



THE MAKERS OF
Armaflex
Tubolit
Oka - Products



Arma-Chek[®]

INSTALLATION MANUAL

ARMA-CHEK D, ARMA-CHEK S, ARMA-CHEK R AND ARMA-CHEK T


Arma-Check



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Arma-Chek'



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Product range

Arma-Chek D



Pre-coated tubes
(AF) and (NH)



Pre-coated tubes
(HT)



Pre-coated sheets



Covering



Tape, Strips



Mastic

Arma-Chek S



Pre-coated tubes
(AF) and (NH)



Pre-coated tubes
(HT)



Pre-coated sheets



Covering



Tape, Strips



Mastic

Arma-Chek R



Covering

Arma-Chek T



Base



Web



Top

Golden Rules when working with Arma-Chek D, Arma-Chek S and Arma-Chek R

- Before working with Arma-Chek D, Arma-Chek S and Arma-Chek R it is advisable that the installer has a general knowledge of the installation techniques relating to Armaflex tube and sheet products.
- Use good quality tools, in particular a sharp knife, fresh Armaflex adhesive and good brushes.
- Oval tubes should always be split on the flat side.
- Use clean Armaflex material – with no dust, dirt, oil or water on the surface; if present clean with Armaflex cleaner.
- Use the right dimensions!
- Never pull glued joints when sealing them, always push them together.
- Never insulate installations and systems that are in operation! Only start insulated plants after 36 hours – after this time the adhesive is fully cured.
- Self-adhesive Arma-Chek D or Arma-Chek S tape should not be used as the only fixing type for butt and longitudinal joints and seams.
- Arma-Chek D, Arma-Chek S and Arma-Chek R covering can be used on seams and joints which are glued with Armaflex adhesive (earliest) after 36 hours to allow complete out-gassing of the adhesive solvent.
- Fabricate Arma-Chek D, Arma-Chek S and Arma-Chek R products on a workbench as you would do metal jacketing, do not carry out fabrication on floors.
- Avoid installing in very humid and wet conditions. Tent and weather protect where possible.
- Avoid installing Arma-Chek D, Arma-Chek S and Arma-Chek R covering under tension.
- Before using Arma-Chek D, Arma-Chek S and Arma-Chek R covering on Armaflex substrate make sure that all seams/joints are completely sealed with the correct type of Armaflex adhesive and are damage free.
- Always use the correct specified Armaflex adhesives.
Do not assume they will always do the same job! If in doubt, consult Armacell technical department.
- On external installations always ensure a “watershed” is present on all seams and joints.
- On external installations always provide the Arma-Chek D or S mastic seal to all exposed seams and joints after the application of the specified Armaflex adhesive.

- For internal installations where the installation may be "washed down," install the Arma-Chek D, Arma-Chek S or Arma-Chek R covering as you would do for an external application, including the provision for the application of Arma-Chek mastic (see page 41: specification table).
- Minimize joints where possible and "stagger".
- Apply Arma-Chek D, Arma-Chek S and Arma-Chek R covering within 3 days of installing the Armaflex insulation on external installations.

Health and Safety

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



General

Tools for installing Armaflex



Folding rule



Short knife



Scissors



Chalk for marking irregular shapes



Long knife



Brush with short, firm bristles



Silver ink marker pen



Sharpening stone



Smooth spatula



Dividers



Armaflex Slitter with blades



Sharpened pipe ends for the most common pipe diameters



Callipers



Safe edge craft knife



Roller for surface gluing



Straight edge



Template



Mastic gun



Correct use of accessories

There are three types of accessories currently available:

- Armaflex adhesive
- Arma-Chek D and Arma-Chek S mastic
- Arma-Chek D and Arma-Chek S self-adhesive tapes

Arma-Chek D, Arma-Chek S and Arma-Chek R gluing

Adhesives to use are:

Armaflex adhesive HT 625 (bonding of HT/Armaflex)

Armaflex adhesive 520 (all other Armaflex elastomers)

- a) Before use shake and stir the adhesive thoroughly. Keep container/adhesive holder closed when not in use.
- b) Use brushes with short, stiff bristles. Alternatively the Armaflex adhesive gluemaster can be used when working with the adhesive.

- c) Application procedures for installing the Arma-Chek D, Arma-Chek S and Arma-Chek R covering to flat and large surface area's, 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 and Arma-Chek R covering. For Arma-Chek D covering adhesive is **only** required on the Armaflex and on the overlapping area. Always ensure there is all over adhesive coverage to all surfaces with no signs of "dry spots". A short pile sheepskin paint roller may be preferred on large circular and flat surface areas.

- d) Allow the adhesive to "tack-dry". The "tack"-time depends on the thickness of the adhesive layer and the ambient conditions (temperature, relative humidity, air movement). The correct initial drying time is checked by 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, a dry paint roller or a big brush to bond the covering to the Armaflex.

Apply pressure to the entire surface, smoothing the covering round making sure there are no air pockets present. Always check for alignment and avoid "creases and crinkles" during that time.

General

- e) If the surfaces are left to dry too long, they will not bond when pressure is applied. When this happens you can re-activate by applying a further film of Armaflex adhesive following steps b) to d).
 - f) In general, the application of adhesives should not be carried out when the ambient temperature is below 0 °C or the relative humidity is higher than 80% (for further information see application hints for Armaflex adhesives).
 - g) Use Armaflex cleaner to clean your tools and/or contaminated Arma-Chek D and Arma-Chek S surfaces.
- 3. All seams and joints to have an allowance of a minimum of 10 mm wide and 3 mm thick mastic "beading" applied.
 - 4. Smooth the mastic, with the use of a mastic spoon or a finger (use washing up liquid and water). The finish of the mastic can be enhanced by „masking“ off 5 mm either side of the seams and joints, prior to the application of the mastic. Proceed to remove the "masking tape" while the mastic is in its wet state (Take care on health and safety issues!!)

Arma-Chek D and Arma-Chek S mastic

The Arma-Chek mastic is an adhesive and a sealing product designed to give additional and long life protection to all Arma-Chek D, Arma-Chek S and Arma-Chek R glued seams and joints in external environments.

Note: Use Arma-Chek D mastic to apply with Arma-Chek R covering.

1. Before applying the mastic to all seams and joints, check that they are completely sealed with the correct type of Armaflex adhesive, and securely fixed down (see item 6 below).
2. Check that the seams and joints are clean, dry and free



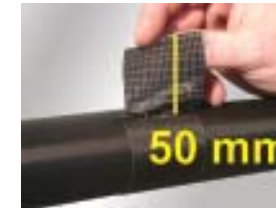
5. In general, the application of the mastic should not be carried out when the ambient temperature is below +5 °C or the relative humidity is higher than 80%.
6. The Arma-Chek mastic should not be used on a stand alone basis to fix and bond the coverings (see item 1 above).

Arma-Chek D and Arma-Chek S self-adhesive tapes

The following procedures are applicable for Arma-Chek D and S self-adhesive tape with 20 mm, 50 mm and 100 mm width.

- Self-adhesive tapes are to be used for internal applications only – **do not use them on external installations!!**
- Check that the seams and joints are clean, dry and free from contamination before applying the self adhesive tape. To clean the seams and joints use the Armaflex special cleaner.
- Peel back release paper and cover the entire seam line with an additional 50 mm overlap where applicable, applying pressure during the installation.
- Check the self-adhesive tape has completely adhered itself to the under-laying covering.

- Self-adhesive Arma-Chek D and Arma-Chek S tape should not be used as the only fixing type for butt and longitudinal joints and seams.



Temperature limits using self-adhesive tapes:

- Ambient application temperature +10 °C to +35 °C, maximum relative humidity 80 %
- Surface application temperature: minimum -50 °C, maximum +80 °C
- always store in a warm, dry storage location. Ideal storage temperature +5 °C to +35 °C (preferred +18 °C)

Pre-coated tubes

Application of pre-coated Arma-Chek D and S material

Application of tube material

General procedures

Arma-Chek D and Arma-Chek S pre-coated tubes are supplied with a self-adhesive seal in 1 metre lengths (with the exception of Arma-Chek D (HT) and Arma-Chek S (HT) which are only available pre-slit). The covering finishes approximately 10 mm before the end of the tube in order to guarantee that the insulation material is installed "under tension" around butt joints.

The Arma-Chek D and Arma-Chek S pre-coated tube range is available for pipes with an outer diameter of up to 89 mm. For larger-sized pipes with an outer diameter of 102 mm up to 160 mm special (non self-adhesive) pre-coated tubes are available on request.

Note: Due to the semi-flexible nature of the products "sleeve-over method" is not possible!

Straight pipes

1. Clean the pipe surface with Armaflex special cleaner
2. Snap the tube onto the pipe.



3. Peel back both release paper strips step by step, align the seam joints and apply heavy pressure to the complete seam, this action will allow closure.
Note: Always check the seam is fully bonded before proceeding to the next steps.



4. Lay the covering tightly round the tube and fix using the factory applied adhesive strip.
5. Use correct Armaflex adhesive to secure the longitudinal seam (apply on both sides, for Arma-Chek D only one side is required, see correct use of accessories). Always remember to "stagger" longitudinal seams.
6. Secure the butt end on the underface of the Armaflex tube with the Armaflex adhesive and also provide a „wet seal" to the adjoining tube.



For internal application:

7. The butt joints have to be secured with the 50mm width self-adhesive Arma-Chek D or Arma-Chek S tape.



For external application

7. Secure additionally the butt joints of the tube using the 100 mm width Arma-Chek D or Arma-Chek S strip which has the correct Armaflex adhesive applied on both sides (for Arma-Chek D only on one side). On external installations always ensure a "watershed" is formed.



8. Use the Arma-Chek mastic to seal all seams and joints! All seams and joints to have an allowance of a minimum of 10 mm wide and 3 mm thick mastic "beading" applied (see page 9).

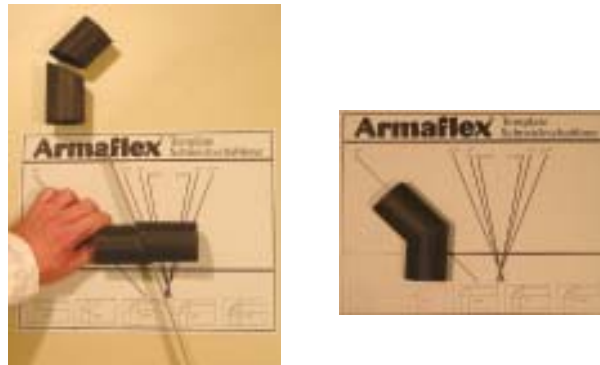


Pre-coated tubes

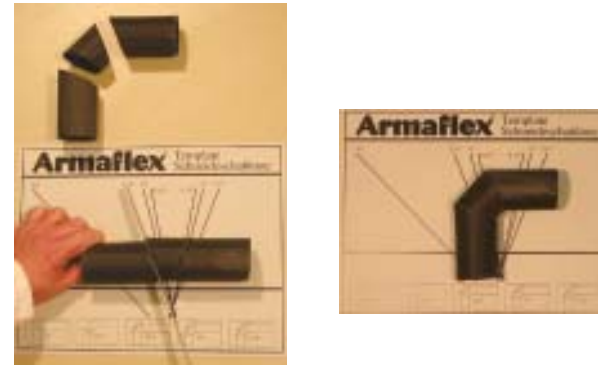
Fabrication of bends

1. Cut the pre-coated tube to the correct length for the bend.
2. Carefully close the longitudinal seam of the tube.
3. Peel back carefully the covering where it is fixed. Apply the correct Armaflex adhesive on the whole surface, to both the covering and the surface of the Armaflex (Note: For Arma-Chek D apply adhesive 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 pictures below – see also Armaflex installation manual!

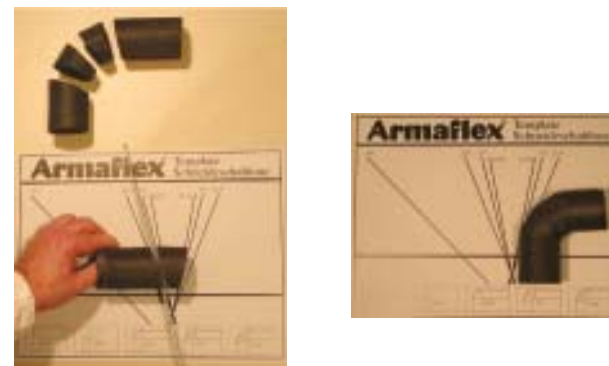
Bends with 45° angle



Segment bend with one middle part (2+1)



Segment bend with two middle parts (2+2)



Segment bend with three middle parts (2+3)

5. Apply glue on all segment seams.
6. Cut the „throat“ of the fitting piece open. Install the fitting piece on the pipe. Apply the appropriate Armaflex adhesive on the „throat“-seam.

**For internal application:**

7. First secure the segment fitting joints of the tube then the seam of the throat using the 20 mm width self-adhesive Arma-Chek D or Arma-Chek S tape.

For external application:

7. Cut the 100 mm width bandage to suit the recommended size of 20 mm.
8. Secure all seams and joints of the bend using the 20 mm width bandage - apply the correct Armaflex adhesive on both sides (for Arma-Chek D only on one side).
9. On external installations always allow for „watershed“
10. Use the Arma-Chek mastic as recommended under chapter „Correct use of accessories“. All seams and joints to have an allowance of a minimum of 10 mm wide and 3 mm thick mastic „beading“ applied.



Pre-coated tubes

T-piece & offset angle

In order to achieve a secure application of T-pieces and offset angles it is recommended to combine an installation of pre-coated Arma-Chek D or Arma-Chek S and covering material.

1. Insulate the main pipe with Armaflex material.
2. Insulate the offset pipe with pre-coated Arma-Chek D or Arma-Chek S material.

Note: Pre-coated material has to be applied according to the Armaflex Installation Manual, Chapter: "T-Pieces/ Offset Angles made of tube and sheet-material."

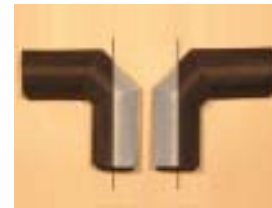
3. The offset has to be installed under compression to the main pipe, which is insulated with Armaflex. Finally the main pipe has to be covered with Arma-Chek D or Arma-Chek S covering material.

Note: Application instructions relating gluing, vapour-sealing and overlapping have to be considered.

(Using Arma-Chek R covering material see chapter "Application of covering material".)

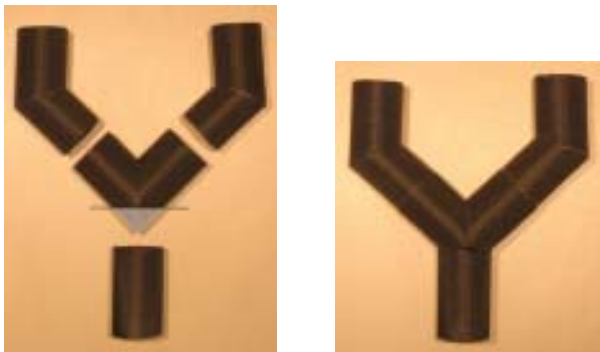
Swept T

- Fabricate two 90° segments bends with one middle part (2+1)
- Always follow instructions related to the application of pre-coated Arma-Chek D and Arma-Chek S tubes as stated in the above procedures relating to adhesives and self-adhesive tapes and bandages.



Y-tube

- Fabricate two bends with 45° angle and one with 90° angle
- Proceed as shown in the pictures.
- Always follow instructions related to the application of pre-coated Arma-Chek D and Arma-Chek S tubes.



Pipe reducer

- See also Armaflex application manual.



Insulation jacket covers (small valves/unions etc.)

1. Apply a small piece of Armaflex tube completely glued on the spindle (or Armaflex self-adhesive tape).
2. Ensure the Armaflex is "butted" up to the face of the over-sized fitting. Apply over-size pre-coated Arma-Chek D or Arma-Chek S tube over the fitting. The over-size fitting should extend by the wall thickness of the over-sized fabrication (minimum of 25 mm is required) over the adjoining insulation. On the butt end of the adjoining insulation remove the pre-coated covering by the overlapping measurement. The spindle cut out should be 5 mm smaller than the actual size of the insulated spindle diameter.



Pre-coated tubes



3. Vapour sealing of all seams and joints together with the penetration area of spindle.



4. Applying the Arma-Chek D or Arma-Chek S self-adhesive tape to the ends of the valve covering. Use minimum width of 50 mm apply the tape following description under chapter "End caps and Termination points".



Application of sheet material

General procedures

Arma-Chek D and Arma-Chek S pre-coated sheet material is available in a continuous roll form and can be used for large bore pipe work, ductwork, vessels and flat surface application.

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

For the insulation of pipes with pre-coated sheet material the following rules apply due to the greater bending stress on the adhesive seams:

Outer pipe-Ø mm	Arma-Chek D Arma-Chek S			Arma-Chek D Arma-Chek S			Arma-Chek D Arma-Chek S		
	(AF) H*	(NH) 13 mm*	(HT) 13 mm*	(AF) M*	(NH) 19 mm*	(HT) 19 mm*	(AF) R*	(NH) 25 mm*	(HT) 25 mm*
≥ 88,9	●								
≥ 114,3	●	●		●					
≥ 139,7	●	●	●	●	●	●			
≥ 168,3	●	●	●	●	●	●			
≥ 219,1	●	●	●	●	●	●	●	●	●

* Tolerance of insulation thickness ± 1 mm

Note:

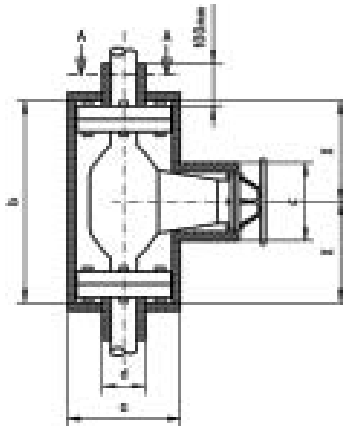
1. This table is valid for ambient conditions of 5°C. For lower application temperatures the rigidity and tension of the sheet material can increase thus leading to other conditions than mentioned in this table!
2. In case of insulating bends with pre-coated sheet-material, please contact Armacell technical department.

Pre-coated sheets

Valve coverings

Insulate the connected pipes to a length of 100 mm and the valve spindle depending on its length using uncoated Armaflex.

1)



Determine the dimensions:

diameter of the end disc:

a = diameter of the flange +
2 x insulation thickness

height of jacket:

b = from end of screw to end
of screw + 5 mm allowance

jacket opening:

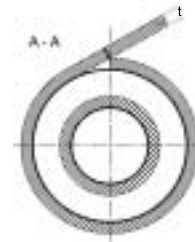
c = diameter of the insulated
valve spindle

end disc opening:

d = diameter of the connected
pipes + 2 x insulation
thickness

Note: 5 mm must be added to the jacket height determined. 5 mm must be subtracted from all measurements for openings.

2)



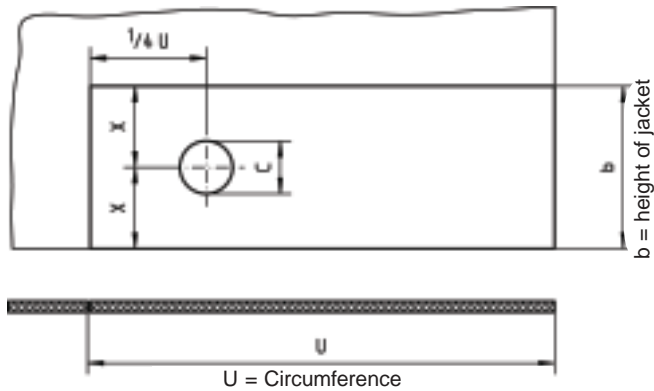
Cross-section A-A:

Determine the circumference
of the flange with a strip of
Arma-Chek D, Arma-Chek S

3) Transfer the measurements determined to the appropriate pre-coated Arma-Chek D or Arma-Chek S sheet.

Install the valve covering and securely bond all areas where there is a risk of penetration with the appropriate Armaflex adhesive. For **indoor applications**, cover the uncoated insulation on the pipes and the valve spindle with 100 mm wide Arma-Chek D or Arma-Chek S self-adhesive tape. On **outdoor applications**, use 100 mm wide strips of the covering material.

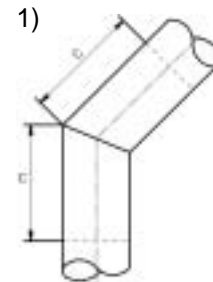
Measure and cut the covering for the valve spindle as described in the chapter "Applying covering material: Valve-Ts / Pipe-Ts" (see page 36).



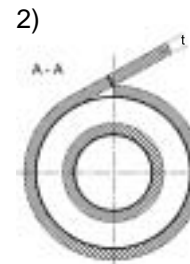
Flange coverings

Fabricate flange coverings following the same principles as for valve coverings.

Pipework offset bend angle

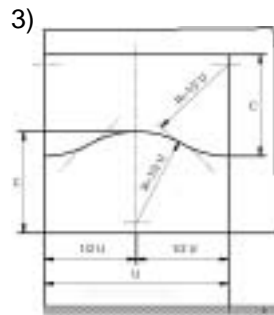


Determine the dimension c.



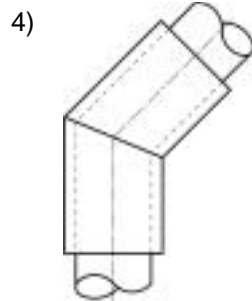
Determine the circumference by placing a strip of Arma-Chek D or Arma-Chek S pre-coated sheet around the pipe.

Pre-coated sheets



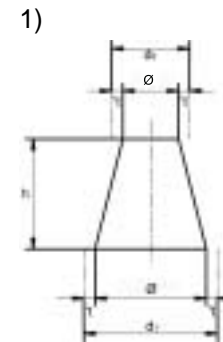
U = Circumference

Transfer the measurements to the pre-coated Arma-Chek D and Arma-Chek S sheet material as shown in the figure.

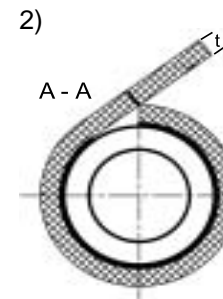


Completed Arma-Chek pipework bend angle made of factory-coated Arma-Chek D or Arma-Chek S sheet material.

Concentric reducer - equal

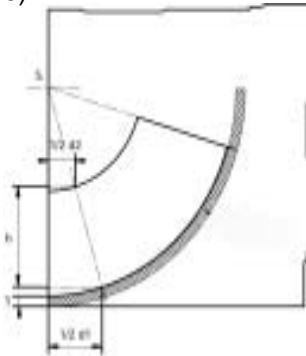


Determine the measurements d_1 and d_2 (pipe diameter + 2 x insulation thickness) of the small and large pipe and the height h .



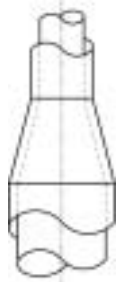
Determine the circumference by placing a strip of factory-coated Arma-Chek D or Arma-Chek S sheet material in the thickness to be used loosely round the larger diameter pipe. Do not stretch the strip!

3)



Transfer the measurements determined onto the surface of the factory-coated Arma-Chek as shown in the picture. Minimize material waste by drawing the half elevation on the edge of the Arma-Chek sheet.

4)



Completed Arma-Chek pipe reducer made of factory-coated Arma-Chek D or Arma-Chek S sheet material with a straight finish.

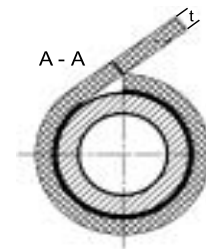
Eccentric reducer – flat back

1)



Determine the measurements d_1 and d_2 (pipe diameter of the bare small and large pipe), the height h and the true length b . Calculate the measurements d_1 and d_2 (diameter of the respective pipe + 2 x insulation thickness).

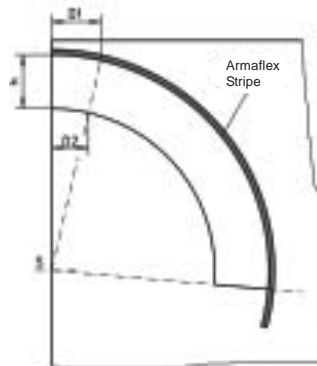
2)



Determine the circumference by placing a strip of factory-coated Arma-Chek sheet material in the thickness to be used loosely round the larger diameter pipe. Do not stretch the strip!

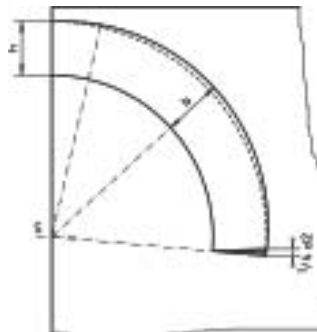
Pre-coated sheets

3)



Transfer the measurements determined, onto the surface of the factory-coated Arma-Chek, as shown in the picture.

4)



Modify the pattern in fig. 3 to the appropriate pattern for an eccentric reducer as shown here.

5)

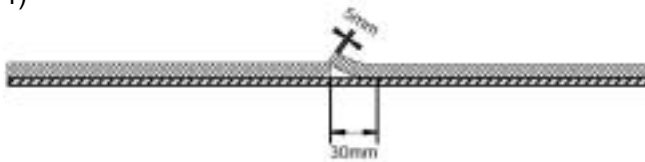


Completed Arma-Chek eccentric reducer made of factory-coated Arma-Chek D or Arma-Chek S sheet material.

Flat surfaces

Flat surfaces are always completely covered with adhesive; on the Armaflex and metal substrate surfaces. Cylindrical bodies with an outer diameter of ≥ 600 mm (≥ 500 mm for off-shore applications) are treated as flat surfaces.

1)



Around the butt joint, leave 30 mm at the edge of the sheet of factory-coated Arma-Chek D or Arma-Chek S free of adhesive and place the sheet in position with 5 mm overlap.

2)

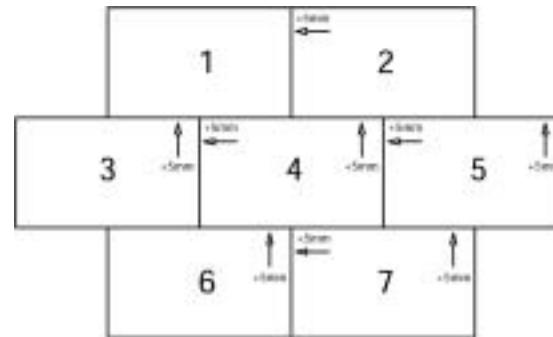


Press the overlapping edge of the sheet into position.

3)



Wet seal the butt seam.



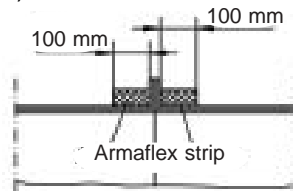
Schedule for glueing insulation to flat surfaces.

Pre-coated sheets

Ductwork (rectangular and circular)

Rectangular:

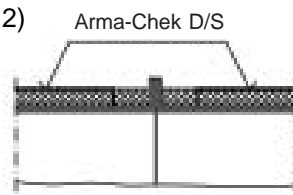
1)



Insulate the area of the ductwork which borders directly on the flange with a 100 mm wide strip of Armaflex.

Determine the dimensions of the ductwork surface to be insulated. On bends the inner (throat) and outer dimensions are determined using strips of factory-coated Arma-Chek D or Arma-Chek S.

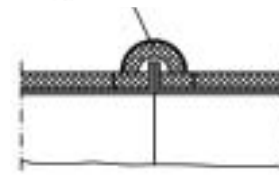
2)



Cut and apply Arma-Chek D or Arma-Chek S pre-coated sheets, use adhesive all-over as described in chapter "Insulating flat surfaces".

3)

1/2 pre-coated Arma-Chek D/S tube



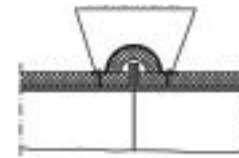
Use factory-applied pre-coated Arma-Chek D or Arma-Chek S tubes to insulate flanges (rule of thumb: half of tube inner diameter \geq flange overlap).

Install these tubes following the description in "Fabrication of bends with Arma-Chek tubes" point 2 and 3 (see page 13).

Cut the tube in half and dimension according to the length of the flange (use 45° mitred cut for the corners of the flange). Install the halved tubes. Be sure to bond carefully!

4)

Arma-Chek D/S coating material (sheets)



Cover uncoated Armaflex strips around the flange with Arma-Chek D or Arma-Chek S self-adhesive tape or Arma-Chek D or Arma-Chek S strips.

Note:

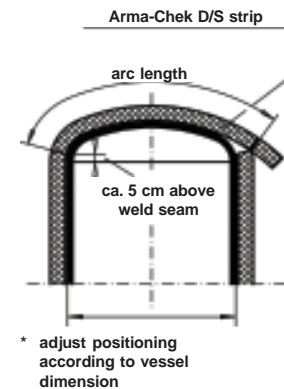
- 1.) All butt joints must be secured with 50 mm wide self-adhesive Arma-Chek D or Arma-Chek S tape. Secure edges with 100 mm Arma-Chek D or Arma-Chek S self-adhesive tape with the same overlap as butt joints.
- 2.) Secure butt joints and edges on outdoor applications in the same way. Note the special installation techniques for outdoors described in chapter "Application of pre-coated material-straight pipes" (see page 12).

Circular ductwork

Circular ductwork is insulated with Arma-Chek D or Arma-Chek S pre-coated sheets depending on the diameter of the ductwork and the insulation thickness of the insulation material used. (See table on page 18 in chapter "Application of sheet material".)

Hanging ductwork

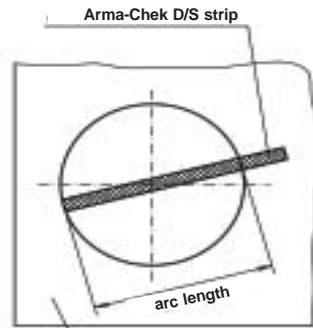
Use the Armafix duct supports to optimize the prevention of thermal bridging and simplify the hanging of ductwork.

Vessels

First insulate the vessel jacket with Arma-Chek D or Arma-Chek S pre-coated sheet material. Position the jacket insulation at least 5 cm (positioning mark) above the weld seam of the vessel head (valid for vessels with an outer diameter of up to a maximum of 1.5 m, for larger vessels the positioning mark must be raised accordingly).

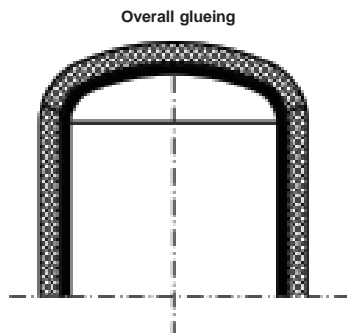
Determine the length of the arc of the vessel head and the vessel bottom using strips of Arma-Chek D or Arma-Chek S.

Pre-coated sheets



Arma-Chek D/S pre-coated sheet

Transfer the length of the arc to factory-coated Arma-Chek D or Arma-Chek S sheets using the previously mentioned strip.



Overall gluing

Completed Arma-Chek D or Arma-Chek S vessel insulation.

Application of Arma-Chek D, Arma-Chek S and Arma-Chek R covering material

General procedures:

1. Ensure the Armaflex insulation surface is clean, dry, and free from all oils, greases and other contaminants, with all the seams and joints secured with Armaflex adhesive. Ensure that Armaflex installation procedures are followed; ensure there are no gaps present in all the seams and joints.

Note: Refer to the Armaflex Installation Manual at all times.

2. Apply adhesive in a thin, uniform layer to both the Armaflex surface and the inner face of the Arma-Chek S and Arma-Chek R covering. For Arma-Chek D covering adhesive is **only** required on the Armaflex and on the overlapping area. A short pile sheepskin paint roller may be preferred on large circular and flat surface areas.
3. It is recommended to fully adhere Arma-Chek D, Arma-Chek S and Arma-Chek R covering for cylindrical bodies with pipe outer diameter ≥ 500 mm.
Note: When Arma-Chek D or Arma-Chek S covering is applied onto a HT/Armaflex substrate, all-over adhesive coverage is not required on the HT/Armaflex or the

covering surfaces. Only the covering seam and joint overlaps require adhesive (even if pipe/duct has an outer diameter greater than 500 mm).

4. If all-over adhesive is applied for the overlapping regions of the Arma-Chek D or Arma-Chek S covering material it is not necessary to use self-adhesive tape (for internal application) or the 100 mm width Arma-Chek D or Arma-Chek S strips (for external application) if the covering is fully glued on the surface.

Cylindrical bodies (pipes, vessels, ductwork etc.)

Determine the circumference measurement of the insulated pipeline with an additional allowance of 50 mm for the overlap.

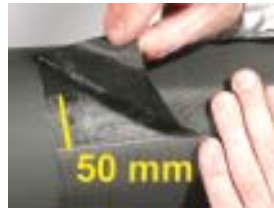
Proceed to cut the amount of pieces required, on a clean flat surface.

Procedures for pipework with outer diameter (including insulation thickness) < 500 mm

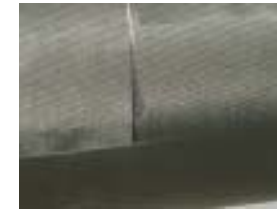
1. Positioning of the covering material: Apply a minimum 50 mm glue line with the correct type of Armaflex adhesive to the surface of the Armaflex and the Arma-Chek S or Arma-Chek R covering. Arma-Chek D does not require this procedure. Position the Arma-Chek D, Arma-Chek S and Arma-Chek R covering along this line

Covering material

and fix to the Armaflex. Ensure the covering is "in-line" and in the desired position. Apply pressure and smooth the covering around the insulations circumference avoiding any "air pockets". Use a clean paint roller for this job. (Overlapping of Arma-Chek D, Arma-Chek S and Arma-Chek R covering material: minimum 50 mm)



2. When the covering has been smoothed in position, mark the overlaps position on the under face area with a pen and continue to apply adhesive on the overlap and the under-laying covering, allow to touch dry, "use fingernail test" and fix down making sure the overlap is completely fixed.
3. Seal the longitudinal seam of the covering with the correct Armaflex adhesive. Continue to install the covering along the pipework allowing for a minimum 50 mm overlap on all "butt" joints.



Note:

1. For outdoor application check the adhesive seams and joints on the covering for any defects and rectify as required. Apply a bead of Arma-Chek mastic along all seams and joints. Always smooth in the mastic on all the seams and joints to allow maximum bonding to occur.
2. Allow for "watershed" where applicable on all external locations.
3. Allow 36 hours curing time before turning on the equipment.

Procedures for pipework with outer diameter (including insulation thickness) ≥ 500 mm

Same application as for outer diameter < 500 mm, but: All over adhesive coverage is required. Consider also „General procedures“, topic 3 (see page 28).

Note: Check adhesive specification table when installing Arma-Chek D, Arma-Chek S or Arma-Chek R covering (see page 41 of manual).

Rectangular bodies (ductwork, vessels)

To reduce labour time we recommend to install the Arma-Chek D, Arma-Chek S or Arma-Chek R coverings to the ductwork in one complete "wrap-around" application:

1. Measure the circumference of the ductwork and cut the Arma-Chek D, Arma-Chek S or Arma-Chek R covering to the correct dimension, allow for a 50 mm overlap of the fixing seam. (Tip: for bigger ducts surfaces a „step-by-step“ application of the coverings in 2 or 4 sections may be the best option where there is only one installer on the application)
2. Follow "general procedures" (application of covering material) step 2 (see page 28)
3. Allow the adhesive to "tack dry" (use fingernail test). Position the Arma- Chek D, Arma-Chek S or Arma-Chek R covering and fix to the Armaflex, ensure the covering is "in-line" and in the desired position. Apply pressure and smooth the covering around the insulations circumference avoiding any "air pockets". Use a clean paint roller for this job.



4. Seal the longitudinal seam of the covering with the correct Armaflex adhesive. Continue to install the covering along the ductwork allowing for a 50 mm overlap on all "butt" joints.



Covering material

Ductwork bends and irregular shapes

1. Measure the length of the inner and outer ductwork bend. Cut the Arma-Chek D, Arma-Chek S or Arma-Chek R covering to the correct dimension.
2. Gluing following "General procedures" (application of covering material) step 2 (see page 28).



3. Application of the cut pieces following the procedures described before (see chapter "rectangular bodies" on page 30).
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.



- Gluing of the butt ends of the covering material with the correct Armaflex adhesive.



Note:

1. For areas/locations where high ambient temperatures can be expected we recommend to use the "feathering technique" with 50 mm overlapping (see page 40).
2. For outdoor application check the adhesive seams and joints on the covering for any defects and rectify. Apply a bead of Arma-Chek mastic along all seams and joints. Always smooth in the mastic on all the seams and joints to allow maximum bonding to occur.
3. Allow for "watershed" where applicable on all external locations.
4. Allow 36 hours curing time before turning on the equipment.

Circular ductwork

Apply the Arma-Chek D, Arma-Chek S or Arma-Chek R covering as you would for large bore pipework installations. (Refer to the section on large bore pipework installations on page 30.)

Fittings made of covering material

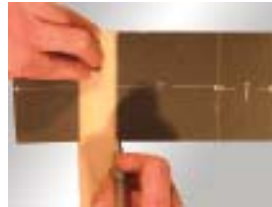
The following fittings can be fabricated using traditional sheet metal cladding working practices (leaf/segmentation) techniques. As an alternative to these time consuming methods below are easy step-by-step details for fabricating fitting templates. The examples below with the use of the Armaflex Installation Manual and the Armaflex cutting templates that are located on all our Armaflex tube cartons should help you on the way.

Segmented Bends

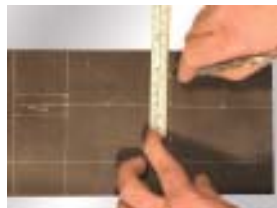
When using Armaflex tube on bend fittings the following fabrication technique could be used:

1. Measure the width of the throat and back of a segment of the assembled segment bend and determine the circumference.
2. Transfer the circumference measurement (U) to the Arma-Chek D, Arma-Chek S or Arma-Chek R covering material and draw in a line dividing it in half. Now add a 50 mm wide overlap on one side.

Covering material



3. Draw in the segment width for the throat seam at each end of the circumference, and the segment width for the back of the bend at the halving of the circumference. Add an allowance of 5 – 10 mm (depending on the outer diameter of the insulated pipe) to each side for the butt overlap.
4. Connect the throat and back width measurements (to which the allowances have been added). Cut out the segment shape.



5. 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.

Comment:

In order to cut out the same segment shape several times we recommend making a cardboard / metal template so that the shape can be transferred to the covering material optimally. The template can be halved lengthways to make the pieces for the beginning of the bend.

6. Install the segments, beginning with the appropriate Armaflex adhesive.

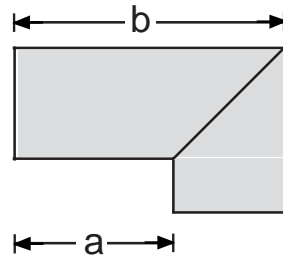
Note: To ensure that the overlap sits tidily, the material can be feathered.



Elbows

1. Measure the maximum and minimum length of the elbow segment (a) and determine the circumference.
2. Follow the same procedure as described in points 2 – 6 "segmented bends". (Point 2: instead of the segment width for the throat seam measure/draw in the minimum elbow segment length. Instead of the segment width for the back of bend measure/draw in the maximum elbow segment length (b)).

Note: Draw in these lengths on one side only!!
Add allowance of 5 – 10 mm for the butt overlap to one side only.)

**Two piece bends (fabricated from Armaflex sheet material)**

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: minimum segment width in the throat area ≥ 20 mm.)



2. Determine the circumference of the insulated pipe and transfer this to the covering material. Halve the circumference.
3. Transfer segment width for the throat seam to each end of the circumference drawn, and the segment width for the back of the bend to the halved circumference.

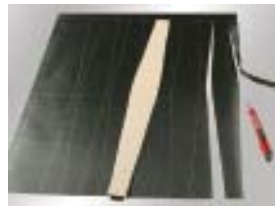


Covering material

4. Connect the determined segment widths to each other – taking into account the additional allowance of an overlap of 5 to 10 mm at each end.
5. Extend the circumference on one side by the overlap measurement of 50 mm.



6. Cut out the finished segment which can be used to fabricate further segments.



7. Fabricate initial pieces for the beginning of the bend with a half segment and possibly the additional allowance of an appropriate bend extension.

8. Assemble the segments first taking one of the initial pieces.

Note

All overlap areas require all-over coverage with the appropriate Armaflex adhesive. On large bore "pulled bend" pipework (hydraulically bent pipes) use what is known as the "wrap-around technique" as a simpler alternative to the procedure described here. Note: Always allow for 50% overlap when using the "wrap-around technique".

For this technique it is possible to use the Arma-Chek D or Arma-Chek S covering bandage or self adhesive tape material (available on rolls). For Arma-Chek R covering cut out your own size bandage from the main roll you are using. For outdoor application use the bandage products only and the self adhesive tape for indoor application.



Valve neck-T / pipe-T

1. Determine the circumference of the Armaflex insulated T-branch.
2. Transfer the circumference measurement on the Arma-Chek covering and mark the circumference into 4 equal sections. Add an additional 50 mm overlap on one side of this section.



3. Measure the minimum height (a) of the insulated T-branch. Transfer these height to the marked out covering.
4. Measure the outer diameter of the insulated main pipe. Take the half of this measurement (radius r) with a pair of dividers, mark out 2 arcs round the intersections of the second and fourth line touching the termination point of (a). Take the same measurement (radius r) and mark out three arcs around the intersections 1, 3 and 5 touching the first two arcs. That leads to joined arcs with a continuous line.



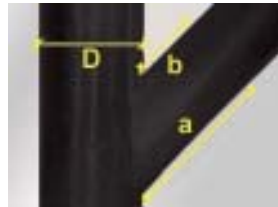
5. Add an additional 10 mm overlap to allow for "feathering" on the master pattern. Cut the pattern out with a pair of scissors.

**Offset angles**

1. Determine the circumference (U) of the Armaflex insulated offset angle, the maximum (a) and minimum (b) height, and the Armaflex insulated outer diameter of the pipe (D) to which the offset angle connects.
2. Transfer the circumference (U) to the Arma-Chek D ,

Covering material

Arma-Chek S or Arma-Chek R covering material. Halve the circumference.



3. Mark the minimum height (b) of the offset angle on the halving line and thus determine the termination point B. Mark the maximum height (a) on each of the side lines and thus determine the termination point A.
4. Draw a circle which stands vertically on point B and only touches it at one point (note: if the halving line is extended it runs through the centre of the circle). The diameter of the circle is a quarter diameter of the Armaflex insulated diameter of the main pipe (D).



5. Add an overlap of 50 mm to one side.
6. Draw the jacket line by marking two arcs (radius = half circumference) between a tangent of the circle standing on termination point B and the termination points A (continue the arc into the 50 mm overlap).



7. When using the feathering technique it is necessary to allow at least 10 mm parallel to the jacket line. Cut out the pattern using a pair of scissors or craft knife.



Vessel dome end

When covering an Armaflex-insulated vessel dome end with Arma-Chek D, Arma-Chek S or Arma-Chek R 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 arc length of the vessel dome end using a tape measure.
2. Calculate the circumference $U = \text{arc length} \times \pi$ and divide the circumference by the number of segments to be used.
3. Draw the first segment on the covering material.

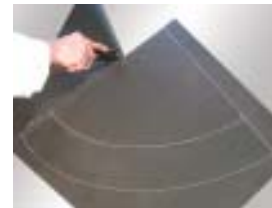


Version 1: Cut out the segments adding an overlap of 50mm to one side (segment to segment). All-over adhesive coverage should also be used on the overlap. On outdoor applications these seams should be secured with the Arma-Chek Mastic.



Version 2: Draw the outline of the segments without the 50 mm overlap. Using all-over adhesive coverage and butting the segments against each other, apply the covering material to the insulation material. Secure the seams

- with Arma-Chek D/S self-adhesive tape on indoor applications
- with 100 mm wide strips of the covering material, applied with all-over adhesive coverage, on outdoor applications.



Covering material

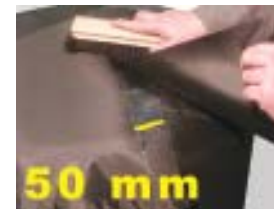
4. Make a template by gluing the first segment onto a piece of cardboard, for example.
5. Now use this template to draw and cut out the other segments.

In general an overlap of at least 100 mm should be added which is then feathered and applied to the Armaflex-insulated vessel dome end using all-over adhesive coverage.



6. To achieve a tidy finish, a circular piece of the covering material can be used to cover the ends of the self-adhesive tape or strips in the middle of the vessel dome end.
7. Finally, covering material is applied to the Armaflex-insulated vessel (jacket), beginning in the concentric 100 mm overlap of the vessel dome end. When covering the vessel observe a vertical overlap of 50 mm for the covering material.
8. In the area where the coverings of the vessel jacket and vessel dome end overlap, an aesthetic finish can

be achieved by applying Arma-Chek tape (indoor applications) or strips of the Arma-Chek covering material (outdoor applications).



End caps and termination points:

Using self adhesive Arma-Chek D and Arma-Chek S tape / bandage:

Self adhesive tape or bandage can be used to cover the open cell structure of the Armaflex on oversize insulation covers. The "feathering" technique can be used (see picture). The length of the feathering should be two times insulation covers thickness. The edges of the "feathering" should be reinforced using additional self adhesive tape or bandage material on both ends. (Note: bandage must be glued with the correct type of adhesive!)



Using covering:

Method 1:

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 as a template, mark out 2 half-semi circles which have the following measurements:
 - a) small bore insulated pipe outer diameter
 - b) large bore insulated diameter of insulated body.

Allowance should be made to both the inner side of the small diameter and the outer side of the large diameter for feathering overlap length minimum equal to the insulation thickness of the non covered area!

Method 2:

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

Covering material



Allowance should be made to both the inner side of the small diameter and the outer side of the large diameter for feathering overlap of minimum equal to insulation thickness of the non covered area.

3. Cut out and modify the covering, fabrication using the "feathering" technique. When installing use the correct type of Armaflex adhesive!
4. For the quadrant overlap use Arma-Chek D or Arma-Chek S self-adhesive tape (in the correct size for the overlap) on indoor applications, on outdoor applications the covering material (rolls), which can be cut into an approximate trapezium shape for the best fit.



Specification Table for Arma-Chek D, S, R
Seam and Joint Detail

Product type	outdoor applications	indoor applications
Adhesive	+	+
Arma-Chek D, S Mastic	+	#
Arma-Chek D self-adhesive tape		+
Arma-Chek S self-adhesive tape		+
Arma-Chek D Strips	+	
Arma-Chek S Strips	+	

+ to be used

applicable if required, in locations with high humidity and "wash-down" areas.

Application guidelines for Arma-Chek T

General procedures

All finished insulation shall be coated with Arma-Chek Base and Arma-Chek Top flexible membrane coating, which may be applied by brush, roller or airless spray. These two coats shall be applied at the thicknesses stated below. The coats are contrasting in colour. It is recommended that a test application be carried out on the Armaflex substrate to demonstrate that the proper film thickness is being achieved.

Measure 1 metre square of Armaflex, cover with a measured 0.50 litres of Arma-Chek Base (allowing for a 10% take up in application brush/roller). Embed one metre square of Arma-Chek Web (for details see below). Allow to dry. Then add 0.50 litres of Arma-Chek top (allowing for a 10% take up in application brush/roller). This will indicate approximate drying times experienced on site as well as approximation of the final construction, which can be used for reference of coating thickness and appearance. As a means of identification the Arma-Chek Web has red colour indicators randomly dispersed in its structure.

Application of Arma-Chek T

- The surface of the Armaflex substrate shall be clean, dry and free from all contamination.
- The first coat of Arma-Chek Base shall be applied to all exposed surfaces of Armaflex as soon as possible, and **not later than 3 days after installation, allowing for the Armaflex adhesive to cure completely for 36 hours.**
- Arma-Chek Base shall be applied at a wet film thickness of 0,5 mm, which will be achieved at a coverage rate of 0.50 litres per square metre. To obtain this coverage when using brush application the coating should not be brushed out, as with conventional paints, but rather dabbed on to the surface and lightly smoothed out.



Arma-Chek T

- While the first coat of Arma-Chek Base is still wet the random fibre glass mat, rough side down, is laid on top and embedded into the coating, using a roller or brush.



- Allow 1-2 minutes for the water-soluble resin on the mat to dissolve in the Arma-Chek Base. This enables the mat to be worked into the coating more easily so that any creases or wrinkles that may be present initially shall be worked into the coating.
- When reinforcing large flat areas the glass fibre mat should be embedded into the wet coating using a short pile nylon roller.
- On pipes, other curved surfaces and areas of poor access it is necessary to embed the reinforcement using a brush or by hand, using disposable gloves for protection, work the fibres well into the wet coating.



- On all configurations it is particularly important to ensure that each section of the random glass fibre mat is overlapped by at least 50 mm to ensure continuity of reinforcement and bonding to the flexible substrate. Embedment of the overlap may be made easier by the application of a further coat of Arma-Chek Base in this area.
- When there is a break in continuity of the insulation, the reinforcement and coating should be taken over the end of the insulation and along the pipe for at least 150 mm where possible.
- Any wicks or proud fibres in the wet coating may be embedded using a paint-loaded brush or roller. Once the coating is dry any such fibres should be removed using a sharp knife.
- Drying time for Arma-Chek Base will depend upon coating thickness and ambient conditions. A well-ventilated area will shorten considerably the time to

touch dry. Under normal conditions the coating will be touch dry, but not stackable, within two hours.

- The second coat, Arma-Chek Top, may be applied after the Base coat is 'through-dry', this will normally require that the first coat be left overnight in a protected but well ventilated area. Arma-Chek Top is applied at a wet film thickness of 0,5 mm, coverage 0.50 litres per square metre. At the correct thickness the random fibre mat should be only just visible through the dried coating. For best results this Top-coat should be laid off at right angles to the first coat if brushing or wherever practical. Arma-Chek Top should be applied within 7 days of Arma-Chek Base.



- To ensure that drying of these coats occurs within six hours of application, the ambient temperature at the time of application should be a minimum of 3°C dry bulb temperature, this should also be 3 Kelvin above the dew point. Where there is no air flow, eg: still air

conditions, both Arma-Chek Base and Arma-Chek Top should be applied on a raising scale of 3-5°C above dew point, or alternatively, mechanical air and or heat circulation may be introduced which will significantly reduce drying times.

WARNING: The Arma-Chek System MUST then be allowed to cure for 7 full days in order to provide complete weathering and impact durability. In the case of Pre-Coated Product, the Arma-Chek must remain dormant. In the case of Site-Applied, the operating line must not be activated within this period.

- It is recommended that all surfaces should be inspected at least every two years and areas that have suffered damage or are showing sign of undue wear should be thoroughly cleaned, repaired as necessary, and recoated as above.

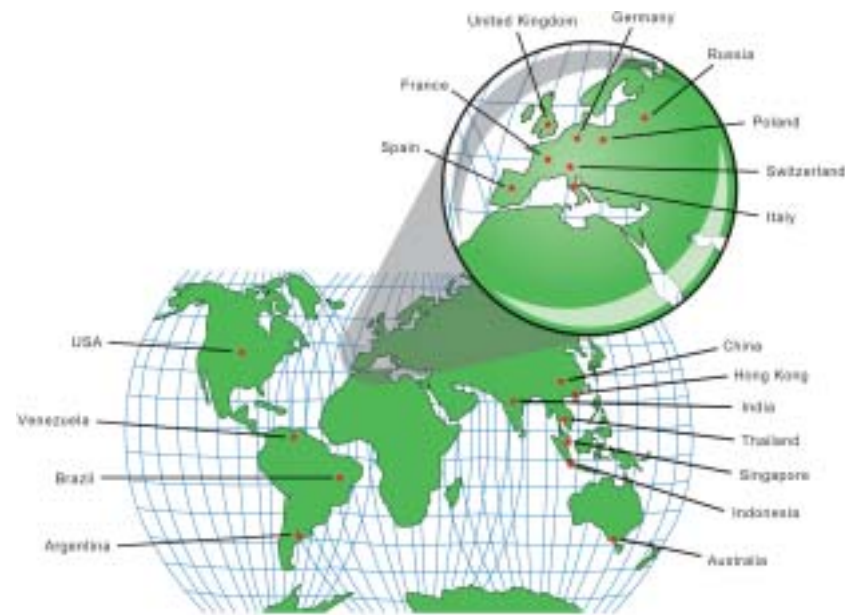
Note:

It is not allowed to use Arma-Chek T on HT/Armaflex substrate.

If installations require HT/Armaflex as insulating material it is recommended to apply an additional AF/Armaflex or NH/Armaflex insulation layer before using Arma-Chek T coating.

Notes

Notes



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