



application manual

Arma-Chek® S+

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WORKING WITH ARMA-CHEK S+

- The installer should have a general knowledge of the installation techniques relating to Armaflex tube and sheet products.
- Use high quality tools. A sharp knife, good brushes and fresh Armaflex adhesive are required.
- Use clean material. No dust, dirt, oil or water should be present on the surface. Clean using Armaflex cleaner where necessary.
- Use correctly dimensioned material!
- Oval tubes should always be split on the flat side.
- Never pull glued joints when sealing. Always push joints together and fit under compression.
- Never insulate installations and systems that are in operation! Only start insulated plants after 36 hours - after this time the adhesive is fully cured.
- Do not use Arma-Chek S+ Self-adhesive or Butyl tapes as the only fixing solution for butt and longitudinal joints and seams.
- Do not apply Arma-Chek covering on seams and joints which are glued using Armaflex adhesive until the adhesive has been given time to fully cure (typically 36 hours).
- Fabricate Arma-Chek fittings on a workbench as you would use when working with metal jacketing.
- Avoid installing in very humid or wet conditions. Tent and weather protect where possible.
- Avoid installing Arma-Chek covering under tension.
- When using Arma-Chek S+ covering on Armaflex substrate ensure all seams/joints are fully sealed using the correct Armaflex Adhesive before commencing installation.
- Always use the correct Armaflex Adhesive as specified. Do not assume all adhesives perform identically! If in doubt, consult the Armacell technical department
- On external installations always ensure a “watershed” is present on all seams and joints.
- Use Arma-Chek S+ Butyl tape.
- For internal installations where the installation may be “washed down,” install the Arma-Chek S+ covering as for an external application, including the provision for the application of Arma-Chek S+ Butyl tape. (for more information please refer to the section “Maintenance” of this manual page xx).
- Minimize joints where possible and “stagger”.
- On external installations apply Arma-Chek covering within 3 days of installing Armaflex insulation.

HEALTH & SAFETY

- When using adhesive and mastic sealants, the manufacturer’s recommendations should be strictly followed. Details available from your local Armacell Technical Services Department.
- Arma-Chek coverings are easily cut with a sharp craft knife. Such knives should be handled with due care.

TOOLS FOR INSTALLING ARMA-CHEK

* A three knife set plus sharpening stone are available together as a tool kit

CORRECT USE OF ARMAFLEX ADHESIVE

Armaflex Adhesive 520

Armaflex Adhesive 520 has been specially developed to bond Armaflex. It joins the surfaces reliably and safely at medium temperatures of up to +105°C. The bond is resistant to weathering and aging. * For temperatures below -50°C, please consult our Technical Department.

PREPARING FOR WORK

Check condition of Armaflex Adhesive. Cans of Armaflex Adhesive should have been stored in a cool environment wherever possible. Cans must also have been kept free from frost.

Damage due to frost can be reversed by storing in warm conditions, or for immediate use by placing the can into a bucket of hot water. Shelf life approx. 1 year.

1. Where installation surfaces are soiled with dust, dirt, oil or water all of these contaminants must be removed and, where applicable, cleaned with Armaflex cleaner before starting work. In addition all surfaces to be joined must be dry before gluing begins.
2. Pay close attention to the installation instructions on the adhesive can. Use small cans during work so that the adhesive does not thicken too quickly. Refill from larger cans when necessary and keep closed when not in use to avoid thickening.
3. Plants must not be in operation during the installation process!
4. Ideal installation temperature is 15°C to 20°C. Do not use adhesive under 0°C. If the adhesive is too cold it can be warmed in a bucket of hot water. At temperatures below 5°C, condensation can appear on the surfaces to be glued or the adhesive film. If this occurs the materials can be glued only with difficulty.
Check whether this has happened by applying absorbent paper. When working in areas with a high atmospheric humidity and high temperatures see "Hot Climates" advice on www.armacell.com/uk or Armaflex Application Manual.
5. Stir adhesive well after opening. If left to stand, heavier components in the adhesive may settle in the bottom of the can. These must be mixed thoroughly before use in order to effectively activate the adhesive.

APPLYING ARMAFLEX ADHESIVE

1. Plants must not be in operation during the installation process!
2. Use brushes with short, stiff bristles. Alternatively the Armaflex adhesive glue master can be used when working with the adhesive. A short pile fabric paint roller/large paintbrush may be preferred on large circular and flat surface areas.

3. Where all over adhesive coverage is required apply adhesive in a thin, uniform layer to both the Armaflex surface and the inner face of the Arma-Chek S+. Always ensure there is all over adhesive coverage to both surfaces with no signs of "dry spots".
4. Allow the adhesive to "tack-dry" on overlapping details. This "tack" time is dependent on a number of factors including the humidity of the air.
5. If surfaces are left too long to dry they will not bond when pressure is applied. When this happens you can re-activate by applying a further film of Armaflex Adhesive.
6. Ideal installation temperature is 15°C to 20°C. Do not use adhesive under 0°C (for further information see Armaflex application manual page 3).
7. Use Armaflex cleaner to clean your tools, contaminated metal surfaces and surfaces which have had talc applied.

"FINGERNAIL TEST"

Test for "tack-dryness" by using the "fingernail test": touch the surface with a fingernail, if the fingernail does not adhere to the surface and the surface itself does not feel tacky the covering can be positioned and fixed using hand pressure.

CORRECT USE OF ARMA-CHEK S+ TAPES

Arma-Chek S+ selfadhesive tape: Silver coloured self-adhesive tape matching Arma-Chek S+. Use only for **INTERNAL** applications.

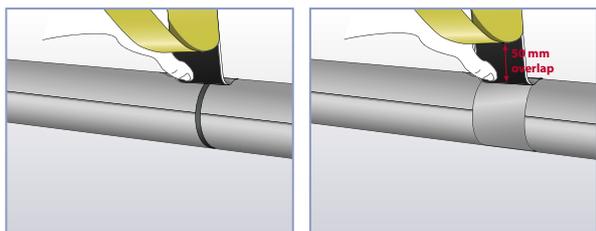
Arma-Chek S+ Butyl tape: Silver coloured tape with self-adhesive Butyl backing. Use for **EXTERNAL OR HIGH HUMIDITY** applications.

Temperature limits using Arma-Chek S+ tapes:

- Ambient application temperature: +10°C to +35°C
- Surface application temperature: -50°C to +80°C
- Max. relative humidity: 80 %

APPLYING ARMA-CHEK S+ TAPES

1. Check all seams and joints are clean, dry and free from contamination before applying self-adhesive tape. Clean using Armaflex cleaner where necessary.
2. Peel back release paper and cover the entire seam line with an additional 50 mm overlap where applicable. Apply pressure during the installation.



3. Check tape has completely adhered itself to the underlaying covering.
4. Self-adhesive Arma-Chek tape should not be used as the only fixing solution for joints and seams.

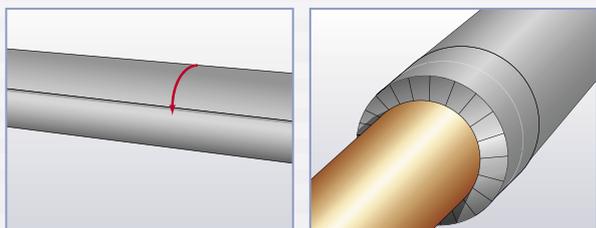
Note: The bond strength of the tape can be enhanced by using a Plastic Card when fixing the tape down.

Note: Always store in a warm, dry storage location. Ideal storage temperature +5°C to +35°C (preferred +18°C).

APPLYING ARMA-CHEK S+ OUTDOORS (WATER-SHED)

All seams and joint details should be arranged so as to eliminate any direct paths which may allow water ingress into the insulation system. On straight-line applications, the main fixing seams shall be staggered with the overlap facing downward Offset the joint as shown.

Note: Particular attention is required on fittings such as elbows and tee's.



USE OF ARMA-CHEK S+ ON DIFFERENT ARMAFLEX MATERIALS

Arma-Chek S+ is specifically designed to be compatible for use with Class O Armaflex and NH/Armaflex .

HOW TO HANDLE PIPE SUPPORTS, PRESSURE GAUGES AND PROTRUSIONS

All metallic parts directly attached to the main piping surface, including pipe loading supports and pressure gauge connections, should be fully insulated and clad using Arma-Chek S+. It is important that all connections are fully vapour sealed using both Armaflex Adhesive and the relevant Arma-Chek S+ tape.

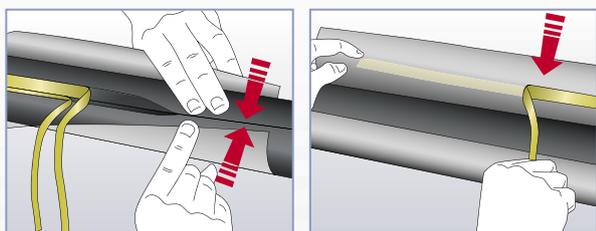
ARMA-CHEK S+ PRECOVERED TUBES

Arma-Chek S+ pre-coated tubes are supplied in 1 metre lengths, pre-slitted with a self adhesive strip down the longitudinal seam. The covering finishes approximately 10 mm before the end of the tube in order to allow for the insulation to be installed “under tension” at butt joints.

The Arma-Chek S+ pre-coated tube range is available for pipes with an outer diameter of up to 89 mm. For pipes with outer diameters between 102 mm and 160 mm, pre-coated tubes with a slightly altered product specification are available on request.

INSULATING STRAIGHT PIPES (OD < 168 MM)

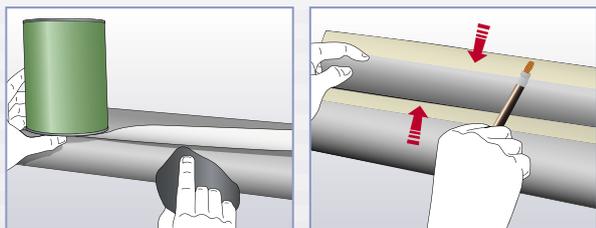
1. Clean the pipe surface with Armaflex cleaner removing any dust or other contamination.
2. Snap the tube onto the pipe.



3. Slowly peel back both release paper strips (no more than 200 mm at a time), align the seam joints and apply pressure to close the joint.

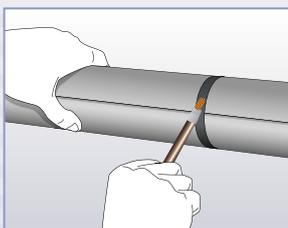
Note: Always check the seam is fully bonded before proceeding further.

4. Lay the covering tightly round the tube and fix using the factory applied adhesive strip.

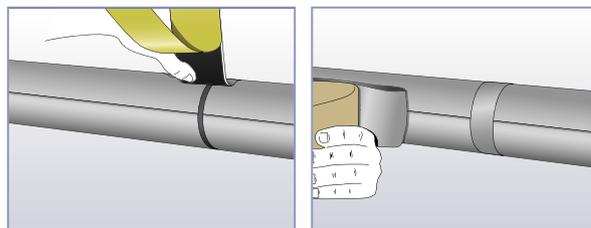


5. Use the correct Armaflex adhesive to secure the longitudinal seam. Apply adhesive on both overlapping surfaces. Always remember to “stagger” longitudinal seams.

Note: Clean surfaces using Armaflex cleaner where necessary.



6. Secure the butt end on the under face of the Armaflex tube with the Armaflex adhesive and also provide a “wet seal” to the adjoining tube.
7. To seal the longitudinal and butt joints
 - for internal installations: Use Arma-Chek S+ self adhesive tape
 - for external installations: Use Arma-Chek S+ Butyl tape.



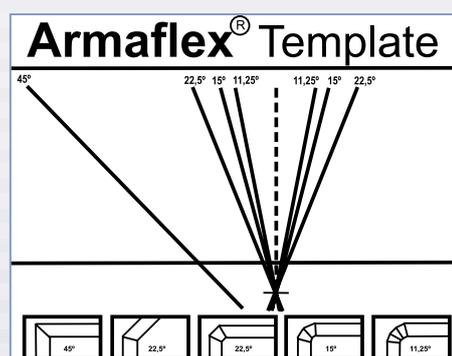
Note: Apply firm, even pressure to the self-adhesive tapes during the application process. Check the surface's are clean and dry.

USING THE ARMAFLEX TEMPLATE

The fabrication of bends and tees using Armaflex tube requires tubes to be cut to different angles. In order to make this process quicker and easier, the Armaflex template is provided on every box of Armaflex.

Additional copies are available on request (contact your local Armacell representative for more information).

1. Place a copy of the Armaflex template face up on a table or worktop.
2. Line a tube of Armaflex across the template parallel along the horizontal base line.
3. Select the required angle cut from the template and cut along this line.



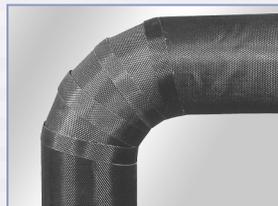
INSULATING FITTINGS WITH PRE-COVERED TUBES

1. Cut the pre-coated tube to the correct length for the bend.
2. Carefully close the longitudinal seam of the tube.
3. Carefully peel back the covering where it is fixed. Apply all over adhesive coverage to one of the surfaces only. Once the adhesive is touch dry, fix the covering to the piece of tube.
4. Fabricate fitting pieces as indicated in the drawings below. See also the Armaflex installation manual! The procedure for this is the same as for Armaflex tube.
5. Apply Armaflex adhesive to all segment seams.



6. Cut the fitting piece open along the inside "throat". Install the fitting piece on the pipe. Apply the appropriate Armaflex adhesive on the "throat"-seam.
7. **For internal installations:** Cover the joints between successive tube segments and the seam of the throat using 30 mm wide Arma-Chek S+ Self-Adhesive Tape.

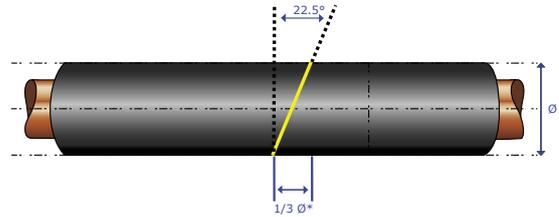
For external installations: Cover the joints between successive tube segments and the seam of the throat using 20 mm wide Arma-Chek S+ Butyl Tape. Always ensure the tape is applied such that a watershed is achieved.



Note: In some circumstances it may be preferable to fabricate segment fittings from standard, un-covered, Armaflex with the Arma-Chek covering applied as a secondary operation.



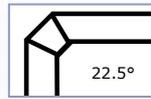
BEND WITH 45° ANGLE USING ARMAFLEX TUBE



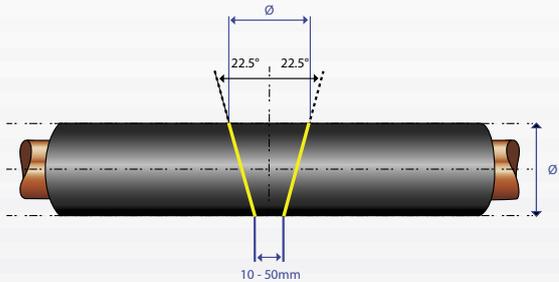
* The Ø details to achieve the 45° angle are approximate values!

Note: Yellow lines indicate where cuts are to be made.

Always follow instructions related to the application of pre-coated Arma-Chek S+ tubes as stated in the above procedures relating to adhesives and self-adhesive tapes and bandages.

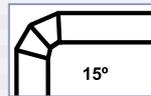


SEGMENT BEND WITH 1 MIDDLE PART - 2+1 USING ARMAFLEX TUBE

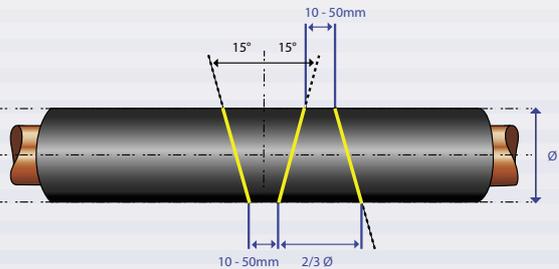


Note: Yellow lines indicate where cuts are to be made.

Always follow instructions related to the application of pre-coated Arma-Chek S+ tubes as stated in the above procedures relating to adhesives and self-adhesive tapes and bandages.

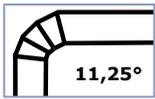


SEGMENT BEND WITH 2 MIDDLE PARTS - 2+2 USING ARMAFLEX TUBE

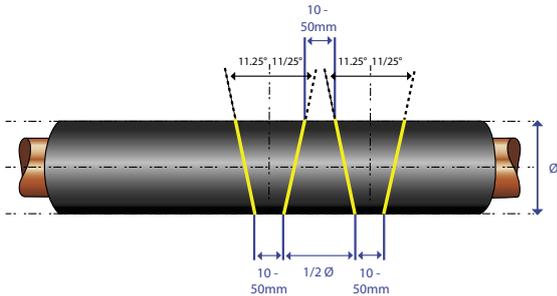


Note: Yellow lines indicate where cuts are to be made.

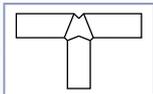
Always follow instructions related to the application of pre-coated Arma-Chek S+ tubes as stated in the above procedures relating to adhesives and self-adhesive tapes and bandages.



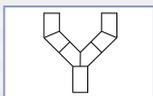
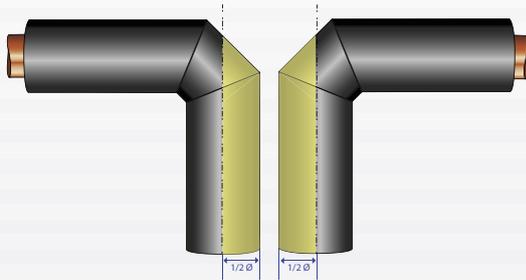
SEGMENT BEND WITH 3 MIDDLE PARTS - 2+3 USING ARMAFLEX TUBE



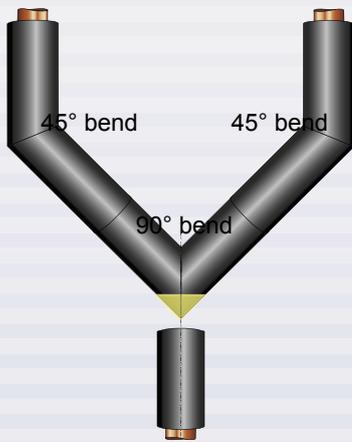
Note: Yellow lines indicate where cuts are to be made. Always follow instructions related to the application of pre-coated Arma-Chek S+ tubes as stated in the above procedures relating to adhesives and self-adhesive tapes and bandages.



SWEPT T-PIECE USING ARMAFLEX TUBE

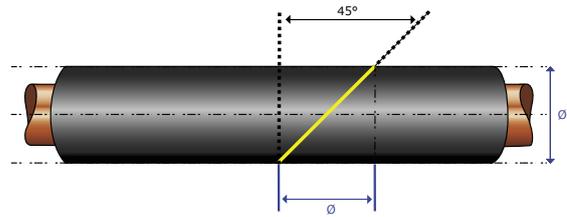


Y-TUBE USING ARMAFLEX TUBE



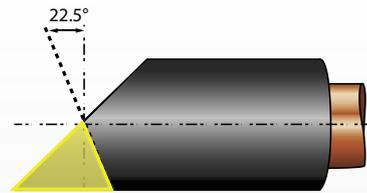
Note: Yellow lines indicate where cuts are to be made. Always follow instructions related to the application of pre-coated Arma-Chek S+ tubes as stated in the above procedures relating to adhesives and self-adhesive tapes and bandages.

ANGLE T-PIECE (OFF-SET) USING ARMA-CHEK S+ PRE_COVERED TUBE



Note: Yellow lines indicate where cuts are to be made.

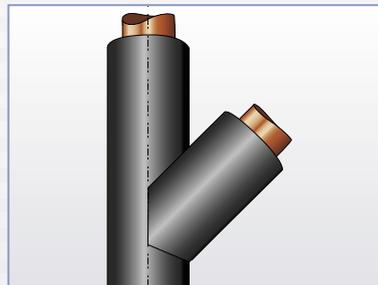
1. Make a 45° cut as shown above



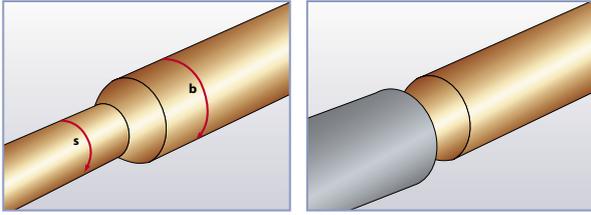
Note: Yellow lines indicate where cuts are to be made.

2. Use the piece of the tube with the 45° and mark a 22.5° angle and cut off as displayed above.

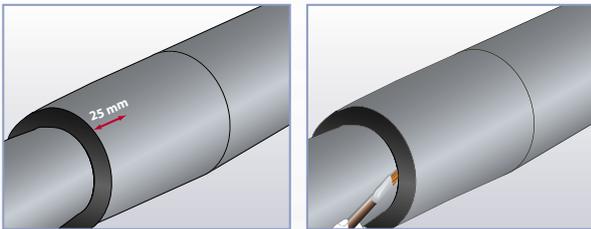
3. Chamfer the inside of the tube where it touches the insulation around the straight pipe
4. Wet seal all seams. To finish, apply Arma-Chek S+ tape to all exposed seams and joints.



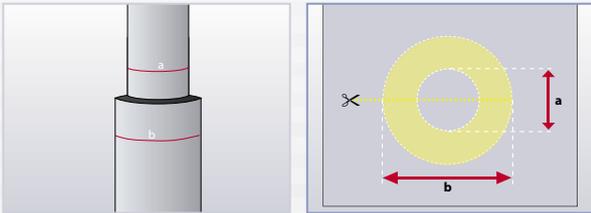
INSULATION OF PIPE REDUCER USING ARMA-CHEK S+ PRE-COVERED TUBES



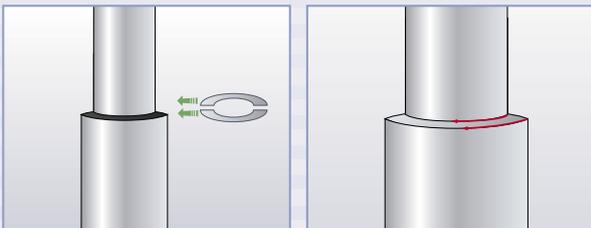
1. Select two different sized Arma-Chek S+ pre-covered tubes one to fit the smaller bore pipe and one to fit the larger bore pipe.
2. Push the Arma-Chek S+ tube designed to fit the smaller bore pipe to the point where the pipe begins to increase in diameter and seal as described on page 5 of this manual.



3. Sleeve the larger Arma-Chek S+ tube over the larger pipe. The tube should overlap the tube on the smaller pipe by 25 mm. Seal as described on page 5 of this manual.
4. Butt Seal the joint with Armaflex Adhesive



5. Measure the following diameters to produce a cover for the remaining Armaflex:
 - a - small bore insulated pipe outer diameter
 - b - large bore insulated pipe outer diameter
6. Using Arma-Chek covering create a template by marking out 2 circles with the same center and the following measurements
 - a - small bore insulated pipe outer diameter
 - b - large bore insulated pipe outer diameter

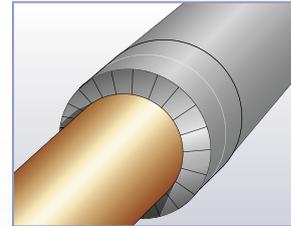


7. Apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the cap end of pipe. Allow to tack dry before applying.

8. **For internal installations:** Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Self-Adhesive Tape.

For external installations: Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.

Tip: Endless endcapping on rolls may be available on request (see Okapak endcapping) and provides an alternative to this procedure.



INSULATING PIPES USING PRE-COVERED ARMA-CHEK S+ SHEET

Arma-Chek S+ pre-coated sheet material is available in 2m x 0.5m sheets and can be used for large bore pipework, ductwork, vessels and flat surface application.

Arma-Chek S+ pre-coated sheet can be fabricated as regular Armaflex sheet, following additional recommendations contained in this manual. (For more information on Armaflex sheet application, refer to the Armaflex Installation Manual.)

Stress on the adhesive seams increases as the insulation thickness increases and the pipe diameter decreases. Please consult the table below to gauge the applicability of Arma-Chek pre-coated sheet.

Sheet Thickness *	Pipe Outer Diameter / mm			
	≥ 88.9	≥ 114	≥ 168	≥ 219
Class O - 13 mm	●	●	●	●
Class O - 19 mm		●	●	●
Class O - 25 mm				●
NH - 13 mm		●	●	●
NH - 19 mm			●	●
NH - 25 mm				●

(* Tolerance of insulation thickness ± 1 mm)

Note: This table is valid for ambient conditions of 5°C. For lower application temperatures the rigidity and tension of the sheet material can increase thus leading to conditions other than those mentioned in this table!

When insulating bends using pre-coated sheet material, please contact the Armacell technical department.

MULTI-LAYER INSULATION

Standard, uncovered, Armaflex sheet should be applied for all layers other than the final layer. Please refer to the Armaflex Application Guide for details of how to install standard Armaflex sheet.

Arma-Chek S+ pre-coated sheet may be used as the final layer in a multi-layer system provided the outer diameter of the penultimate layer exceeds the minimum requirement as detailed in the section above.

ARMAFLEX ADHESIVE AND ITS USE ON LARGE BORE PIPEWORK – OD < 600 mm

Armaflex Adhesive must be applied along all seams and joints for both sheet and tube fabrications. The first layer of any system should also be “wet sealed” to the pipe (different procedures may apply for stainless steel pipe and certain types of plastic pipe).

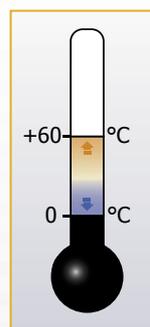
All over adhesive coverage is not required on pipework below 600 mm in diameter. See the Armaflex Application manual for more details.

ARMAFLEX ADHESIVE AND ITS USE ON LARGE BORE PIPEWORK - OD > 600 mm

All-over adhesive coverage should be applied to both the underlying surface of Arma-Chek S+ pre-coated sheet and the pipework surface to which it is to be adhered when the pipework/insulation outer diameter is greater than 600 mm.

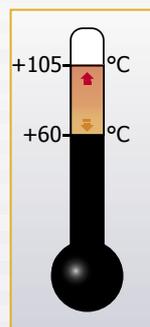
This should reduce the stress present on the main fixing seam and prevent the sheet from “bellowing” by allowing equal product weight distribution.

TEMPERATURE RANGE FOR INSULATING WITH ARMA-CHEK S+ PRE-COVERED SHEET



Applicable to Pipes and flat surfaces (0°C to +60°C):

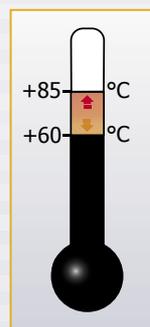
Pre-coated sheets and tubes may be used.



Applicable to pipes (+60°C to +105°C):

Pre-coated tubes may be used.

The use of Arma-Chek S+ pre-coated sheets is not recommended at these temperatures. Arma-Chek S+ covering may be applied separately as a second step operation. An air space of 5-10mm should be left to allow for expansion of the Armaflex when in service.



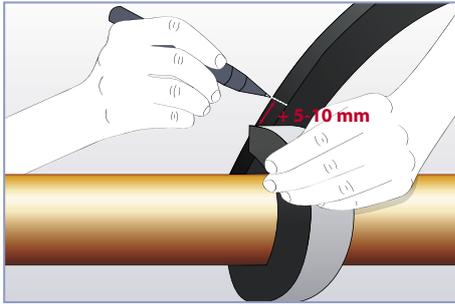
Applicable to flat surfaces (+60°C to +85°C):

The use of Arma-Chek S+ pre-coated sheets is not recommended.

Arma-Chek S+ covering may be applied separately as a second step operation.

INSULATING LARGE PIPES WITH ARMA-CHEK PRE-COVERED SHEET

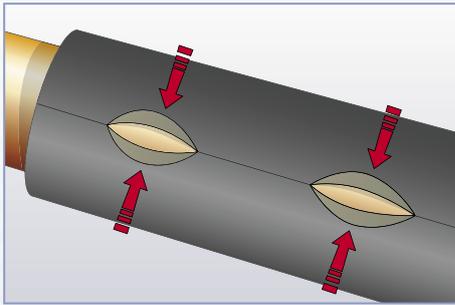
1. Determine the circumference of the pipe and add a further 5 - 10 mm to this length.



Important: Always measure with a strip made of Arma-Chek S+ pre-covered sheet of the thickness to be used for the insulation.

Warning: Do not stretch the strip.

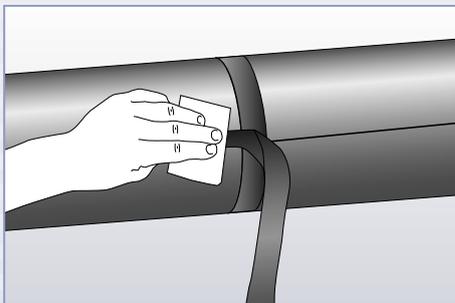
2. Cut Armaflex sheet to the required size – apply Armaflex adhesive to the cut surfaces in a thin layer, allow to touch dry.



3. Press together at the ends and then in the middle. Close the entire seam starting from the middle.

Note: In order to prevent the seam re-opening ensure the adhesive has been fully applied to the edges of the fixing seam and ensure the correct amount of adhesive has been applied.

Check the open time of adhesive to ensure it is still fit for use.



4. **For internal installations:** use Arma-Chek S + Self-Adhesive Tape to cover all longitudinal and butt joint seams.

For external installations: use Arma-Chek S+ Butyl Tape to cover all longitudinal and butt joint seams. Apply tape such that a watershed is provided.

INSULATING FITTINGS WITH ARMA-CHEK S+ PRE-COVERED SHEETS

Fittings can be insulated using Arma-Chek S+ pre-coated sheet as described in the Armaflex Application Manual.

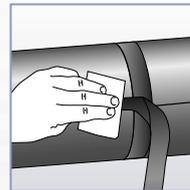
Note: 2-piece bends and 45°-bends should not be fabricated using Arma-Chek S+ pre-covered sheets.

For these types of fittings segmented bends should be fabricated (see detail on next page).

Please note the following:



Add 5 - 10 mm to measured circumferences. This addition reflects the more rigid nature of the material.

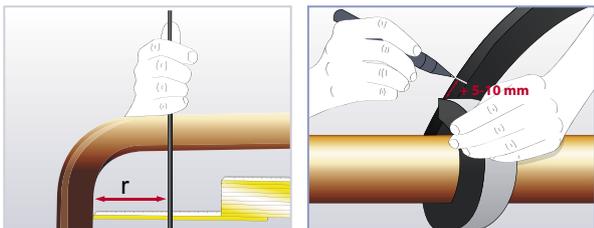


All seams should be covered using Arma-Chek S+ tape.

For internal installations: use Arma-Chek S+ Self-Adhesive Tape.

For outdoor installations: use Arma-Chek S+ Butyl Tape

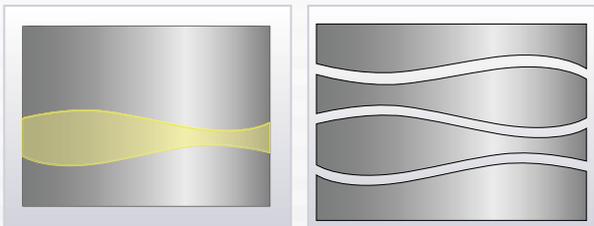
SEGMENTED BEND WITH ARMA-CHEK PRE-COVERED SHEET



1. Determine the true circumference of the bend by using a strip of Armaflex around the centre of the bend.

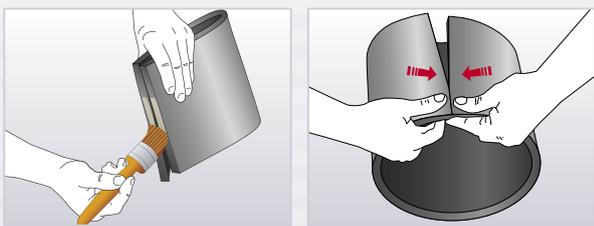
Important: Always measure using a strip of pre-covered Armaflex sheet - 50mm wide - of the thickness to be used for the insulation. Do not stretch the strip.

This value, along with the centre radius, can be used in the Arma-Chek Fishtail calculator to determine the required dimensions for each fishtail.

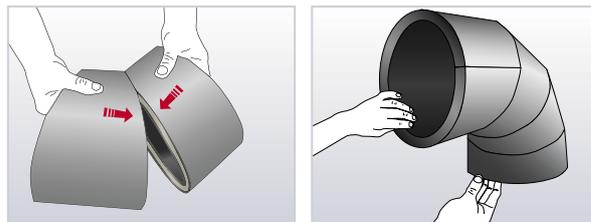


2. Trace the fishtail template onto the Armaflex surface. Mark out as many segments as required for the bend.
3. Cut the segments using a small sharp knife.

Note: The example shown is for a 2+2 fabrication - two centre pieces, one starter and one finishing piece.

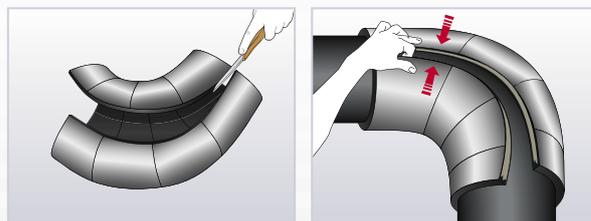


4. Using Armaflex adhesive apply a thin, even layer of adhesive to both edges of the segment. Multiple segments can be glued at one time, as shown.
5. Allow the adhesive to tack dry (fingernail test), fit then press the glued seams together firmly.
Note: For easy fixing, press together each end first then press the centre section area last.

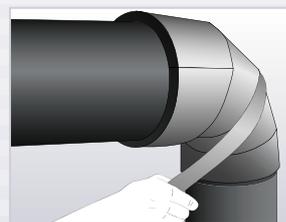


6. When all applicable fabrications have been fixed together, apply a thin even film of adhesive around all circumferential edges of the segments.
7. Position, and line-up the centre seams, apply firm pressure around the glued seams to bond the segments together.

Note: Ensure all fixing seam surfaces have adhesive applied. Allow adhesive to “touch dry” before bonding together.



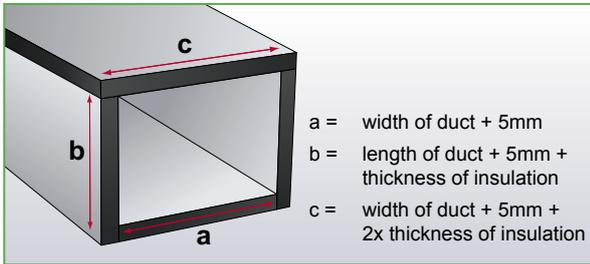
8. When all segments are glued together use a small sharp knife and cut along the centre line of the fabrication.
9. Place the pre-fabricated fitting cover over the piping bend. Apply a thin coat of Armaflex adhesive to the main fixing seams.
Allow to tack dry. Fix the glued seam together, starting from both ends and working to the centre.
Note: As an alternative segments can be applied separately and then fixed, positioned, sealed and taped to finish, directly on the installed piping on location.



10. All seams should be covered using Arma-Chek S+ tape.
For internal installations: use Arma-Chek S+ Self-Adhesive Tape.
For outdoor installations: use Arma-Chek S+ Butyl Tape.

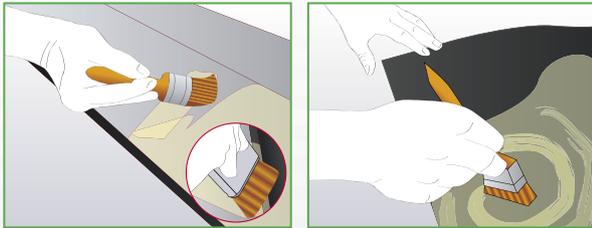
INSULATING RECTANGULAR DUCTS

Measure surface dimensions and cut Armaflex sheet to size. **Note:** Add 5mm so that material is fitted under compression.

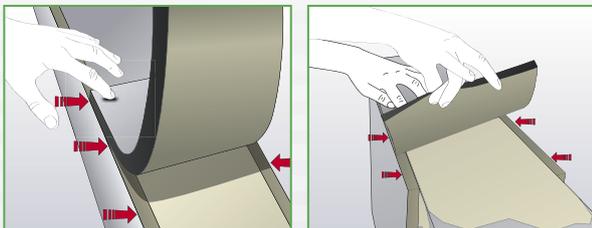


INSULATING RECTANGULAR DUCTS WITH ARMA-CHEK S+ PRE-COVERED SHEET

Clean all surfaces using Armaflex cleaner to remove grease, oil, dirt etc. and cut sheets to size

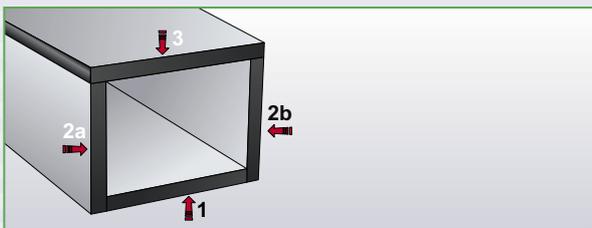


Spread a thin film of adhesive onto the metal surface and then onto the Armaflex sheet.

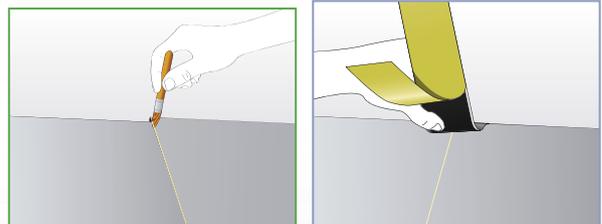


When the adhesive is tack dry (fingernail test) place Armaflex sheet in position and press firmly to achieve a good bond. Continue, applying Armaflex adhesive to both surfaces, including the Armaflex edge, and allow to tack dry before pressing firmly into position.

Note: Remember to roll the sheet down into position along the insulated edge's.



The cut sheets should be positioned so that there is a 5-10mm overlap (for compression). Do not apply adhesive to this area..



When pressed together the material is under compression and is not stretched.

Apply an additional wet seal along the butt joints.

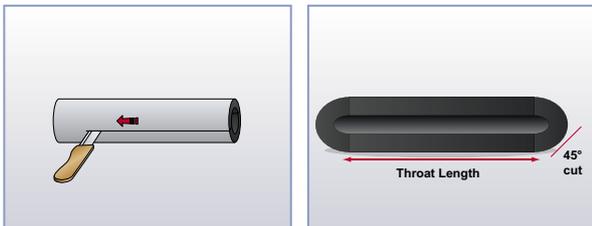
Note: All butt joints should be secured using 50 mm wide self adhesive Arma-Chek S+ tape. Secure edges using 100 mm Arma-Chek S+ self-adhesive tape with the same overlap as butt joints.

Note: Secure butt joints and edges on outdoor applications in the same way. Note the special installation techniques for outdoors described in chapter "Application of pre-coated material-straight pipes" (see page 10 of this manual).

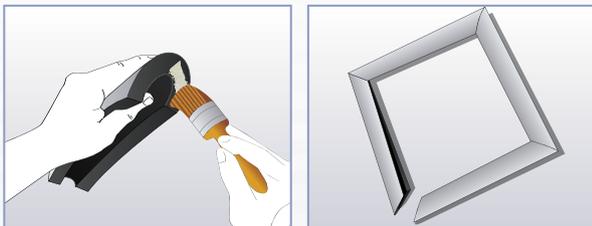
INSULATING DUCT BRACKETS WITH ARMAFLEX TUBES

“PICTURE FRAME” METHOD

Use Arma-Chek S+ pre-coated tubes to insulate flanges (rule of thumb: half of tube inner diameter = flange overlap).



Cut the tube in half and dimension according to the length of the flange. Use 45° mitred cuts for the corners of the flange. Install the halved tubes using Armaflex Adhesive. Be sure to bond carefully!



Cover uncoated Armaflex seams around the flange using Arma-Chek S+ Self Adhesive tape or strips of Arma-Chek S+.

Note: All 45° joints should be secured using 25 / 50 mm wide self adhesive Arma-Chek S+ tape. Secure edges using 100 mm Arma-Chek S+ self-adhesive tape with the same overlap as butt joints.

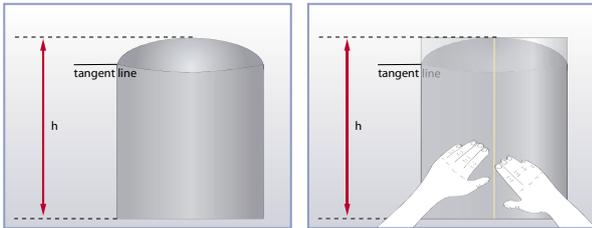
Note: Secure butt joints and edges on outdoor applications in the same way. Note the special installation techniques for outdoors described in chapter “Application of pre-coated material-straight pipes” (see page 10 of this manual).

INSULATING CIRCULAR DUCTS USING ARMA-CHEK S+ PRE-COVERED SHEETS

Circular ductwork may be insulated using Arma-Chek S+ pre-coated sheets depending on the diameter of the ductwork and the insulation thickness of the insulation material used (See table in “general procedures” section.)

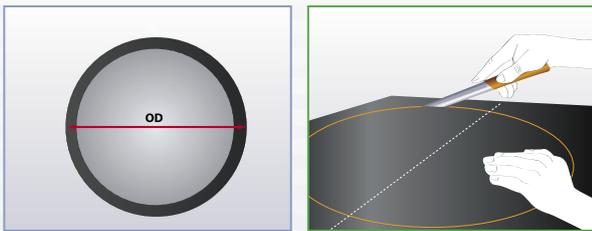
For installation follow the procedures described within the sections “Insulating pipes” and “Segmented bends” with Arma-Chek S+ pre-covered sheets.

INSULATING SMALL ($\varnothing < 1.5\text{m}$) TANKS AND VESSELS WITH PRE-COVERED ARMA-CHEK S+ SHEET

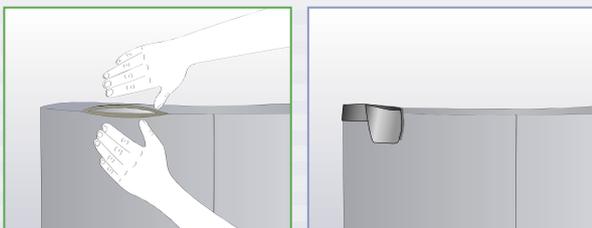


1. First insulate the vessel body with Arma-Chek S+ pre-coated sheet material. The insulation panels should be extended to cover over the dome end of the vessel (see drawing).
2. The Arma-chek S+ pre-covered sheets shall be fixed (only on the body part, not the extension for the dome end) and secured using Armaflex adhesive with all over coverage applied to both the vessel substrate and the Arma-Chek S+ sheet.
The end body panel is fixed level with end of the domed section.

Note: The domed section should not be fixed down to the curved surface of the dome.



3. Measure the OD of the overlapping end panel. Using Arma-Chek S+ pre-coated sheet draw and cut a circle using this OD measurement plus 2 times the insulation thickness as the circle diameter.
4. Bond top panel by using Armaflex Adhesive to the Arma-Chek S+ body panel edge.
Note: For "cold work" the air space within the flat top panel can be filled with left-over Armaflex before finally fixing the flat top panel.



5. All seams and joints should be wet-sealed using Armaflex adhesive and, once cured, covered using the appropriate Arma-Chek S+ tape.

For internal installations: Use Arma-Chek S+ Self-Adhesive tape.

For external installations: Use Arma-Chek S+ Butyl tape.

ALTERNATIVE METHOD FOR DOME ENDS

As an alternative, the dome end panel can be insulated using a two step method.

1. Insulate body section with Arma-Chek S+ pre-covered sheet.
2. Insulate the dome end with Armaflex sheet as described in the Armaflex Application manual page 30.
3. Cover the domed end using Arma-Chek S+ sheet as described on page 22 of this manual.

WORKING WITH ARMA-CHEK S+ COVERING

- a. Armaflex should have been installed according to the recommendations of the Armaflex Application manual.

Ensure the Armaflex insulation surface is clean, dry and free from all oils, greases and other contaminants, with all seams and joints secured using Armaflex adhesive.

- b. Armaflex adhesive is required on the Armaflex surface and on the underside of the overlapping Arma-Chek S+ covering.
- c. It is recommended to fully adhere both the Armaflex surface and the Arma-Chek surfaces (all over adhesive coverage) for cylindrical bodies with pipe outer diameter > 500 mm. For applying all over adhesive coverage a short pile fabric paint roller may be preferred over standard brushes.
- d. Cover all longitudinal and butt joint seams using Arma-Chek S+ Self-Adhesive Tape. For external installations all seam and jointing details shall be covered using Arma-Chek S+ Butyl Tape to finish.

Note: A 50 mm overlap of the Arma-Chek S+ covering should always be allowed at all longitudinal and butt joints.

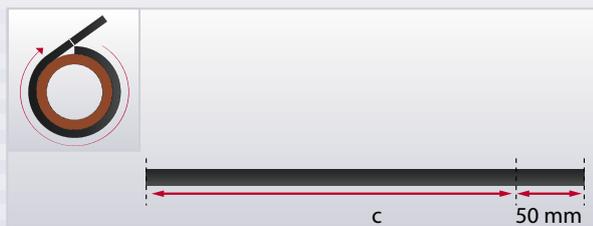
- e. For areas/locations where high ambient temperatures are expected "feathering technique" with a 50 mm overlapping is recommended (see application manual Arma-Chek R for details).
- f. For outdoor installations:
- Check the adhesive seams and joints on the covering for any defects and rectify
 - Allow for a "watershed" where applicable
- g. Allow 36 hours curing time before turning on the equipment.

COVERING OF CYLINDRICAL BODIES

(pipes, vessels, ductwork, ...)

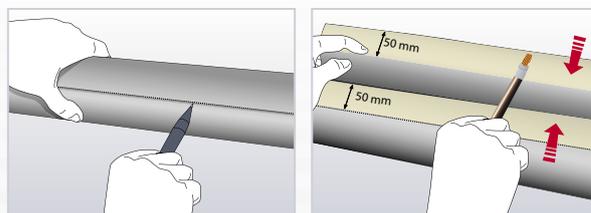
Determine the circumference the insulated pipe and add an additional 50 mm to this length to function as an overlap.

Transfer this measurement onto a sheet of Arma-Chek S+ and cut the covering sheet as required.

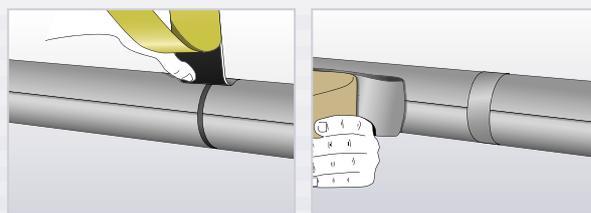
**PIPEWORK WITH AN OUTER Ø < 500 MM
(measurement of outer-Ø incl. insulation)**

1. Apply a minimum 50 mm glue line with the correct type of Armaflex adhesive to the surface of the Armaflex and the underside of the Arma-Chek S+ covering. Correctly position the covering along this line and, when satisfied, apply firm pressure. Smooth the covering around the circumference for a clean finish.

Remember: Always ensure the Arma-Chek S+ covering overlaps by a minimum of 50 mm.



2. When the covering has been smoothed in position, mark the overlap position on the under face area using a pen. Apply adhesive on the underside of the overlapping Arma-Chek S+ and also onto the surface to be covered by the overlap. Allow to touch dry (use the "fingernail test") before fixing down the overlap.
3. Seal the longitudinal seam of the covering using Armaflex adhesive.
4. Check seams and joints on the covering for any defects and rectify as required. Remove unwanted adhesive using Armaflex cleaner.



5. **For Internal installations:** Cover all longitudinal and butt joint seams using Arma-Chek S+ Self-Adhesive Tape.

For external installations: Cover all longitudinal and butt joint seams using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.

Note: Ensure surfaces are clean and dry before the application of tape. Apply firm pressure when installing the tape.

PIPEWORK WITH AN OUTER Ø > 500 MM
(measurement of outer-Ø incl. insulation)

All over adhesive coverage is required for pipework > 500 mm. In all other respects the application procedure remains as for insulated pipework less than 500 mm in diameter.

Note: Check the Armaflex adhesive specification table when installing Arma-Chek coverings. Use only the appropriate Armaflex adhesive for the substrate.

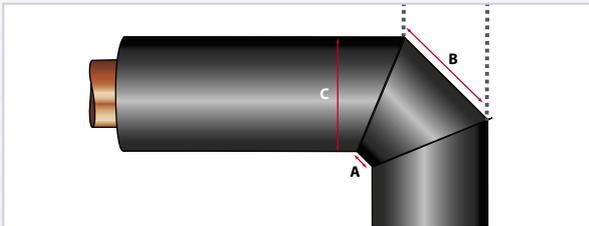
FITTINGS MADE OF COVERING MATERIAL

Arma-Chek S+ fittings can all be fabricated using traditional metal cladding working methods and techniques. Those experienced with metal working practices may choose to work following said practices.

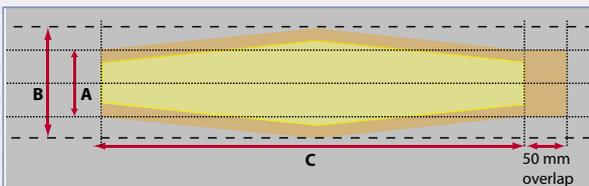
The methods detailed below provide straightforward, step-by-step, instructions to fabricate appropriate fitting templates and are recommended for installers of all levels of experience.

COVERING FOR SEGMENTED BENDS

“SIMPLE” FISH-TAIL MENTHOD



1. Measure the width of the throat (A) and back (B) of a segment of the assembled segment bend and determine the circumference (C).



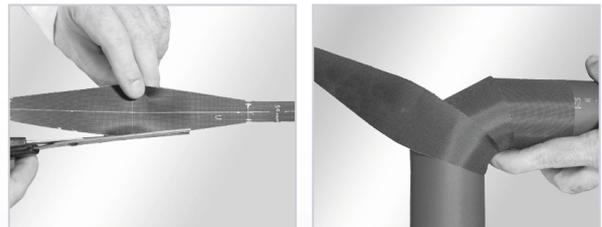
- A = Length of the inner (throat) seam of the bend divided by the number of segments + 2 x 10 mm overlap on each side of every segment
- B = Length of outer seam of bend divided by the number of segments + 2 x 10 mm overlap on each side of every segment
- C = Length circumference pipe incl. insulation

2. Transfer the circumference measurement C to the Arma-Chek covering material and draw a perpendicular bisecting line of length B (plus an additional 10 - 20 mm) at the mid point. Now extend the circumferential line by an additional 50 mm on one side.
3. At each end of the circumferential line draw a perpendicular line of length A (plus an additional 10 - 20 mm).

4. Extend the circumferential line by an additional 50 mm on one side creating a rectangle of width A (plus an additional 10 – 20 mm) as shown.

5. Connect the lines to create a fishtail outline as shown.

Remark: Where many identical fishtails are required it is recommended to transfer this shape onto a durable template in order to allow for easy replication.



6. Optimize the shape of the curve at the widest point of the cut-out segments by rounding slightly with a pair of scissors or craft knife.

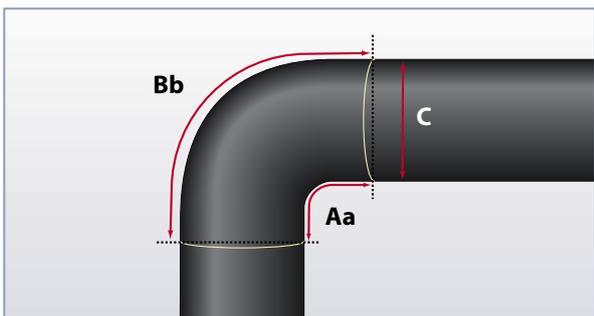
7. Install the segments using Armaflex Adhesive as standard.

Note: To ensure that the overlap sits tidily, the material can be feathered. On external installations, arrange the segments to provide a “watershed”.

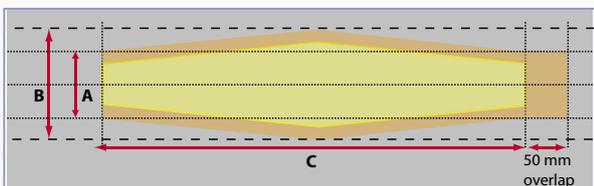
8. **For Internal installations:** Cover all longitudinal and butt joint seams using Arma-Chek S+ Self-Adhesive Tape.

For external installations: Cover all longitudinal and butt joint seams using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.

COVERING FOR TWO-PIECE BENDS



1. Measure the length of the inner (throat) seam of the bend and determine the number of segments. The number of segments should be chosen to achieve an exact fit on the outer side (back) of the bend (recommendation: min. segment width in the throat area > 20 mm.)
2. Determine the circumference of the insulated pipe and transfer this to the covering material.



- A = Length of the inner (throat) seam of the bend divided by the number of segments + 2 x 10 mm overlap on each side of every segment
- B = Length of outer seam of bend divided by the number of segments + 2 x 10 mm overlap on each side of every segment
- C = Length circumference pipe incl. insulation

3. Draw a perpendicular bisecting line of length B divided by the number of segments at the mid point. Now extend the circumferential line by an additional 50 mm on one side. At each end of the circumferential line draw a perpendicular line of length A divided by the number of segments.
4. Connect the lines to create a fishtail outline as shown.
5. Extend the circumferential line by an additional 50 mm on one side creating a rectangle of width A (plus an additional 10 – 20 mm) as shown.



6. Cut out the finished segment. This can be used as a template to fabricate further segments.
7. Fabricate initial pieces for the beginning of the bend with a half segment.

8. Install the segments using Armaflex Adhesive as standard.

Note: To ensure that the overlap sits tidily, the material can be feathered. On external installations, arrange the segments to provide a “watershed”

9. **For Internal installations:** Cover all longitudinal and butt joint seams using Arma-Chek S+ Self-Adhesive Tape.

For external installations: Cover all longitudinal and butt joint seams using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.

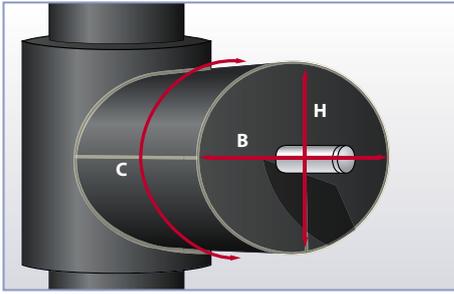
WRAP AROUND TECHNIQUE FOR PULLED BENDS

On large bore “pulled bend” pipework (hydraulically bent pipes) it may be possible to spirally wrap bandages of Arma-Chek S+ or Arma-Chek S+ Self-Adhesive Tape.

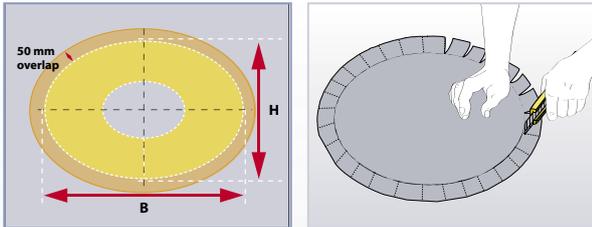
Note: Always allow for 50% overlap when using the “wrap-around technique”.

Remember: Arma-Chek S+ Self-Adhesive Tape is suitable for internal installations only.

COVERING OF NECK-T / PIPE-T / SPINDLE NECK OF VALVE

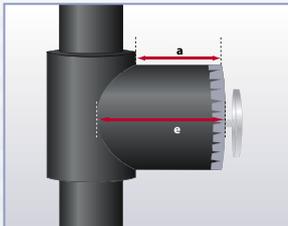


1. Determine the total outer circumference of the T-branch (including insulation).

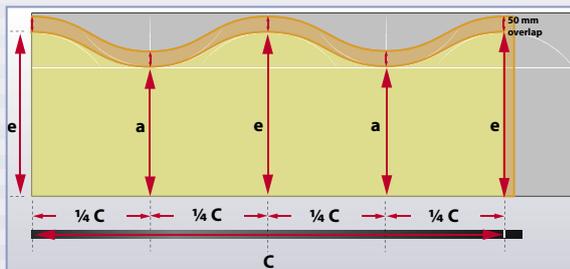


2. Transfer the height (H) and the width (B) of the valve neck spindle (end cap) to a sheet of Arma-Chek S+ as shown in the above drawings. Add a 50 mm overlap around the circumference and "feather" this as shown.

Apply Armaflex adhesive to the underside of the Arma-Chek S+ covering and the outer surface of the Armaflex on the valve neck spindle (end cap) cover. Allow the adhesive to tack dry before applying the covering with firm even pressure.

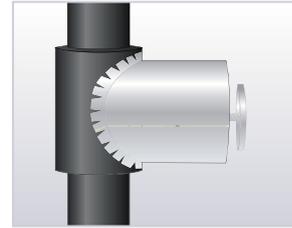


3. Measure the minimum height (a) and maximum height (e) of the insulated T-branch. Transfer this height to the marked out covering.
4. Transfer measurements as illustrated below:
(for more information see Armaflex Application Manual)

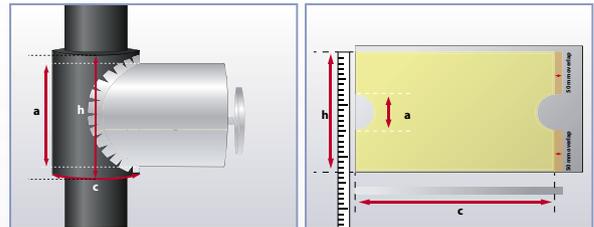


a = minimum length (height)
e = maximum length (height)

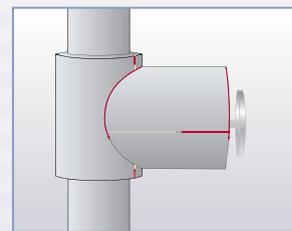
C = circumference



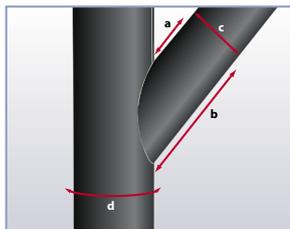
5. After cutting the end overlap to create a "feathering" effect apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the Valve. Allow to tack dry before applying as shown.



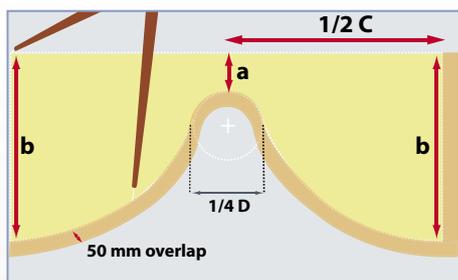
6. Measure
h = height of insulated valve body
a = diameter of insulated T-Neck
c = circumference of insulated valve body
7. Transfer these measurements to a sheet of Arma-Chek S+ as shown in the drawing above leaving a 50 mm overlap on one side.
Cut the pattern using a pair of scissors or a craft knife
8. Apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the main body pipe. Allow to tack dry before applying as shown.



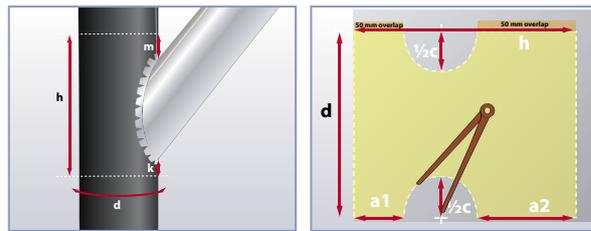
9. **For internal installations:** Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Self-Adhesive Tape.
For external installations: Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.
10. For valve body caps ends - see cap ends and termination points.

OFFSET ANGLES

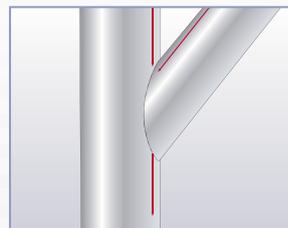
1. Determine the circumference (c) of the Armaflex insulated offset angle, the min. (a) and maximum (b) heights, and the total outer diameter of the insulated pipe (d) to which the offset angle connects.



2. Transfer the circumference (c) to the Arma-Chek S+ covering material. Mark the mid-point of this circumferential line.
3. Mark the minimum height (a) of the offset angle from the mid point of the circumferential line at right angles. Mark the maximum height (b) from either end of the circumferential line at right angles.
4. Draw a circle with a diameter equal to a quarter of the total diameter of the main insulated pipe ($1/4 d$).
5. Extend the circumferential line by 50 mm on one side to provide an overlap.
6. Draw the jacket line by marking two arcs (radius = half circumference) between a tangent of the circle standing on the mid point line and the points at distance (a) from either end of the circumferential line. Continue the arc into the 50 mm overlap.
7. In order to achieve a pleasing finish feathering can be carried out as described elsewhere in this guide. When feathering remember to allow at least 10 mm parallel to the jacket line. Cut out the pattern using a pair of scissors or a craft knife.
8. Apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the offset pipe. Allow to tack dry before applying.



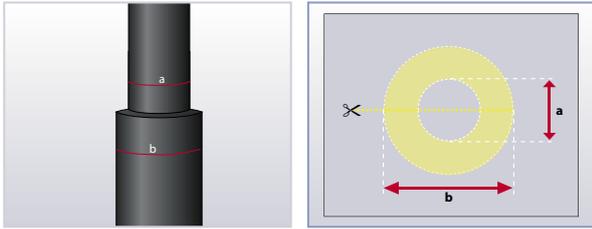
9. Measure the circumference of the main body pipe and the points at which the offset pipe joins the main body. Transfer these measurements to a sheet of Arma-Chek S+ as shown in the drawing above leaving a 50 mm overlap on one side. Cut the pattern using a pair of scissors or a craft knife.
10. Apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the main body pipe. Allow to tack dry before applying.



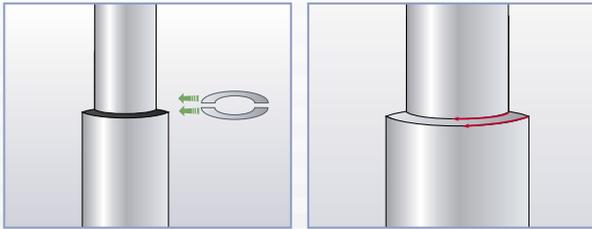
11. **For internal installations:** Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Self-Adhesive Tape.
For external installations: Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.

COVERING END CAPS AND TERMINATION POINTS

USING ARMA-CHEK S+ SELF-ADHESIVE TAPE



1. Measure the following diameters of the end cap:
a - small (insulated) pipe diameter and
b - the large bore insulated body.
2. Using Arma-Chek covering create a template by marking out 2 circles with the same center and the following measurements
a - small bore insulated pipe outer diameter
b - large bore insulated diameter of body.



3. Apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the cap end of pipe. Allow to tack dry before applying.
4. **For internal installations:** Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Self-Adhesive Tape.
For external installations: Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.

COVERING OF INSULATED PIPE SUPPORTS

**PIPE SUPPORTS INSTALLED INTERNALLY
 “BUTT-UP” METHOD WITH TAPE**

Wet seal the Armaflex Tube / Sheet ends to the insulated pipe-support using Armaflex adhesive in the standard manner. To complete, over-cover both the Armaflex and the attached pipe-support using:

For internal installations: Arma-Chek S+ Self-Adhesive Tape

For external installations: Arma-Chek S+ Butyl Tape.

In situations where there are no insulated piping supports attached, cover over the exposed end of the Armaflex using the appropriate Arma-Chek S+ tape to finish.

**EXTERNAL PIPE SUPPORTS
 “ENCAPSULATED METHOD”**

Cover over and install in the same manner as when using Armaflex on supporting pipe bracketing systems. See Armaflex manual (page 26).

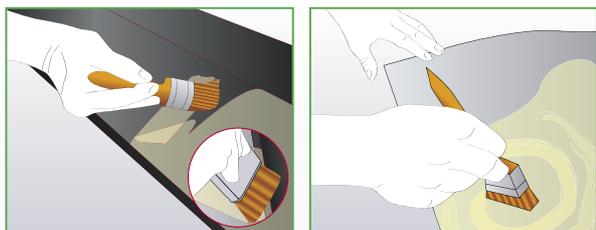
Using Arma-Chek S+ covering fabricate a cover to fit over the top of the Armaflex (use same method as for “covering end caps and termination points”).

COVERING OF INSULATED RECTANGULAR SHAPES (ductwork, tanks and flat surfaces inclusive)

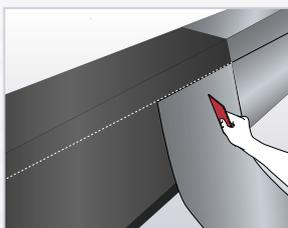
To reduce labour time it is recommend to install the Arma-Chek coverings to the ductwork in a single complete "wrap-around":

1. Measure the circumference of the ductwork and cut the Arma-Chek coverings to the correct dimension, allow for a 50 mm overlap of the fixing seam.

Note: for larger duct surfaces a "step-by-step" application of the coverings in 2 or 4 separate sections may be the preferred option where there is only one installer on the application.



2. Apply the Armaflex adhesive directly to both the Armaflex and the Arma-Chek S+ surfaces in a thin and even manner using a large paint brush/ fabric paint roller. Allow the adhesive to "touch dry".



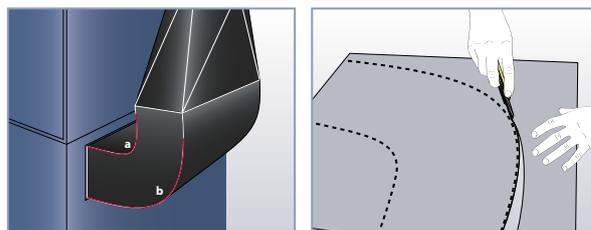
3. Position the coverings and fix to the Armaflex sheet. Ensure the covering is "in-line" and in the desired position.

Apply firm even pressure and smooth the covering around the surface of the insulation avoiding any air/solvent pockets or crease's and crinkles. Use a plastic card to enhance the edges at the corners of the duct. Pinch and smooth along the covering, as its being applied.

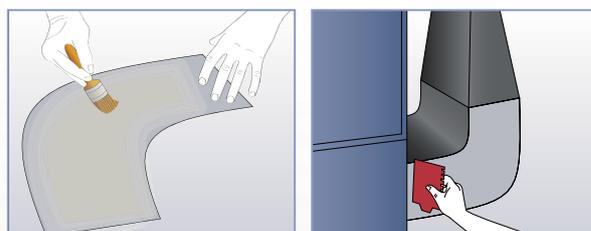
4. Clean away any unwanted adhesive using Armaflex cleaner, particularly around seam and joint details. The attached seam and joint details should be over-covered with the appropriate Arma-Chek S+ tape.

For internal installations: Use Arma-Chek S+ Self-Adhesive tape.

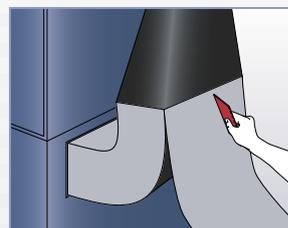
For external installations: Use Arma-Chek S+ Butyl tape.

DUCTWORK BENDS AND IRREGULAR SHAPES

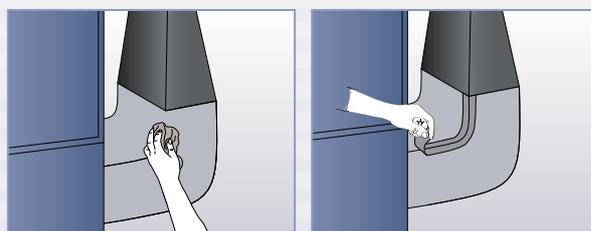
1. Measure the length of the inner and outer ductwork bend. Cut the Arma-Chek S+ covering to the correct dimensions.



2. Apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the duct. Allow to tack dry before applying.
3. Apply the cut pieces following the procedures described (see chapter "rectangular shapes" on this page).



4. Apply an adequate piece of covering on the lateral face of the insulated ductwork bend. Cut this covering alongside the edges of the duct channel.



5. Clean away any unwanted adhesive using Armaflex cleaner, particularly around seam and joint details. The attached seam and joint details should be over-covered with the appropriate Arma-Chek S+ tape.

For internal installations: Use Arma-Chek S+ Self-Adhesive tape.

For external installations: Use Arma-Chek S+ Butyl tape.

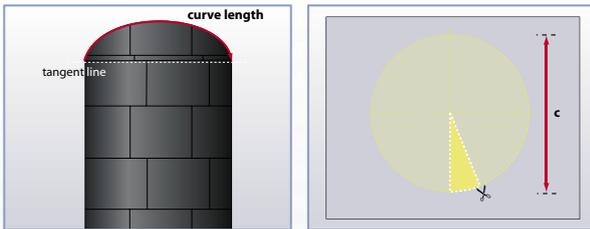
CIRCULAR DUCTWORK

Apply the Arma-Chek S+ covering on circular ductwork as for large bore pipework installations. (Refer to the section on large bore pipework installations on page 15 of this manual.)

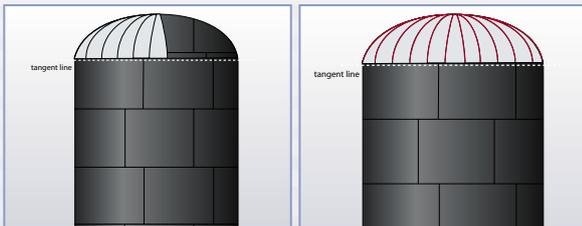
VESSELS AND TANKS

COVERING OF VESSEL DOME ENDS

When covering an Armaflex-insulated vessel dome end with Arma-Chek covering material it is necessary to cut out segments. Use enough segments to ensure that the material can be applied without wrinkles.

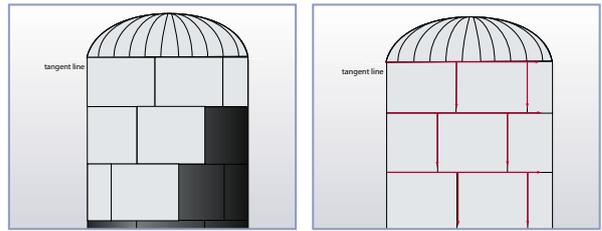


1. Determine the curve length (a) of the insulated vessel dome end using a tape measure.
2. Calculate or measure the circumference $C = \text{arc length} \times \pi$ and divide the circumference by the number of segments to be used.
3. Draw the segment shape on a piece of cardboard to create template.
4. Use this template to draw and cut out the other segments.
5. Apply Armaflex adhesive to one side of the Arma-Chek S+ pattern and also to the Armaflex installed on the duct. Allow to tack dry before applying.



6. Butt-up all vessel dome segments until the whole dome end is covered with Arma-Chek S+.
7. **For internal installations:** Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Self-Adhesive Tape.
For external installations: Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed

COVERING OF VESSEL BODY

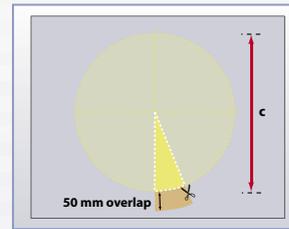


1. Apply covering material to the Armaflex insulated vessel (jacket), beginning butt jointing to the dome end cover.
2. **For internal installations:** Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Self-Adhesive Tape.

For external installations: Cover all seams and joint details (indicated by red arrows →) using Arma-Chek S+ Butyl-tape. Always apply so as to allow for a watershed.

COVERING OF EXTERNAL VESSEL DOME ENDS

The dome end segments have to be fabricated allowing an 50 mm overlap (see drawing). The overlap should be "feathered".



Insulate first vessel body as described and then the dome ends. The 50 mm overlap is positioned over the body panels to create a watershed. Make sure that all seams and joints are covered with Arma-Chek S+ Butyl-tape

5 OTHERS

CLEANING (standard cleaning & steam clean)

Where it is necessary to clean the surface of Arma-Chek S+ the following methods may be appropriate in environments as indicated:

Duct contamination - Should be cleaned away using a dry clean cloth. Where required on flat surfaces use of a vacuum cleaner is possible. When using a vacuum cleaner care should be taken not to damage the surface finish.

Soiled area's – May be cleaned using a clean cloth. A mild general cleaning detergent mixed with clean cold/warm water can be used if required.

Foodstuff / fluid contamination – Should be cleaned away using water/steam pressure cleaning equipment if required. Care should be taken not to damage the S+ surface and attached matching self-adhesive tape/butyl tape.

Important: Avoid the following

1. Steam/water temperature of above +105° C
2. Water pressure (psi) of +100

Note: Water/steam outlet, distance should always be a minimum of 500mm away from the insulated surface. Direct close up contact should always be avoided when using a pressure cleaning process.

MAINTENANCE

In general, Arma-Chek S+ does not require maintenance, except in area's where regular general cleaning procedures are in effect. However, where heavy mechanical damage has taken place, the area affected should be removed and replaced. It may only be necessary to over-cover the damaged area, with a new section of the covering, applied as detailed within the manual to finish.

6 REFERENCES

In addition to this manual Armacell provides the following documents, freely available from www.armacell.com/uk (or as part of our ArmaPlus CD). These documents contain further detailed advice for specific applications.

MECHANICAL PROTECTION AND OUTDOOR APPLICATIONS WITH ARMAFLEX

Explanation of the issues arising when installing Armaflex outdoors and evaluation of solutions to protect Armaflex from mechanical damage.

HOT CLIMATES - HIGH AMBIENT TEMPERATURE AND RELATIVE HUMIDITY

Installation advice on installing Armaflex in hot and humid climates, including details on anticipated adhesive curing times.

INSULATING OF LOW TEMPERATURE LINES WITH ARMAFLEX

Installation advice on issues arising when insulating low temperature lines below -40°C.

ARMAFLEX UNDERGROUND

Explanation of the theory underlying insulating underground pipes, including advice on insulating underground pipes using Armaflex and also including a calculation tool to calculate the impact of insulation on the time until pipe freezing occurs.

TRACE HEATING

Explanation of the theory underlying insulating trace heated pipes, including advice on selecting correctly dimensioned insulation tube.

ARMAFLEX ON RECTANGULAR & CIRCULAR DUCTWORK

Additional detailed installation advice when installing Armaflex onto rectangular or circular ductwork.

ARMAFLEX IN CONCRETE

Installation advice when burying pipes insulated in Armaflex directly in concrete.

GLUING ARMAFLEX ONTO CELLULAR GLASS

Installation advice when installing Armaflex directly onto a cellular glass surface.

OTHER APPLICATION GUIDES

- » Application Guide for Armaflex
- » Special Application Advice for HT/Armaflex
- » Application Hints for Armaflex Underground
- » Application hints for Armaflex TuffCoat
- » Application of Armaflex DuoSolar VA
- » Application guide for ArmaSound Industrial Systems
- » Armaflex & Arma-Chek application video

CALCULATION TOOLS

- » **Armafinish FR paint - Coverage Calculator**
- » **keytec. ISO 15665**
Determine the right ArmaSound Industrial Systems
- » **keytec. Armaflex Underground**
Calculate the impact of insulation on the time until pipe freezing occurs.
- » **ArmWin AS**
Armwin AS is the technical calculation program to determine insulation thicknesses required to prevent surface condensation and limit energy losses. It also allows users to calculate U-values, heat flows and temperature changes for pipes, ducts and tanks.

ARMA-CHEK COVERING SYSTEMS



Arma-Chek S+

The insulation system resistant to mechanical impact with a bright silver finish.



Arma-Chek D

The lightweight and easy to apply insulation system resistant to mechanical impact.



Arma-Chek R

The insulation system with extra system security that minimises the risk of under insulation corrosion (UIC)



Arma-Chek T

The easy to apply and highly reliable solution for irregular shapes and hard to access areas.



Select the right Arma-Chek Covering System for your application ...

Equipment Type	General Construction		Process Industries		Shipbuilding
	Office & Commercial buildings	Plant buildings / Warehouses	Heavy Industry & Offshore (incl. Petrochemical / LNG)	Pharma & Food industries	
HVAC - Plant rooms	D S	D	D R T	S D	T
HVAC - Service Shafts	D S	D	D R	D S	T
HVAC - Suspended Sub-Flooring	D S		D R	D S	T
AC ductwork, indoors (exposed to view)	S D	S D	D R	S D	
AC ductwork, outdoors	D R S	D R S	R D	R D S	
Pipe work, indoors		D S	R D	S R	
Pipe work, outdoors	D S	D S	R T	D R T	T R
Process Pipework			R T	S R T	R T
Process pipe work, Dual Temp (intermittent)		R	R	R	
Vessels & Tanks, indoors	S D	D R S	R D	S R	T R
Vessels & Tanks, outdoors	D S	R D S	R T	R T	T R
Engine rooms					T

Where a letter appears in a full shaded circle in the table above this implies that the corresponding Arma-Chek system is particularly suited to this application. A letter in a non-shaded circle also implies a high level of suitability for the corresponding Arma-Chek system, although this is not the standard Armacell recommendation for this application.

Arma-Chek products may also be used in areas not indicated above and as such the table represents indicative advice only.



Armacell UK Limited
 Mars Street · Oldham, Greater Manchester · OL9 6LY
 Tel 0161 287 7100 · Fax 0161 633 2685
www.armacell.com/uk · info.uk@armacell.com



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