



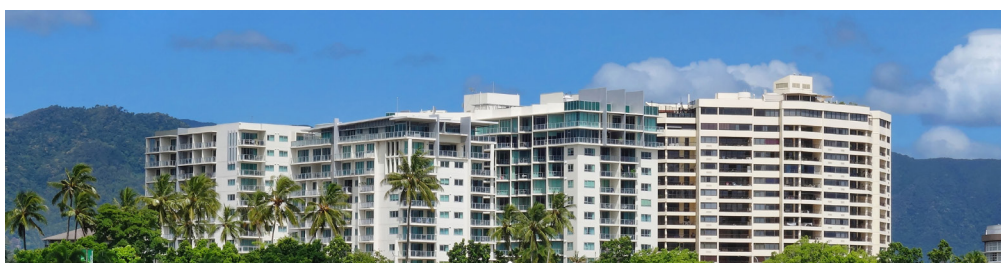
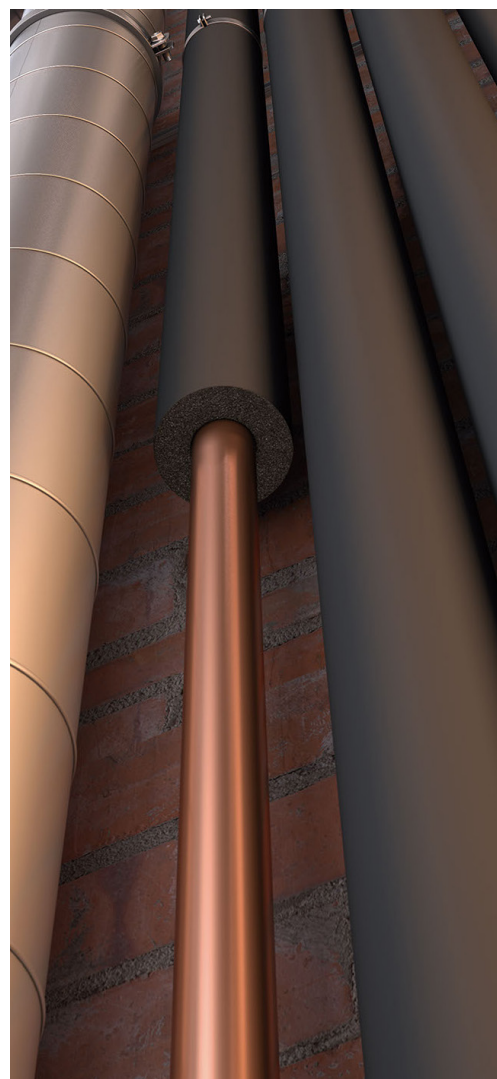
## ENHANCED PERFORMANCE AND INDOOR AIR QUALITY

# ArmaFlex® FRV

High-performance insulation for  
air-conditioning, heating and refrigeration

- // Fire-tested for vertical pipe chases to NFPA 274
- // Complies with AS/NZS 4859.1
- // Reduces mould and bacteria growth through Microban® antimicrobial product protection, unique to Armacell
- // Type III Environmental Product Declaration (EPD)
- // FM-Approved

[www.armacell.co.th](http://www.armacell.co.th)



 **armacell**  
ArmaFlex®

ENHANCED PERFORMANCE  
AND INDOOR AIR QUALITY

# ArmaFlex FRV

ArmaFlex FRV fulfils NFPA 274 requirements, a full-scale test simulating one of the most stringent fire environments in high-rise buildings. Infused with Microban antimicrobial product protection and provided with an independently verified Environmental Product Declaration (EPD) to support green building certification schemes, this FM-approved product is the preferred insulation for air-conditioning, heating and refrigeration applications.

Excellent performance



Good indoor air quality



Sustainability focus



## // Excellent performance

Passes a full-scale fire test simulating how insulated pipes behave in confined spaces when a small, growing fire escalates in the vertical pipe chase of a high-rise building.

## // Closed-cell structure

Minimises moisture penetration to ensure long-term protection against corrosion under insulation. Makes an additional water vapour barrier unnecessary.

## // Energy efficient

Low thermal conductivity minimises energy losses to deliver long-term energy savings.

## // Microban protection

When microbes come into contact with the insulation surface, Microban penetrates the cell wall of the microorganism, disabling its ability to function, grow and reproduce.

## // Focused on sustainability

From the point of manufacturing to its end of life, ArmaFlex FRV saves more energy over the product life cycle than is required to manufacture it.

## // Safer indoor air quality

Free of fibre and formaldehyde, and GREENGUARD® Gold certified for low emissions of volatile organic compounds.

## // Easy-to-install

Highly flexible elastomeric foam that can be installed quickly on irregular shapes and installations in tight spaces.

# BETTER PERFORMANCE IN HIGH-RISE BUILDINGS

Insulation materials are among the few industrially made products that save more energy over their product lifetime than is needed in their manufacturing process. For example, **ArmaFlex saves 140 times more energy** than is required for its production, transportation and disposal<sup>1</sup>. Amortisation calculations for typical applications also exhibit that the cost of ArmaFlex is recovered after just one or two years.

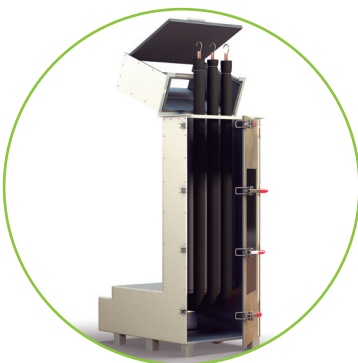
While the benefits of installing quality insulation are clear, the drive to limit any increase in construction costs has resulted in a proliferation of different materials that claim to meet various local regulations. With several major fires breaking out in tall buildings around the world in recent years, there is an increased awareness that existing test methods may not be adequately assessing fire hazard properties. Hence, the intention to regulate the fire performance of building materials is being insufficiently met.

The key to ensuring the robustness of any building design lies in selecting and installing products that are "fit for purpose", not merely tested and approved. As buildings get taller, specifiers should look beyond minimum requirements to ensure higher safety standards. This challenges material manufacturers to improve their technology to offer solutions that provide enhanced overall safety for building occupants.

## NFPA 274 STANDARD TEST METHOD

The National Fire Protection Association (NFPA) is an international non-profit organisation that develops, publishes and disseminates fire risk consensus codes and standards. The NFPA 274 Standard Test Method is a full-scale test that uses large samples to simulate how insulated pipes in a **confined vertical configuration** may behave during a growing fire situation. It may be a more realistic assessment as it reflects the actual installation configuration.

BY USING PRODUCTS THAT PASS NFPA 274, SPECIFIERS AND MANUFACTURERS HELP TO ENCOURAGE THE USE OF PRODUCTS WITH BETTER PERFORMANCE.



Insulated pipes are first inserted into a vertical pipe chase test chamber which mimics the actual pipe installation.



A small, growing fire which escalates is placed directly underneath the pipes and the fire performance is observed.



The test runs for 10 minutes and materials must pass the recommended performance criteria.

## // Test results

Three materials were tested: ArmaFlex FRV, foil-faced polyethylene (PE) and PE. To pass the test, the material must meet all the recommended performance criteria and **only ArmaFlex FRV was able to achieve this**.

| Material /<br>Performance criteria | Peak heat<br>release rate | Total heat<br>release | Total smoke<br>release | Extent of flame<br>above pipe chase | Result      |
|------------------------------------|---------------------------|-----------------------|------------------------|-------------------------------------|-------------|
|                                    | [kW]                      | [MJ]                  | [m <sup>2</sup> ]      | [m]                                 | [Pass/Fail] |
| Pass criteria                      | ≤ 300                     | ≤ 83                  | ≤ 500                  | ≤ 0.3                               | -           |
| ArmaFlex FRV                       | ✓                         | ✓                     | ✓                      | ✓                                   | ✓           |
| Foil-faced PE                      | ✗                         | ✓                     | ✓                      | ✗                                   | ✗           |
| PE                                 | ✗                         | ✗                     | ✓                      | ✗                                   | ✗           |

<sup>1</sup> Assuming a service life of 20 years for cold applications and/or 30 years for hot applications, this ratio was calculated based on very conservative assumptions.



IN 2009, WE BECAME THE WORLD'S FIRST MANUFACTURER OF FLEXIBLE TECHNICAL INSULATION MATERIALS TO CARRY OUT LIFE CYCLE ASSESSMENTS (LCA) AND PUBLISH ENVIRONMENTAL PRODUCT DECLARATIONS (EPDS).

## PROTECTING THE ENVIRONMENT

A key aspect of our corporate philosophy and business strategy is our commitment to environmental protection, which ties in with our corporate value - Sustainability. In all this, we measure our success by the added value our innovative solutions deliver to a wide range of industries - benefits of societal and ecological significance.

**An Environment Product Declaration (EPD)** is a neutral, independently verified document that provides information about the impact a product has throughout its life cycle - and in particular its impact on the environment. The fact that one EPD can be compared with another facilitates product evaluation, especially when designing green buildings in line with certification schemes such as Leadership in Energy and Environmental Design (LEED®).

**A Life Cycle Assessment (LCA)** quantifies the direct and indirect environmental impact associated with the life cycle of a product from the raw material extraction, materials' processing and manufacturing through distribution and use to its ultimate disposal. As an LCA provides specific information on an individual manufacturer's products, the results serve as a valuable benchmark.



### INDOOR AIR QUALITY

In 2011, the Empire State Building in New York City was extensively renovated and LEED GOLD certified. ArmaFlex was installed on the air ducts to ensure a high indoor air quality.



### ENERGY CONSERVATION

Sathorn Square in Bangkok, Thailand, is a Grade A office building and a LEED-certified project that achieved GOLD level certification in 2013. ArmaFlex was installed on the chilled water system to prevent condensation and minimise energy losses.



## HOW ARE THESE DOCUMENTS USED?

**EPDs and LCAs provide objective and transparent information about a product's environmental impact** and facilitate understanding about a building's environmental footprint. EPDs also allow for a like-for-like comparison of similar products for specification and procurement purposes.

**Architects, specifiers and those inviting tenders**

**EPDs are used as the basis for calculating eco-balance, a prerequisite for green building certification.** Some of the key criteria considered when selecting construction products include technical performance, costs, environmental aspects and aesthetics.

**Real-estate companies and building owners**

**When EPDs and green building certifications are presented, the value of the building increases and it is easier to market properties that are certified as sustainable.** Long-term cost savings can also be enjoyed as the building is designed to make efficient use of its resources.

**End-users and governments**

As awareness of sustainability and healthy working environments for increased productivity increases, governments are keen to develop green building initiatives. Individuals are also driven to engage in energy consumption behavioural change and place higher emphasis on occupant well-being. **EPDs can provide assurance that the manufacturers' claims are substantiated.**

## HEALTHIER INDOOR AIR QUALITY

GREENGUARD is a certification programme created by UL to certify products that have been scientifically proven to meet some of the world's most rigorous third-party chemical emissions standards. GREENGUARD Certified products help to reduce indoor air pollution and the risk of chemical exposure, contributing to healthier indoor environments. GREENGUARD Certified products are recognised by many green building rating schemes around the world, giving these products a clear advantage in the marketplace.

### GREENGUARD GOLD CERTIFICATION

This certification programme offers a much stricter certification criteria than the GREENGUARD Certification programme as it takes into account the safety of sensitive individuals (such as children and the elderly) who spend an extended amount of time indoors. Products that have achieved GREENGUARD Gold certification are acceptable for use in schools and healthcare facilities as they emit even fewer volatile organic compounds and total chemical emissions than products without this certification.

With more of our time being spent indoors, installing materials that emit low volatile organic compounds and total chemical emissions will help to mitigate health risks.

THANKS TO GREENGUARD GOLD CERTIFICATION, USING ARMAFLEX FRV MEANS YOU COULD EARN CREDITS TOWARDS GREEN BUILDING CERTIFICATION (SUCH AS LEED) WITHOUT ADDITIONAL TESTING OR LOCAL CERTIFICATION.

### ANTIMICROBIAL PRODUCT PROTECTION

Bacteria are among the fastest reproducing organisms in the world, and research has shown that some can double every four to twenty minutes. This means they could be a potential health hazard to anyone coming in contact with them, even before they are visible to the naked eye.

ArmaFlex FRV is infused with Microban product protection during the manufacturing process. Hence, the protective ingredient becomes part of the insulation molecular structure and helps to provide long-term antimicrobial protection that does not deplete or get washed off. This state-of-the-art technology works to penetrate the cell wall of the micro-organism coming into contact with the insulation surface to disable its ability to function, grow and reproduce.

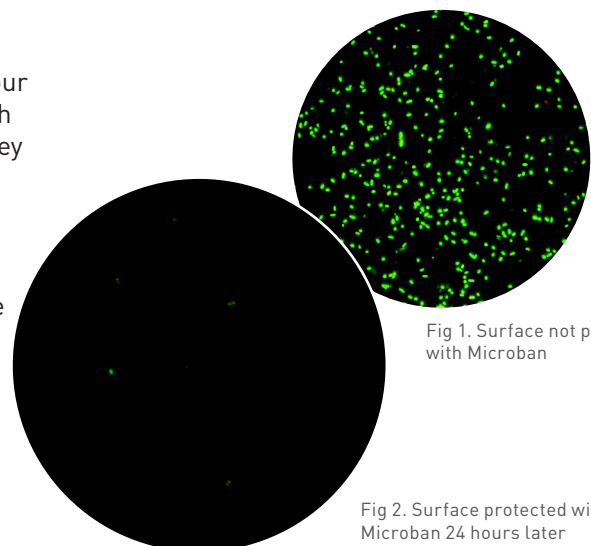
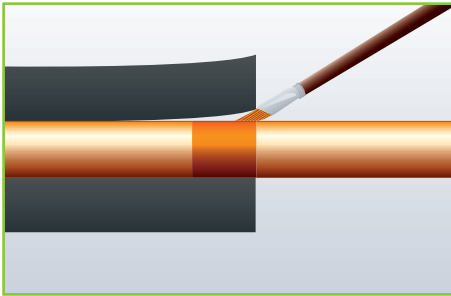


Fig 1. Surface not protected with Microban

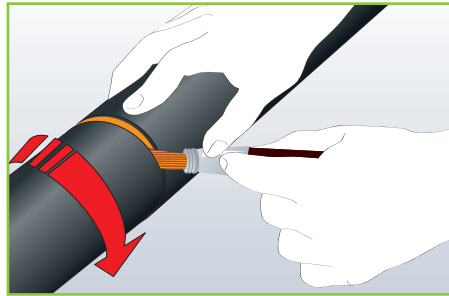
Fig 2. Surface protected with Microban 24 hours later

# Installation

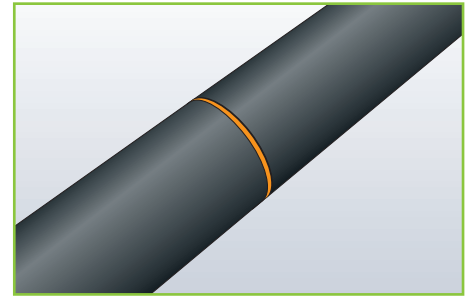
## WET SEALING BUTT JOINTS



1. On all cold lines use ArmaFlex adhesive to glue the ends of the ArmaFlex sheets or tubes to the pipe surface. The adhesive should be applied in a width at least equal to the insulation thickness.

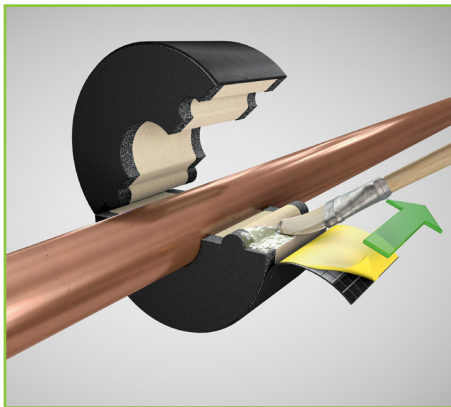


2. For the final wet sealing of the tube or sheet, use fingers to pull the joint apart and apply a thin, even film of adhesive to both butt joint edges with a small brush.

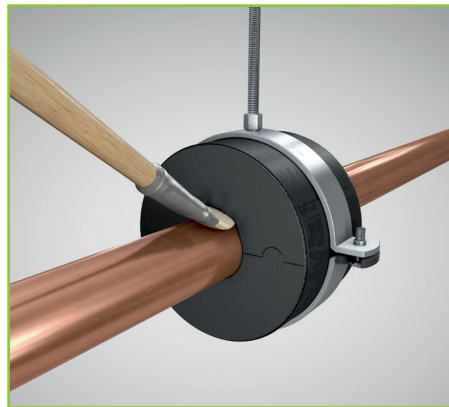


3. Use your fingers and thumbs to apply firm and even pressure to the glued joint to finish.

## USING ADHESIVE FOR INSULATED PIPE SUPPORTS



1. Apply ArmaFlex adhesive on the insulated pipe support and remove the self-adhesive tape.



2. Close the seam by applying firm pressure. Glue the edges of the insulated pipe support to the copper pipe with ArmaFlex adhesive.



3. Wet seal butt joints with adhesive and install ArmaFlex FRV tubes on either side of the insulated pipe support.

[Learn more](#)

## INSTALLATION ADVICE

Visit [www.armacell.com](http://www.armacell.com) to download the latest copy of the ArmaFlex installation manual. Instructional videos are also available on our Armacell - Global YouTube channel.

## TECHNICAL DATA - ARMAFLEX FRV

|  |  |  |       |        |              |        |       |   |
|--|--|--|-------|--------|--------------|--------|-------|---|
| Brief description                        | ArmaFlex FRV is a highly flexible closed-cell insulation material made from nitrile rubber, with high water vapour diffusion resistance and low thermal conductivity.  |  |       |        |              |        |       |   |
| Material type                            | Elastomeric foam based on synthetic rubber.  |  |       |        |              |        |       |   |
| Colour                                   | Black.   |  |       |        |              |        |       |   |
| Special features                         | Sheets and tubes are infused with Microban antimicrobial protection to provide additional assurance against mould and bacteria growth.   |  |       |        |              |        |       |   |
| Applications                             | Thermal insulation/protection of pipes, air ducts and vessels (incl. elbows, fittings, flanges etc.) in hot and cold water services, chilled water lines, heating systems, air conditioning ductwork and refrigerated pipework; installed in commercial, industrial, residential and public buildings to control condensation, protect against frost and reduce energy loss. |  |       |        |              |        |       |   |
| Installation                             | Please refer to the ArmaFlex installation manual for advice. ArmaFlex can be used together with ArmaFlex adhesive and ArmaFix® pipehangers for a complete insulation system.   |  |       |        |              |        |       |   |
|  |  |  |       |        |              |        |       |   |
| Property                                 | Value/Assessment   |  |       |        |              |        |       | Standard/Test method                      |
| Temperature range                        |  |  |       |        |              |        |       |   |
| Service temperature                      | Range  | Minimum [°C]   |       |        | Maximum [°C] |        |       |   |
|  | Full range   | -50  |       |        | +105         |        |       |   |
|  | Remarks  | +85 °C if sheet or tape is glued to the object with its whole surface. |       |        |              |        |       |   |
| Thermal conductivity                     |  |  |       |        |              |        |       |   |
| Declared thermal conductivity            | 0m   | +/-0 °C  |       | +15 °C |              | +23 °C |       | ASTM C518, ASTM C177, ASTM C335, ISO 8497 |
|  | Range  | ≤25mm  | >25mm | ≤25mm  | >25mm        | ≤25mm  | >25mm |   |
|  | λ <sub>d</sub> ≤[W/(m·K)]  | 0.033  | 0.035 | 0.034  | 0.036        | 0.035  | 0.037 |   |
| Resistance to water vapour               |  |  |       |        |              |        |       |   |
| Water vapour diffusion resistance factor | μ ≥ 7,000  |  |       |        |              |        |       | DIN EN 13469, DIN EN 12086                |
| Resistance to water                      |  |  |       |        |              |        |       |   |
| Water absorption                         | < 0.2% by volume   |  |       |        |              |        |       | ASTM C1763                                |
| Fire performance                         |  |  |       |        |              |        |       |   |
| Surface spread of flame                  | Class 1  |  |       |        |              |        |       | BS 476 Part 7                             |
| Vertical pipe chase                      | Peak rate of heat release: ≤ 300kW<br>Total heat release (THR <sub>10min</sub> ) ≤ 83MJ<br>Total smoke release (TSR <sub>10min</sub> ) ≤ 500m²<br>Extent of flame ≤ 0.3m (1ft)   |  |       |        |              |        |       | NFPA 274                                  |
| Flammability of plastic materials        | V-0 rating   |  |       |        |              |        |       | UL 94                                     |
| FM-Approved                              | Yes  |  |       |        |              |        |       | FM 4924                                   |
| Practical fire behaviour                 | Does not generate flaming droplets.  |  |       |        |              |        |       |   |
| Weather and UV resistance                |  |  |       |        |              |        |       |   |
| UV resistance                            | For UV protection, an Arma-Chek® covering system is required. For outside use, ArmaFlex should be protected within three days of installation.   |  |       |        |              |        |       |   |
| Health and environment                   |  |  |       |        |              |        |       |   |
| Antimicrobial behaviour                  | Built-in Microban antimicrobial product protection.  |  |       |        |              |        |       |   |
| Environmental Product Declaration (EPD)  | Type III EPD: Declaration number 4789125188.101.1, UL Environment.   |  |       |        |              |        |       |   |
| Fungal growth                            | No fungal growth is observed.  |  |       |        |              |        |       | ASTM G21                                  |
| Health aspects                           | Free of fibre and formaldehyde. Low volatile organic compounds (VOC), low total aldehyde. GREENGUARD Gold for even lower VOC and total chemical emissions.   |  |       |        |              |        |       | UL2818                                    |
| Other technical features                 |  |  |       |        |              |        |       |   |
| Storage                                  | Material shall be stored in dry, clean rooms at normal relative humidity (50% to 70%) and ambient temperature (0 °C to 35 °C).   |  |       |        |              |        |       |   |
| Shelf (storage life)                     | Self-adhesive sheets, tubes and tapes: 1 year.   |  |       |        |              |        |       |   |

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 our Technical department in due time whether or not the data and information apply to the intended application area.



### // Material R-values for ArmaFlex FRV insulation

The thermal resistance or “R-value” is a measure of a material’s ability to retard heat flow. Thermal resistance is used in combination with numerals to designate thermal resistance values. The higher the R-value, the higher the insulation’s thermal resistance. The following table provides the material R-values for ArmaFlex FRV pipe insulation, with values calculated in accordance with AS/NZS 4859.1.

Pipe insulation R-values (at 23°C)

| Pipe outer diameter [mm] | 9mm  | 13mm | 19mm | 25mm | 32mm | 38mm | 50mm |
|--------------------------|------|------|------|------|------|------|------|
| 6                        | 0.45 | 0.68 | 1.1  |      |      |      |      |
| 10                       | 0.40 | 0.61 | 0.98 | 1.5  |      |      |      |
| 12                       | 0.38 | 0.61 | 1.0  | 1.4  | 1.9  | 2.3  |      |
| 15                       | 0.36 | 0.54 | 0.86 | 1.4  | 1.7  | 2.2  |      |
| 20                       | 0.35 | 0.52 | 0.82 | 1.3  | 1.7  |      |      |
| 22                       | 0.34 | 0.50 | 0.79 | 1.2  | 1.6  | 2.0  | 2.8  |
| 25                       | 0.33 | 0.48 | 0.76 | 1.2  | 1.5  |      |      |
| 28                       | 0.32 | 0.48 | 0.74 | 1.2  | 1.5  | 1.8  | 2.6  |
| 32                       | 0.32 | 0.47 | 0.73 | 1.1  | 1.4  |      |      |
| 35                       | 0.31 | 0.47 | 0.72 | 1.1  | 1.4  | 1.7  | 2.5  |
| 38                       |      | 0.46 |      | 1.1  |      |      |      |
| 40                       |      | 0.46 |      | 1.1  |      |      |      |
| 42                       | 0.31 | 0.45 | 0.69 | 1.1  | 1.4  | 1.7  | 2.3  |
| 48                       | 0.31 | 0.44 | 0.68 | 1.0  | 1.3  | 1.6  | 2.3  |
| 50                       | 0.31 | 0.44 | 0.67 |      |      | 1.6  |      |
| 54                       |      | 0.44 | 0.66 | 1.0  | 1.3  | 1.6  |      |
| 60                       | 0.30 | 0.43 | 0.65 | 0.98 | 1.2  | 1.5  | 2.2  |
| 67                       |      | 0.45 | 0.64 | 0.96 |      | 1.5  |      |
| 73                       |      | 0.45 | 0.68 | 0.94 | 1.2  | 1.5  | 2.1  |
| 76                       |      | 0.45 |      | 0.94 | 1.2  | 1.5  |      |
| 80                       |      |      |      | 0.93 |      | 1.4  | 2.0  |
| 89                       |      | 0.44 | 0.66 | 0.92 | 1.2  | 1.4  | 2.0  |
| 101                      |      | 0.43 |      | 0.90 |      |      |      |
| 114                      |      | 0.43 | 0.64 | 0.89 | 1.1  | 1.4  | 2.0  |
| 140                      |      |      | 0.63 | 0.86 |      | 1.3  | 2.0  |
| 168                      |      |      |      | 0.85 |      | 1.3  | 2.0  |

The thermal resistance (material R-value) for ArmaFlex FRV sheet insulation is shown in the table below. These values are calculated in accordance with AS/NZS 4859.1. R-values for flat surfaces and radial surfaces cannot be directly compared.

Sheet and roll insulation R-values (at 23°C)

| Wall thickness [mm] | 9mm  | 13mm | 19mm | 25mm | 32mm | 38mm | 50mm |
|---------------------|------|------|------|------|------|------|------|
| R-value             | 0.27 | 0.39 | 0.56 | 0.74 | 0.89 | 1.1  | 1.4  |



Tube - standard (2.0m length)

| Insulation inner diameter [mm] | Cu pipe outer diameter [mm] | Fe pipe outer diameter [mm] | Nominal diameter [DN] | 9mm          |                    | 13mm         |                    | 19mm         |                    | 25mm         |                    |
|--------------------------------|-----------------------------|-----------------------------|-----------------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|
|                                |                             |                             |                       | Item         | Carton content [m] | Item         | Carton content [m] | Item         | Carton content [m] | Item         | Carton content [m] |
| 6                              | 1/4                         | 14                          | 6                     | FRVA-09X006  | 332                | FRVA-13X006  | 198                | FRVA-19X006  | 100                |              |                    |
| 10                             | 3/8                         |                             |                       | FRVA-09X010  | 266                | FRVA-13X010  | 172                | FRVA-19X010  | 92                 | FRVA-25X010# | 60                 |
| 12                             | 1/2                         |                             |                       | FRVA-09X012  | 200                | FRVA-13X012  | 136                | FRVA-19X012  | 84                 | FRVA-25X012# | 54                 |
| 15                             | 5/8                         |                             |                       | FRVA-09X015  | 192                | FRVA-13X015  | 126                | FRVA-19X015  | 72                 | FRVA-25X015  | 48                 |
| 20                             | 3/4                         | 22                          | 8                     | FRVA-09X020# | 140                | FRVA-13X020  | 98                 | FRVA-19X020  | 60                 | FRVA-25X020  | 40                 |
| 22                             | 7/8                         |                             |                       | FRVA-09X022  | 136                | FRVA-13X022  | 98                 | FRVA-19X022  | 60                 | FRVA-25X022  | 40                 |
| 25                             | 1                           |                             |                       | FRVA-09X025  | 112                | FRVA-13X025  | 84                 | FRVA-19X025  | 50                 | FRVA-25X025# | 34                 |
| 28                             | 1-1/8                       |                             |                       | FRVA-09X028  | 98                 | FRVA-13X028  | 78                 | FRVA-19X028  | 48                 | FRVA-25X028  | 32                 |
| 32                             | 1-1/4                       | 32                          | 20                    | FRVA-09X032# | 82                 | FRVA-13X032  | 64                 | FRVA-19X032  | 40                 | FRVA-25X032# | 28                 |
| 35                             | 1-3/8                       |                             |                       | FRVA-09X035  | 82                 | FRVA-13X035  | 58                 | FRVA-19X035  | 36                 | FRVA-25X035  | 28                 |
| 38                             | 1-1/2                       |                             |                       |              |                    | FRVA-13X038# | 56                 |              |                    | FRVA-25X038# | 24                 |
| 40                             |                             |                             |                       |              |                    | FRVA-13X040# | 48                 |              |                    | FRVA-25X040# | 24                 |
| 42                             | 1-5/8                       | 38                          | 32                    | FRVA-09X042  | 70                 | FRVA-13X042  | 48                 | FRVA-19X042  | 32                 | FRVA-25X042  | 24                 |
| 48                             | 1-7/8                       |                             |                       | FRVA-09X048  | 50                 | FRVA-13X048  | 40                 | FRVA-19X048  | 32                 | FRVA-25X048  | 20                 |
| 50                             |                             |                             |                       | FRVA-09X050# | 48                 | FRVA-13X050# | 40                 | FRVA-19X050# | 24                 |              |                    |
| 54                             | 2-1/8                       |                             |                       |              |                    | FRVA-13X054# | 40                 | FRVA-19X054  | 24                 | FRVA-25X054  | 18                 |
| 60                             | 2-3/8                       | 76                          | 50                    | FRVA-09X060  | 48                 | FRVA-13X060  | 34                 | FRVA-19X060  | 24                 | FRVA-25X060  | 18                 |
| 67                             | 2-5/8                       |                             |                       |              |                    | FRVA-13X067# | 30                 | FRVA-19X067# | 20                 | FRVA-25X067  | 16                 |
| 73                             |                             |                             |                       |              |                    | FRVA-13X073  | 24                 | FRVA-19X073# | 18                 | FRVA-25X073  | 12                 |
| 76                             | 3                           |                             |                       |              |                    | FRVA-13X076# | 24                 |              |                    | FRVA-25X076# | 12                 |
| 80                             |                             | 89                          | 80                    |              |                    |              |                    |              |                    | FRVA-25X080# | 12                 |
| 89                             | 3-1/2                       |                             |                       |              |                    | FRVA-13X089  | 20                 | FRVA-19X089# | 16                 | FRVA-25X089  | 12                 |
| 101                            |                             |                             |                       |              |                    | FRVA-13X101# | 18                 |              |                    | FRVA-25X101# | 8                  |
| 114                            | 4-1/2                       |                             |                       |              |                    | FRVA-13X114  | 18                 | FRVA-19X114  | 12                 | FRVA-25X114  | 8                  |
| 140                            |                             | 114                         | 100                   |              |                    |              |                    | FRVA-19X140# | 6                  | FRVA-25X140# | 4                  |
| 168                            |                             |                             |                       |              |                    |              |                    |              |                    | FRVA-25X168# | 4                  |

\*Made to order. Minimum order quantities and different lead times may apply.  
Self-adhesive option available upon request. Minimum order quantities and different lead times may apply.

Sheet - precut (1.22m width)

| Item           | Insulation thickness [mm] | Length [m] | Carton content [pcs] | Carton content [sqm] |
|----------------|---------------------------|------------|----------------------|----------------------|
| FRVA-03MM/91#  | 3                         | 0.91       | 60                   | 66.6                 |
| FRVA-13MM/91#  | 13                        | 0.91       | 20                   | 22                   |
| FRVA-25MM/75   | 25                        | 0.75       | 10                   | 9.15                 |
| FRVA-25MM/91   | 25                        | 0.91       | 10                   | 11.10                |
| FRVA-25MM/95   | 25                        | 0.95       | 10                   | 11.59                |
| FRVA-25MM/110  | 25                        | 1.10       | 10                   | 13.42                |
| FRVA-25MM/125# | 25                        | 1.25       | 10                   | 15.25                |

\*Made to order. Minimum order quantities and different lead times may apply.  
Self-adhesive option available upon request. Minimum order quantities and different lead times may apply.

Accessories

| Item            | Carton content      | Article description   |
|-----------------|---------------------|---|
| FRVA-TAPE       | 12 rolls            | ArmaFlex FRV insulation tape (3mm thickness x 50mm width x 9m length) |
| ADH820-700ML-SE | 12 x 0.7 litre cans | ArmaFlex 820 adhesive (700ml)   |
| AS-AD5201E      | 4 x 3.78 litre cans | ArmaFlex 520 adhesive (1 gallon)                                      |
| GLUEM-BRUSH17MM | 5 x 4               | Gluemaster (17mm diameter) Comes with extra brush points              |
| GLUEMASTER B    | 12                  | Gluemaster adhesive pump  |

## Tube - standard (2.0m length)

| Insulation inner diameter [mm] | Cu pipe outer diameter [mm] | Fe pipe outer diameter [mm] | Nominal diameter [DN] | 32mm         |                    | 38mm         |                    | 50mm         |                    |
|--------------------------------|-----------------------------|-----------------------------|-----------------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|
|                                |                             |                             |                       | Item         | Carton content [m] | Item         | Carton content [m] | Item         | Carton content [m] |
| 6                              | 1/4                         |                             |                       |              |                    |              |                    |              |                    |
| 10                             | 3/8                         |                             | 6                     |              |                    |              |                    |              |                    |
| 12                             | 1/2                         |                             |                       | FRVA-32X012# | 32                 | FRVA-38X012# | 24                 |              |                    |
| 15                             | 5/8                         | 14                          | 8                     | FRVA-32X015# | 32                 | FRVA-38X015# | 20                 |              |                    |
| 20                             | 3/4                         |                             |                       | FRVA-32X020# | 24                 |              |                    |              |                    |
| 22                             | 7/8                         | 22                          | 15                    | FRVA-32X022# | 24                 | FRVA-38X022# | 20                 | FRVA-50X022# | 12                 |
| 25                             | 1                           | 25                          |                       | FRVA-32X025# | 24                 |              |                    |              |                    |
| 28                             | 1-1/8                       | 28                          | 20                    | FRVA-32X028  | 24                 | FRVA-38X028  | 18                 | FRVA-50X028# | 12                 |
| 32                             | 1-1/4                       | 32                          |                       | FRVA-32X032# | 18                 |              |                    |              |                    |
| 35                             | 1-3/8                       |                             | 25                    | FRVA-32X035  | 18                 | FRVA-38X035  | 16                 | FRVA-50X035# | 10                 |
| 38                             | 1-1/2                       | 38                          |                       |              |                    |              |                    |              |                    |
| 40                             |                             |                             |                       |              |                    |              |                    |              |                    |
| 42                             | 1-5/8                       |                             | 32                    | FRVA-32X042  | 16                 | FRVA-38X042  | 12                 | FRVA-50X042# | 8                  |
| 48                             | 1-7/8                       |                             | 40                    | FRVA-32X048  | 12                 | FRVA-38X048  | 12                 | FRVA-50X048# | 8                  |
| 50                             |                             |                             |                       |              |                    | FRVA-38X050# | 10                 |              |                    |
| 54                             | 2-1/8                       |                             |                       | FRVA-32X054# | 12                 | FRVA-38X054# | 10                 |              |                    |
| 60                             | 2-3/8                       |                             | 50                    | FRVA-32X060  | 12                 | FRVA-38X060  | 10                 | FRVA-50X060# | 8                  |
| 67                             | 2-5/8                       |                             |                       |              |                    | FRVA-38X067# | 8                  |              |                    |
| 73                             |                             |                             |                       | FRVA-32X073  | 8                  | FRVA-38X073  | 8                  | FRVA-50X073# | 8                  |
| 76                             | 3                           | 76                          |                       | FRVA-32X076# | 8                  | FRVA-38X076# | 8                  |              |                    |
| 80                             |                             |                             |                       |              |                    | FRVA-38X080# | 6                  | FRVA-50X080# | 6                  |
| 89                             | 3-1/2                       | 89                          | 80                    | FRVA-32X089  | 8                  | FRVA-38X089  | 6                  | FRVA-50X089# | 6                  |
| 101                            |                             |                             |                       |              |                    |              |                    |              |                    |
| 114                            | 4-1/2                       | 114                         | 100                   | FRVA-32X114  | 8                  | FRVA-38X114  | 4                  | FRVA-50X114  | 4                  |
| 140                            |                             |                             | 125                   |              |                    | FRVA-38X140  | 4                  | FRVA-50X140  | 4                  |
| 168                            |                             |                             | 150                   |              |                    | FRVA-38X168  | 4                  | FRVA-50X168  | 4                  |

\*Made to order. Minimum order quantities and different lead times may apply.  
Self-adhesive option available upon request. Minimum order quantities and different lead times may apply.

## Sheet – jumbo continuous roll (1.22m width)

| Item         | Insulation thickness [mm] | Length [m] | Carton content [sqm] |
|--------------|---------------------------|------------|----------------------|
| FRVA-03MM/L# | 3                         | 15         | 18.3                 |
| FRVA-06MM/L  | 6                         | 15         | 18.3                 |
| FRVA-09MM/L  | 9                         | 15         | 18.3                 |
| FRVA-13MM/L  | 13                        | 15         | 18.3                 |
| FRVA-19MM/L  | 19                        | 15         | 18.3                 |
| FRVA-25MM/L  | 25                        | 15         | 18.3                 |

\*Made to order. Minimum order quantities and different lead times may apply.  
Self-adhesive option available upon request. Minimum order quantities and different lead times may apply.

## Sheet - continuous roll (1.22m width)

| Item         | Insulation thickness [mm] | Length [m] | Carton content [sqm] |
|--------------|---------------------------|------------|----------------------|
| FRVA-09MM/E# | 9                         | 10         | 12.2                 |
| FRVA-13MM/E# | 13                        | 8          | 9.76                 |
| FRVA-19MM/E# | 19                        | 6          | 7.32                 |
| FRVA-25MM/E# | 25                        | 4          | 4.88                 |
| FRVA-32MM/E# | 32                        | 3          | 3.66                 |
| FRVA-38MM/E  | 38                        | 3          | 3.66                 |
| FRVA-50MM/E  | 50                        | 3          | 3.66                 |

\*Made to order. Minimum order quantities and different lead times may apply.  
Self-adhesive option available upon request. Minimum order quantities and different lead times may apply.



PROTECTION THAT LIVES ON  
**MICROBAN**®

//Cover Photo (Top)

Melbourne Grammar School - Bromby Science and Technology Centre

Containing many workshop studios and classrooms to educate the scientists of the future, the Bromby Science and Technology Centre is a five-storey building covering approximately 4,800m<sup>2</sup> of floor space. Safety is a key concern in this building and ArmaFlex FRV was installed to provide enhanced fire safety as well as condensation control to drive energy efficiency.

//Cover Photo (Bottom)

Rydges Esplanade Resort Cairns, Australia

All data and technical information are based on results achieved under the specific conditions defined according to the testing standards referenced. Despite taking every precaution to ensure that said data and technical information are up to date, Armacell does not make any representation or warranty, express or implied, as to the accuracy, content or completeness of said data and technical information. Armacell also does not assume any liability towards any person resulting from the use of said data or technical information. Armacell reserves the right to revoke, modify or amend this document at any moment. It is the customer's responsibility to verify if the product is suitable for the intended application. The responsibility for professional and correct installation and compliance with relevant building regulations lies with the customer. This document does not constitute nor is part of a legal offer to sell or to contract.

At Armacell, your trust means everything to us, so we want to let you know your rights and make it easier for you to understand what information we collect and why we collect it. If you would like to find out about our processing of your data, please visit our **Data Protection Policy**.

© Armacell, 2020. All rights reserved. Trademarks followed by ® or ™ are trademarks of the Armacell Group. Microban® is a trademark of Microban Products Company and is used herein with permission. LEED® stands for Leadership in Energy and Environmental Design™. LEED®, and its related logo, is a trademark owned by the U.S. Green Building Council® and is used herein with permission. UL, the UL logos and the UL mark are trademarks of UL LLC® 2013.

00127 | ArmaFlex FRV | ArmaFlex | ProductDS | 112020 | en-TH

## ABOUT ARMACELL

As the inventors of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal, acoustic and mechanical solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With 3,135 employees and 24 production plants in 16 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for high-tech and lightweight applications and next generation aerogel blanket technology.



For more information, please visit:  
[www.armacell.com](http://www.armacell.com)