK-2.5	Protective paint for ArmaFlex, black, 2.5 Litres	4
FINISH/WH-2.5	Protective paint for ArmaFlex, White, 2.5 Litres	4
FINISH/GY-2.5	Protective paint for ArmaFlex, grey, 2.5 Litres	4

TAPE

Code	Description	Colour	Width (mm)	Length (m)	Thickness (mm)	Rolls/carton
AF-TAPE-MC	AF/ArmaFlex tape	Black	50	15	3	12
HT-TAPE	HT/ArmaFlex tape	Black	50	15	3	12
NH-TAPE	NH/ArmaFlex tape	Dark Grey	50	15	3	12
UD-TAPE	ArmaFlex Ultima tape	Blue	50	15	3	12
ACH-PSATAPES-30	Arma-Chek Silver tape	Silver	30	25	0.08	10
ACH-PSATAPES-50	Arma-Chek Silver tape	Silver	50	50	0.08	6
ACH-TAPED2025 •	Arma-Chek D tape	Dark Grey	20	25	0.18	12
ACH-TAPED5050 •	Arma-Chek D tape	Dark Grey	50	50	0.18	6
ACH-TAPED10025 •	Arma-Chek D tape	Dark Grey	100	25	0.18	3

MASTICS

Code	Description	Pieces/carton
ACH-MASTICSD	Mastic black. Sealing compound for installing Arma-Chek outdoors, 290 ml	12
ACH-MASTICS	Sealing compound for installing Arma-Chek R, Cartridge 290 ml	12

TOOLS

Code	Description	Pieces/carton
BLADES	Spare blades for tube slitter-knife (50x6 pcs)	50x6
BLADES-PCS	Spare blades for tube slitter-knife (6 pcs)	6
CERAMIC KNIFE	Knife with ceramic blade (10 cm) and rubber grip (9 cm)	1
CUTTING-SET	ArmaFlex knife-set (3 knives + 1 sharpening stone)	1
GLUEM-BRUSH11MM	Gluemaster extra brush points with cap (11mm diameter)	5x4
GLUEM-BRUSH17MM	Gluemaster extra brush points with cap (17mm diameter)	5x4
GLUEMASTER B	ArmaFlex Gluemaster (adhesive pump)	12
SLITTER	Special tube slitter-knife	10

TOOLBOX

Length - 570mm, Width - 325mm, Thickness - 160mm, Aluminium toolbox

Code	Description	Pieces/carton
TOOLBOX	Case containing tools to install ArmaFlex	1

TOOLS FOR THE PROFESSIONALS

ARMAFLEX TOOLBOX

All the tools and aids required to install ArmaFlex professionally in a lightweight, yet robust, aluminium case. With all the high-quality tools for measuring, cutting and gluing elastomeric insulation materials insulators, are well-equipped for all fields of application.

MEASURING CORRECTLY

- ArmaFlex Application Manual
- Folding rule with circumference scale
- Callipers (300 mm) to determine diameters precisely
- Edding & silver-ink marker & ballpoint pen
- Bow compass with holder

CUT PERFECTLY

- ArmaFlex template
- 4 knives: with blade length of 9, 17, 27 cm & 1 ceramic knife
- Knife holster
- Sharpening stone
- Copper pipe ends (6 different diameters)
- Sharpening tool for copper pipe ends

GLUE NEATLY

- ArmaFlex short-bristle brushes 14, 70mm flat brush
- ArmaFlex gluemaster (adhesive pump)
- Cleaning cloth for tools

Pipe Diameter chart

COPPER PIPES

STEEL PIPES

PLASTIC PIPES

Insulation bore size (mm)	COPPER PIPE		STEEL PIPE			PASTIC PIPE
	OD (mm)	OD (inch)	Nominal Ø (DN)	OD (mm)	OD (inch)	OD (mm)
6	6	1/4				6
10	10	3/8	6	10.2	1/8	10
12	12	1/2				12
15	15	5/8	8	13.5	1/4	
18	18	3/4	10	17.2	3/8	16
20	19	3/4				20
22	22	7/8	15	21.3	1/2	
28	28	1 1/8	20	26.9	3/4	25
35	35	1 3/8	25	33.7	1	
42	42	1 5/8	32	42.4	1 1/4	40
48	48	1 7/8	40	48.3	1 1/2	
54	54	2 1/8				50
60	60	2 5/8	50	60.3	2	
67	67	2 5/8				63
76	76	3	65	76.1	2 1/2	75
80	80	3 1/8				
89	89	3 1/2	80	88.9	3	
93	92	3 5/8				90
108	108	4 1/4				
114	114	4 1/2	100	114.3	4	110
Sheet required						125
	133					
			125	139.7	5	140
	159					160
			150	168.3	6	
						180
	219		200	219.1	8	
						225
						250
	267					
			250	273	10	
						280
						315
			300	329.9	12	
			350	355.6	14	355
			400	406.4	16	400
			450	457	18	
			500	508	20	
			600	610	24	

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