INVEST IN BETTER

ArmaFlex® Know-How

Key Installation Points

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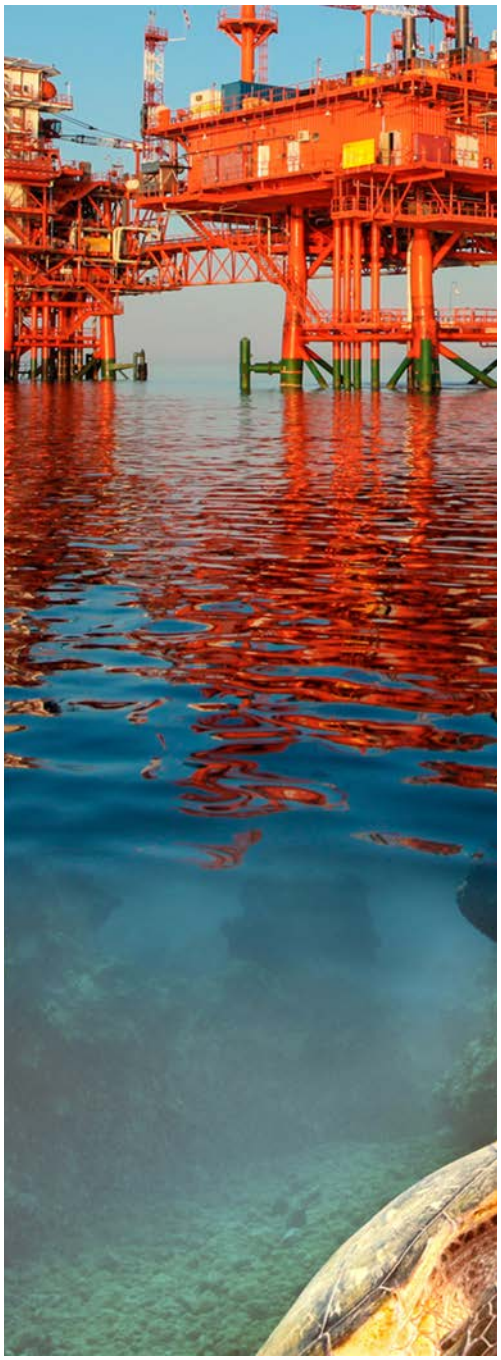
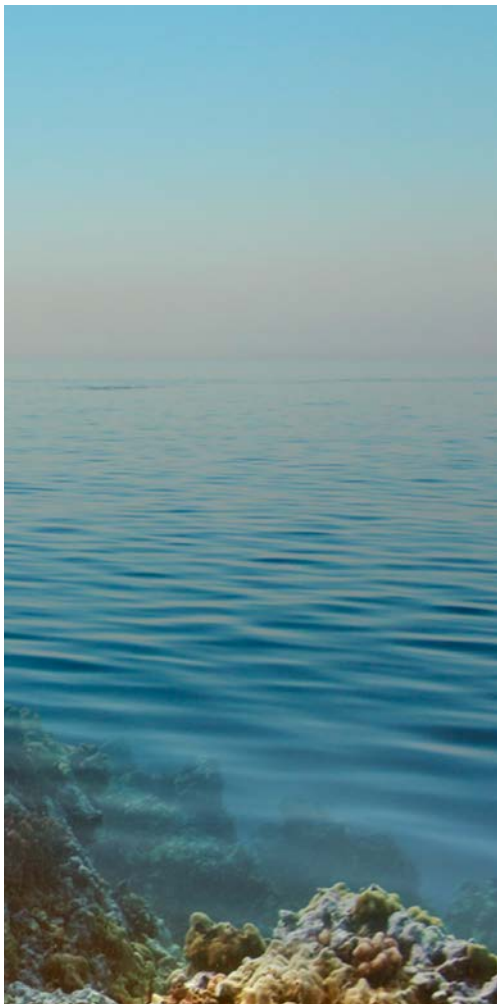




armacell®

ArmaFlex®

Application Services

Our job does not end with the manufacturing and supply of the right products. We are there throughout the project execution, to ensure contractors receive the right training, follow best practice and to help with any unexpected design or application challenges that may emerge.

That's why we continuously work in partnership with operators, EPC's and insulation contractors around the world on developing complete solutions, offering value added services to meet and exceed our clients' expectations, in order to ensure successful project delivery.

Invest in better with Armacell.

Contents

CONTENT

Tools

- Folding rule / Tape measure
- Silver ink marker
- Dividers
- Callipers
- Straight edge
- Scissors
- Brushes with short firm bristles
- Rollers for surface gluing
- Long knife 300mm
- Short knife 75mm
- Sealant gun

Preparation

- Folding rule / Tape measure
- Pipe and vessal surface must be clean, dry and free from contamination or damage.
- Armacells recommended application temperature and conditions must be observed.

air temp.
5°C to 35°C
(41°F to 95°F)

surface temp.
5°C to 35°C
(41°F to 95°F)

humidity
< 80% RH.
3°C (5°F)
> dewpoint

shade

shelter
from rain

- ArmaFlex sheet must be the correct grade, clean and fit for purpose.
- ArmaFlex adhesive must be the correct type, and be within the recommended shelf life.
- All tools must be clean and fit for purpose.
- Protect the insulation from rain and direct sunlight during construction and at the end of each shift.

Adhesive types

ArmaFlex 520 Adhesive

Was developed to bond standard ArmaFlex materials (except HT/ArmaFlex types). It joins the surfaces reliable and safely at application temperatures from -50°C to 110°C.

ArmaFlex 625 Adhesive

Was developed to bond HT/ArmaFlex material types in particular . It joins the surfaces reliable and safely at application temperatures from -50°C to +150°C, It can also be used to fix all types of ArmaFlex (except ArmaFlex Ultima).

Adhesive Fixings: standard coverage

Horizontal piping <20" Ø NB

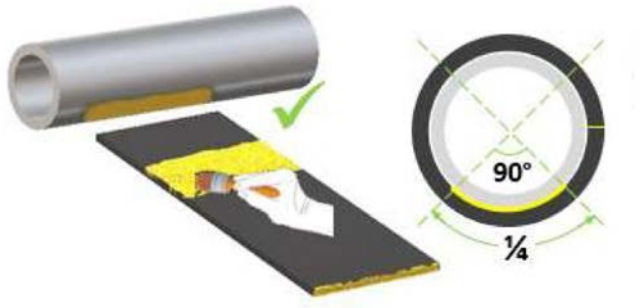
The layer of ArmaFlex is not fixed to the pipe (or the underlying insulation surface) with all over adhesive fixing.

Only a 50mm strip of adhesive is applied to both pipe and insulation, this is to be applied to every section of insulation applied.

This creates a fixing point so 10mm compression of the joint can be achieved.

Adhesive Fixings: partial coverage

Horizontal piping 22"Ø NB to 30"Ø NB

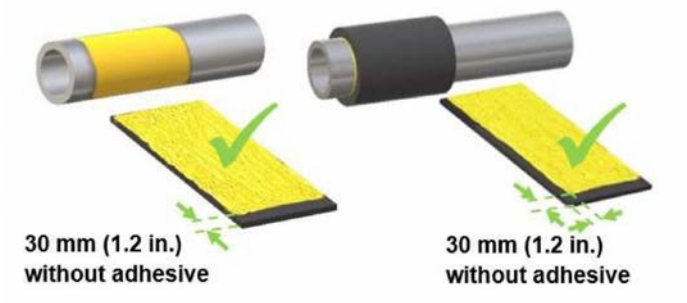


The layer of ArmaFlex is fixed to the bottom quadrant of piping (or the underlying insulation surface) a 50mm strip of adhesive is applied to both pipe and insulation, this is to be applied to every section of insulation applied.

This creates a fixing point so compression of the joint can be achieved.

Adhesive Fixings: all over coverage

All vertical piping and horizontal piping >32"Ø NB



The layer ArmaFlex is fixed 100% to both contacting surfaces (or the underlying insulation surface).

A 30mm wide strip without adhesive is required where joints are to be installed under compression.

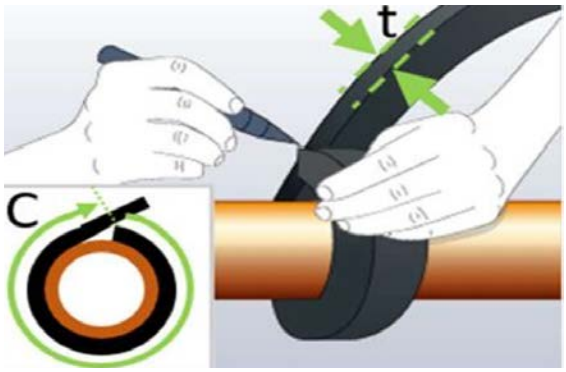
Pipe size and correct sheet thickness guide

- The ArmaFlex insulation pipe size chart is to assist in selecting the correct insulation thickness for pipe size.
- If the required pipe insulation thickness is greater than the recommended sizes a multi layer insulation system is required.

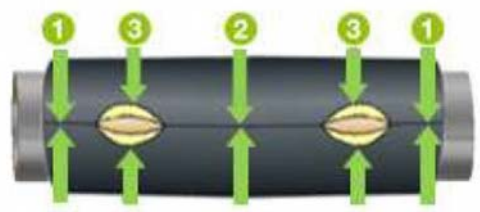
HTI ArmaFlex LTI ArmaFlex	Pipe diameter / mm			
	≥ 88.9	≥114	≥139	≥159
10mm	•	•	•	•
19mm	•	•	•	•
25mm		•	•	•
32mm				•

Key points for installing on straight piping

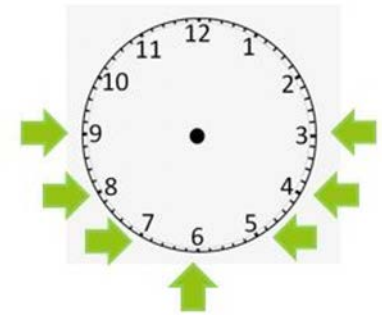
- Determine the piping circumfrance using a strip of ArmaFlex the same thickness to be used for insulation.



- Do not stretch the strip.
- Cut the ArmaFlex sheet to the required size.
- Apply ArmaFlex adhesive to the longitudinal joint allow to tack dry. (Additional adhesive may be required depending on pipe orientation and pipe size as shown in adhesive fixing section).
- Apply ArmaFlex to pipe, fix at either end and center then continue to close all the longitudinal joint.



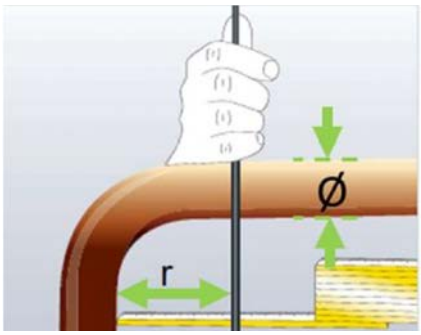
- Apply ArmaFlex to pipe, fix at either end and center then continue to close all the longitudinal joint.

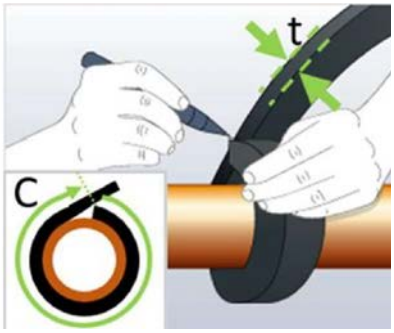


Key points for fabrication and installing a 90° elbow pipe fitting

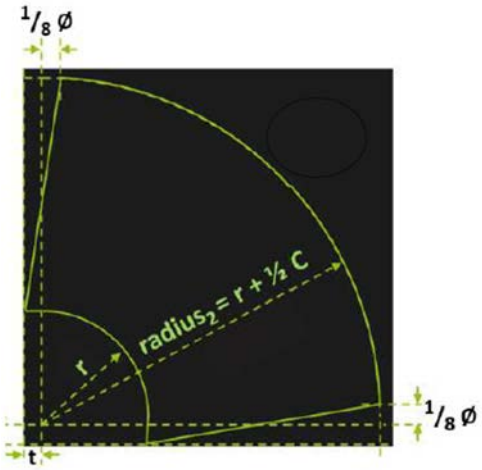
- A 90° elbow fitting can be fabricated using 6 measurements.

Insulation thickness = t
Elbow inside radius = r
Pipe circumference = c
$^1/_2$ Pipe circumference = $^1/_2$ c
Pipe diameter = Ø
$^1/_8$ Pipe diameter = $^1/_8$ Ø



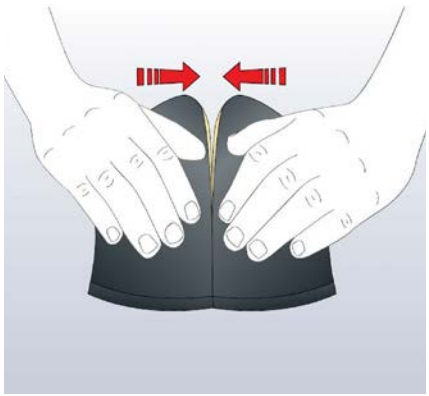


- It is recommended that when fabrication a 90° elbow 2 piece fitting cover, it is done on metal sheet, as this can be saved as a template and be used again (this will increase future productivity).



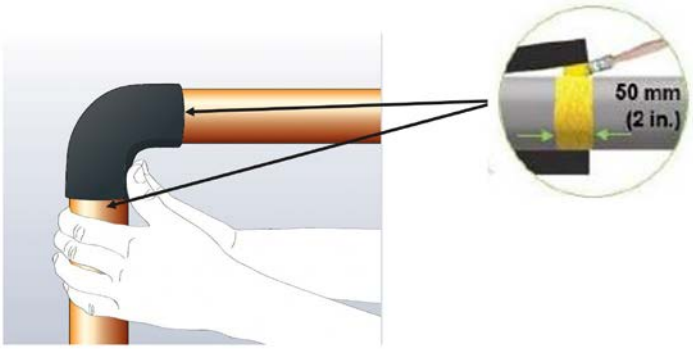
- Once 90° elbow pipe fitting template is manufactured simply mark around the template twice and cut out.

- Apply ArmaFlex adhesive to the outer edges and fix together.



Key points for fabrication and installing a 90° elbow pipe fitting

- Once fixed together apply ArmaFlex adhesive to the inner edges and apply to the pipe.



- 90° elbow fittings should be installed before straight lengths. (This is to assist in building compression into the insulation system).

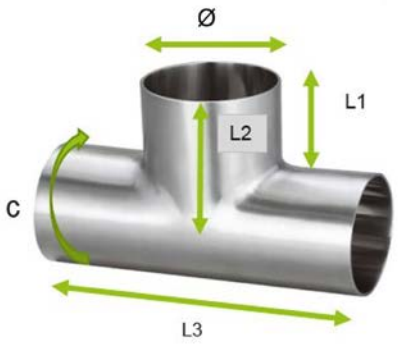
- 90° elbow fitting may be split into multiply pieces for ease of application on larger pipe sizes.

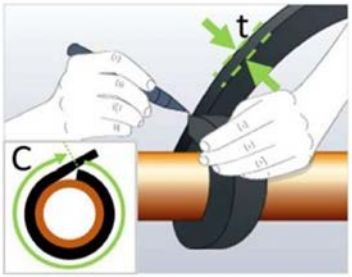
Pipe diameter, OD (Nominal pipe size, Ø)	Configuration
88.9 ⩽ OD ⩽ 323mm (3 ⩽ Ø ⩽ 12in.)	2 pieces 
273 ⩽ OD ⩽ 558.3mm (12 ⩽ Ø ⩽ 22in.)	2 pieces split 2 ways 
558.3 ⩽ OD ⩽ 914.4mm (22 ⩽ Ø ⩽ 36in.)	2 pieces split 4 ways 
OD > 914.4mm (Ø > 36in.)	segments 

Key points for fabrication and installing a tee pipe fitting

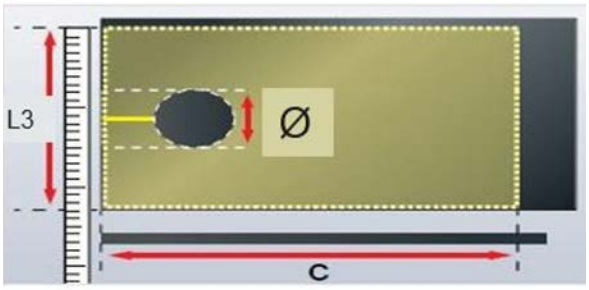
- A tee fitting can be fabricated using 6 measurements.

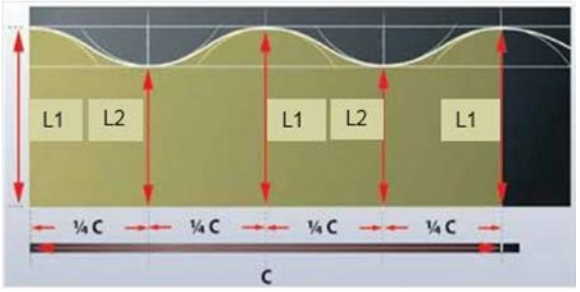
Pipe circumference = C
$^1/_4$ Pipe circumference = $^1/_4$ C
Pipe diameter = Ø
Length 1 = L1
Length 2 = L2
Length 3 = L3



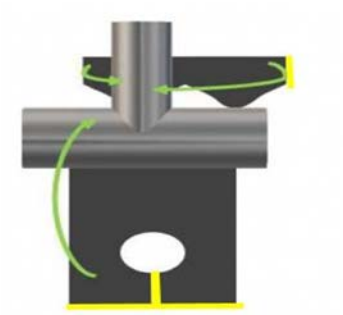


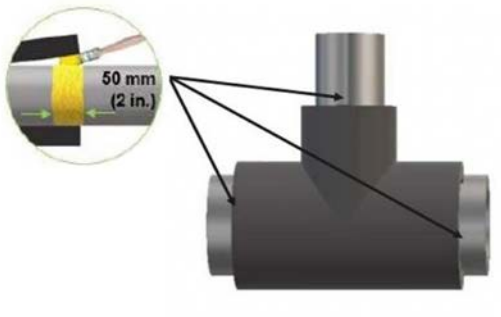
- It is recommended that when fabricating a tee pipe fitting it is done on metal sheet as this can be saved as a template and be used again (this will increase future productivity).





- Apply ArmaFlex adhesive to tee body and tee connecting branch and apply to pipe.

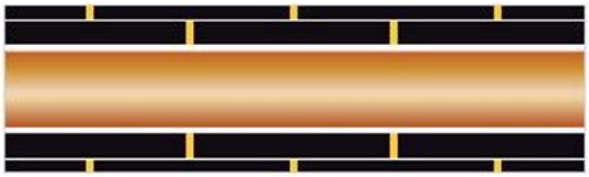




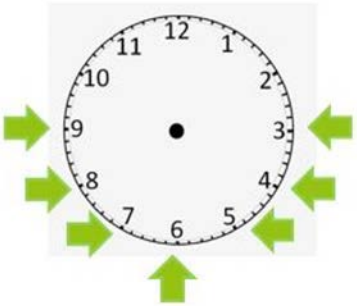
- Tee piece fittings fittings should be installed before straight lengths. (This is to assist in building compression into the insulation system).

Multiple layering staggered joints

- Multi layering staggered jointed insulation systems are used for different reasons.
- **Hot insulation:** This is used to stop a direct path for heat loss and to stop water ingression.
- **Cold insulation:** This is used to stop a direct path for heat gain and to stop water ingression and water vapor transmission.
- All seams and joints shall be staggered by a minimum of 50mm from the underlying insulation.



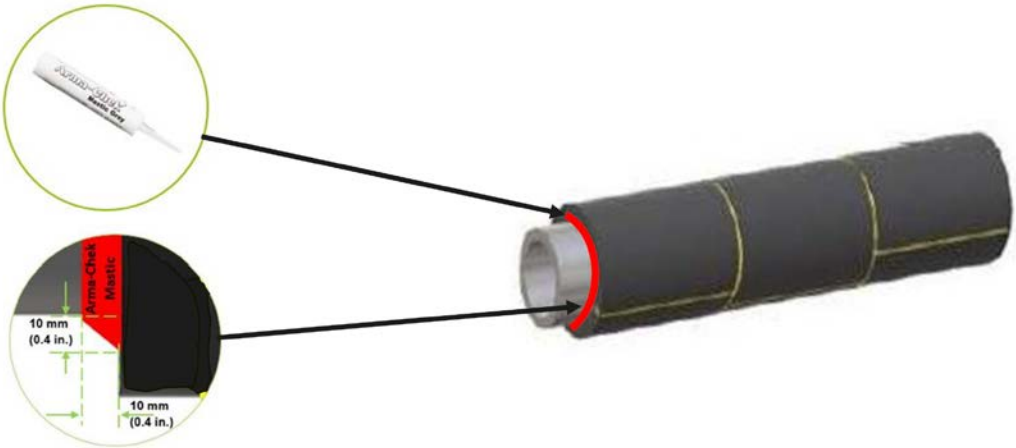
- Longitudinal seams shall be positioned at 3, 4, 5, 6, 7, 8, or 9 o'clock position, this is to shed water and avoid direct damage during construction if pipe lines are walked on.



Key points for end terminations

- Single layer end terminations next to valve and flanges are wet sealed to prevent water ingression and water vapour transmission.
- It is standard practice to terminate the insulation system by bolt length plus 25mm away from the valve / flange face.
- Single layer end terminations shall be fixed down in position with a 50mm strip of ArmaFlex adhesive.

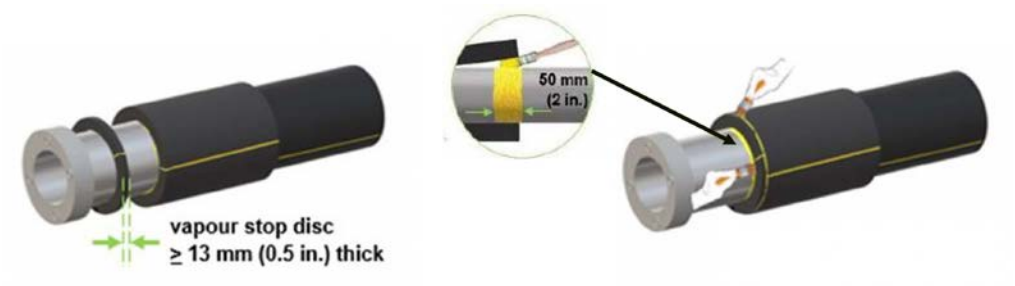
- Single layer end terminations are then sealed over using a minimum 10mm wide Arma-Chek Mastic bead applied to the ArmaFlex and piping surface.



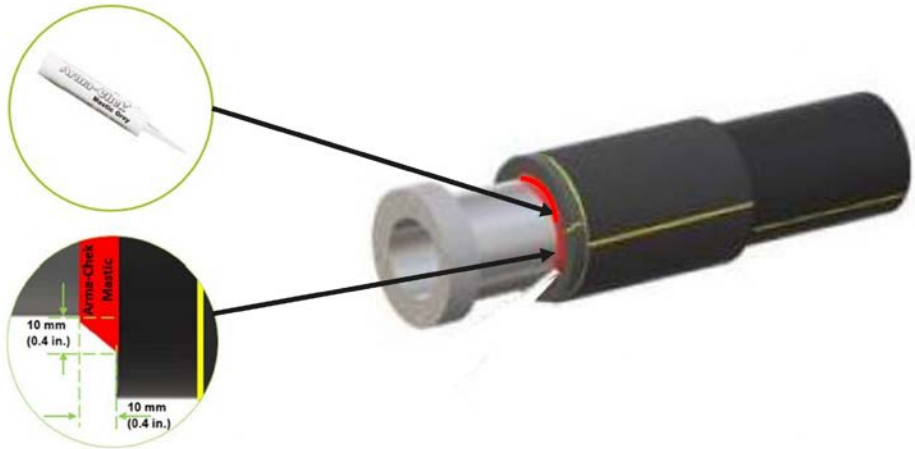
Key points for end terminations

- Multiple layer end terminations require a additional 13/19 or 25mm thick ArmaFlex vapour stop disc, these are applied next to valve and flanges to terminate and seal the insulation system to prevent water ingression and water vapour transmission.

- It is standard practice to terminate the insulation system by bolt length plus 25mm away from the valve / flange face.



- Multi layer end terminations are then sealed using a minimum 10mm wide Arma-CheK mastic bead to the ArmaFlex and piping surface.

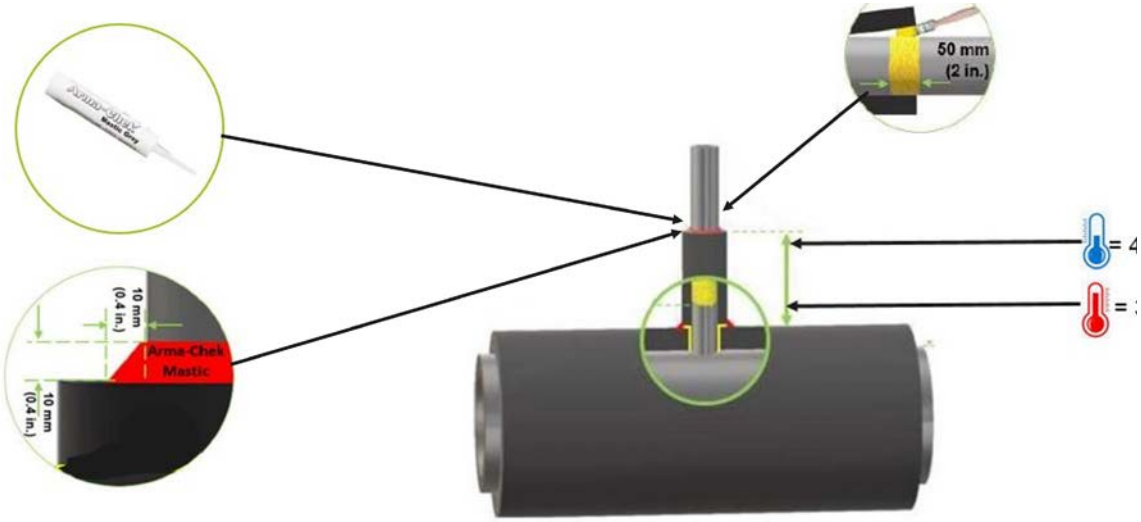


Key points for non insulated protrusions

- None insulated pipe protrusions such as vents / drains / instrumental connections require to be insulated a minimum length from the insulated pipe, This is recommended to reduce heat loss / heat gain / ice formation & water ingression.

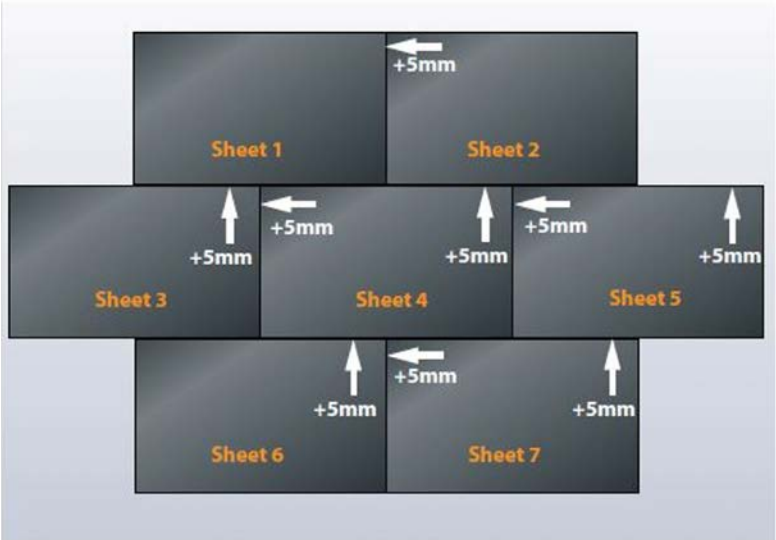
- It is good practice for Hot applications that the none insulated pipe should be insulated a total length of 3 x insulated pipe thickness = 3xT

- It is good practice for Cold applications that the none insulated pipe should be insulated a total length of 4 x insulated pipe thickness = 4xT.



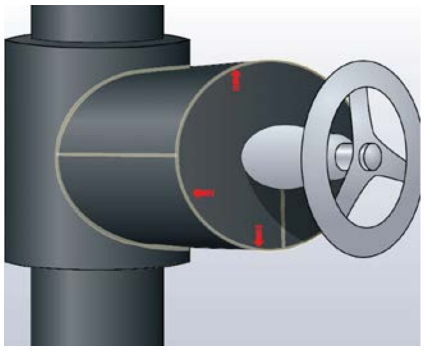
Key points for installing on large bore piping, flat surfaces, vessal and tanks

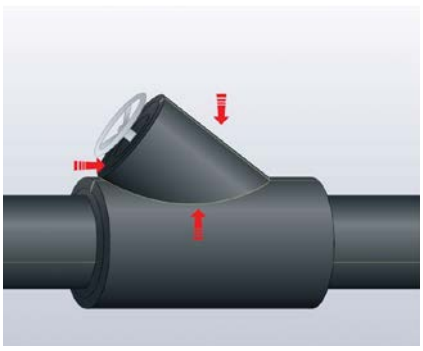
- ArmaFlex shall be fixed a 100% to both connecting surfaces with ArmaFlex adhesive.
- All seams and joints shall be staggered by a minimum off 100mm.
- All seams and joints shall be installed with a minimum of 5mm compression in all directions.
- All seams and joints shall be fixed and sealed using ArmaFlex adhesive.
- All protrusions shall be insulated to the required length, this depends if the insulation system is Hot or Cold.
- ArmaFlex application details of a large bore piping, flat surfaces, vessal or tank.



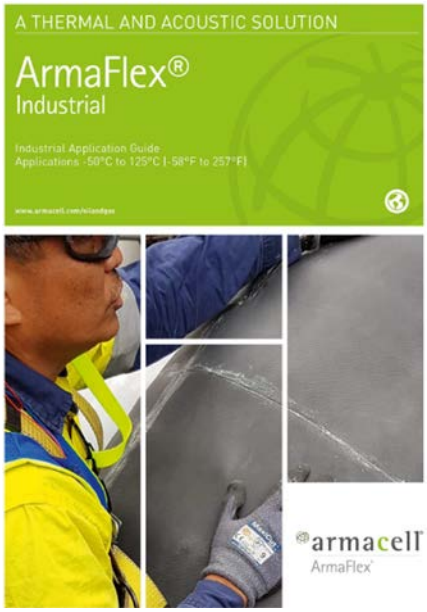
Key points for installing on valves and flanges

- Valve and flanges are insulated at the end of most project this is due to commissioning of the piping system, acess to valve and flanges is required to balance the piping system.
- Once commissioning of the piping system is completed valves and flanges can be insulated.
- Valve and flange surface must be clean, dry and free from contamination or damage.
- When valves and flanges require insulating the correct insulation thickness shall be installed.
- Insulation shall follow the shape and contours of the valve or flange.
- For cold applications all annular spaces within the valve and flange shall be built up with insulation off cuts to avoid air voids within the insulation system.
- Valve and flange insulation shall overlap the piping insulation by a minimum of a 100mm.
- Valves and flange can also be insulated using pre insulated removable metal box's.
- Below are a few examples of valve and flange insulation installations.





Learning guide



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ABOUT ARMACELL

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

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