



THERMAFLEX®

# ThermaSmart® Marine

## Installation Manual



Marine Installation Manual | EN 2026



2690/2026



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**Disclaimer:**

The information in this document is based on our current state of technical knowledge. Due to the variety of possible influences during installation and combination of products, the insulator is responsible for any necessary verification of certain information. For the current technical product specifications, we refer to the relevant products and the related datasheets. Any copy, duplication or reprint requires a written permission from Thermaflex International Holding B.V. Product images are for illustration purposes only. Actual products may vary in appearance. Refer to product specifications or contact us for accurate details.

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# Environment, health and safety

## Safety first!

Insulation works should only be performed by skilled professionals who have the required training, experience and knowledge of relevant regulations. Persons with the corresponding qualification should be informed about the job safety requirements and must have read and understood the installation manual before carrying out the assigned work.

The equipment used for the job must meet all local regulations, must be clean and fully



### Ventilation

Make sure to have good ventilation when you are working with glue joining technology in confined spaces.



### Safety regulations

Respect the relevant safety regulations for the workspace.



### National laws

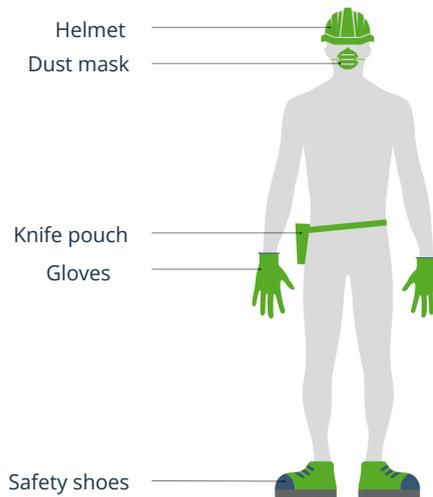
Make sure all tools used on-site meet national regulations.



### Certificate

Only trained personnel should carry out installation works to avoid accidents.

## Recommended workwear:



# Installation conditions

For a professional high-quality installation, the following installation conditions must be followed.



## System decommissioned

The system must be decommissioned. The pipe must be at ambient temperature (over dew point for cooling). Heating system is cooled down completely.



## Windy conditions

Installation should not be carried out in windy conditions.



**Ambient temperature:** +5 °C to 40°C



## Clean

Clean working environment.



## Safety regulations

Clear local safety regulations.



## Ventilation

When working in confined spaces, ventilation must be provided.

### Important!

An insulated system may only be used 24 hours after the work has been carried out and the ThermaGlue is at full strength.

# ThermaSmart® Marine

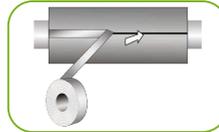
ThermaSmart® Marine is a polyolefin elastomer insulation system covered with black aluminium foil.

The application of ThermaSmart® Marine Tube is the same as other Thermaflex tube insulation (see page 8, 9, 10), but in this case the following rules should be applied:

## 1. Seam protection

- For ThermaSmart® Marine installed insulation, all seams should be covered with ThermaSmart® Marine Black aluminium tape, therefore gluing the seams is not required.
- For ThermaSmart® PRO HF used in multi-layer application all seams should be previously glued with ThermaGlue (see ThermaSmart® PRO HF on pages 8-9).

Glueless application for all ThermaSmart® Marine tubes!



### Important!

ThermaSmart® Marine, all seams should be covered with an overlap at least 50 mm!

## 2. Applying tape



## 3. Finishing assembly

After installation, make sure that the entire ThermaSmart® Marine system is coated with black aluminium foil.



## Required tools



ThermaSmart® Marine tube



ThermaSmart® PRO HF tube

### Important!

In the case of areas without black aluminium foil should be covered with ThermaSmart® Marine Black aluminium tape.

**⚠ The glue MUST NOT be used after the expiration date. See the bottom of the can.**



Knives & cutters



Utility knife



Small paring knife, 8 cm



Marker



Tape measure



Folding ruler



Squeegee

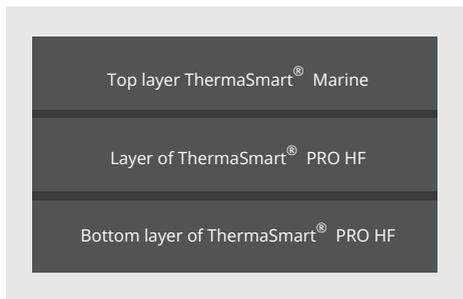


Tape

## Application thickness above 30 mm and up to 150 mm

ThermaSmart® Marine and ThermaSmart® PRO HF tube versions are produced in a maximum thickness of 30 mm. For applications requiring greater thickness, a multi-layer system can and should be used, as follows:

- Bottom layers ThermaSmart® PRO HF version
  - **ThermaGlue must be used to seal all seams**
- Final top layer ThermaSmart® Marine
  - **No ThermaGlue is needed.**
  - Seams can be sealed by only using ThermaSmart® Marine aluminium tape



### Important!

Make sure to allow an excess length of +2% for compression joining to compensate for thermal expansion!

### Note

The three layers shown in the picture are just an example. More or fewer layers can be used, provided the total thickness does not exceed 150 mm.

- Combinations of all wall thicknesses from the range can be used for this provided that the total wall thickness does not exceed the maximum allowed 150 mm.
- After installing the top layer of ThermaSmart® Marine, all seams longitudinally as well as front side connections must be covered with self-adhesive ThermaSmart® Marine Black aluminium tape with a minimum width of 50 mm.
- Glueless application is only for the Marine tube insulation with the Black Alu foil. The ThermaSmart® HF tube used as a first layer in a multi-layer system should always be installed using ThermaGlue to seal the seams (see manual tube insulation).
- If ThermaSmart® Marine is used in only one layer (up to 30 mm) no glue is needed. All seams can be sealed with only using ThermaSmart® Marine Black aluminium tape.
- Make sure that all seams are closed before using the ThermaSmart® Marine Black aluminium tape to seal and cover the seams.

Following correct installation and bonding of the multi-layer insulation system, the subsequent layer may be installed immediately.

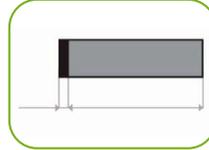
# ThermaSmart<sup>®</sup>

## PRO HF Tube

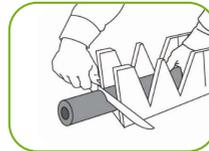
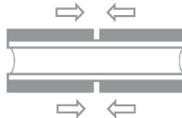


### 1. Measure length

- Measure the length needed for the tube insulation.
- Add 2% extra length to compensate for thermal expansion.
- Cut the insulation tube at a 90° angle.



### 2. Cut to length (butt joint)

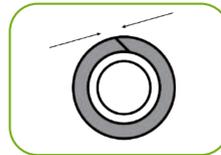


#### Tip!

Use a mitre box for a perfect 90° cut!

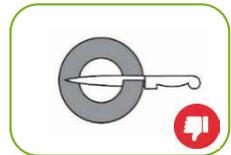
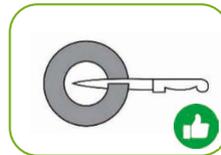
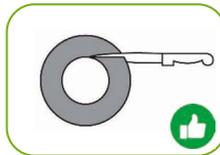
### 3. Longitudinal cut (circumferential joining)

- Cut open tubular insulation along the longitudinal direction using a knife.
- Maximise the joining surface as shown in Figure 3. For optimum, safe and vapour-tight joining.



#### Important!

Reduce the ovality of the tube insulation by pressing on it. Always cut tubes on the flat side to minimise tension on the seam.



#### Important!

Make sure to use the right product with the right inner diameter.

- ID too small - tension in the seam.
- ID too large - hollow space.

### Required tools



Knives & cutters



Utility knife



Small paring knife, 8 cm



Marker



Tape measure



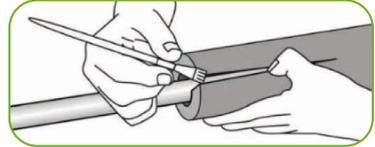
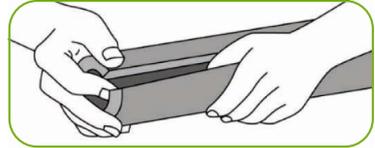
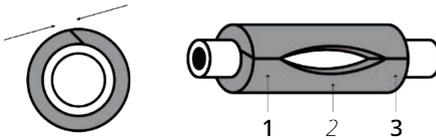
Folding ruler



Mitre box

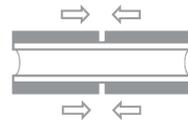
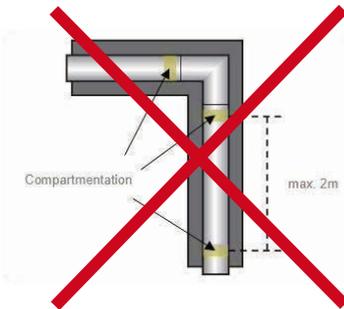
# 1. Circumferential joining

- After making the longitudinal cut, open the insulation using your finger.
- Wrap around the pipe.
- Cover both joining surfaces with ThermaGlue.
- Let glue dry and perform the fingernail test.
- Press seam together:
- First join edges (1,3) to prevent misalignment
- Then join middle part (2).
- Join the remaining parts applying light pressure.



## 2.1. Butt joint (option 1.)

- Apply glue to both the surface of the installed tube end and the new insulation tube.
- Wait until glue is tack-dry.
- Join the two insulation tubes by applying light pressure to the already installed tube.
- No compartmentation is needed as long as all butt joints are fully sealed with ThermaGlue.



### Important!

Make sure to allow an excess length of +2% for compression joining to compensate for thermal expansion!

## Required tools



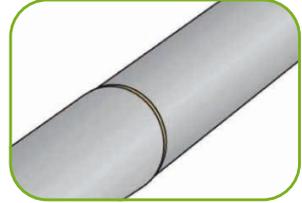
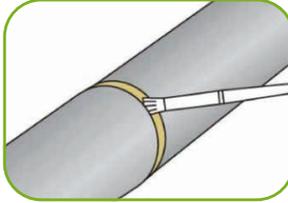
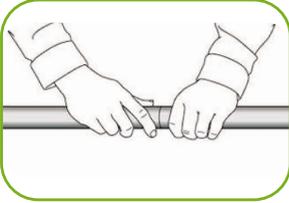
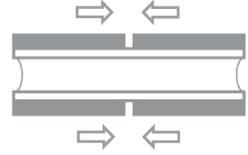
ThermaSmart® PRO HF tube



The glue **MUST NOT** be used after the expiration date. See the bottom of the can.

## 2.2. Butt joint - wet sealing (option 2.)

- Both insulation tubes already installed.
- Pull the two insulation ends apart.
- Use the wet sealing technique by applying adhesive evenly between both joining surfaces.
- Use light pressure to join the two insulation tubes together while glue is still wet for a vapour-tight bond.

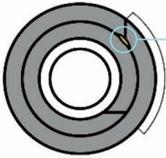


### Important!

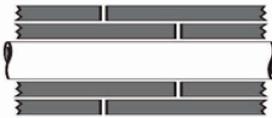
After using the wet sealing technique the glue must be "tack dry" before installing an additional layer (see page 9).

## 3. Multi-layer-insulation

Ensure that the two layers are at least 90° apart from each other and the longitudinal seams do not overlap. After applying the first layer, the second layer should be applied in the same manner.



**Important!** Apply glue beneath the seam of the 2<sup>nd</sup> layer.  
> 90°



### Important!

The multi-layer technique is also needed if higher insulation thicknesses are required.  
Apply the glue below the seam of the 2<sup>nd</sup> layer.

## Required tools



Glue pump



Brush



ThermaSmart® PRO HF tube



The glue **MUST NOT** be used after the expiration date. See the bottom of the can.

# Prefab it yourself

## 1. Joining techniques:

We offer two main joining techniques to seal off your system! This includes our long-time performance-proven ThermaGlue as well as our heat plate tool for tubular prefabrications to simply and swiftly prefab it yourself, on site or in your workshop.

## 2. Heat up the heating element

Heat surface to the temperature of 180°C.

### Important!

Ambient temperature 5°C - 35°C



## 3. Length allowance

For melting provide an additional length of + 5 mm to the original length of each fitting.

### Important!

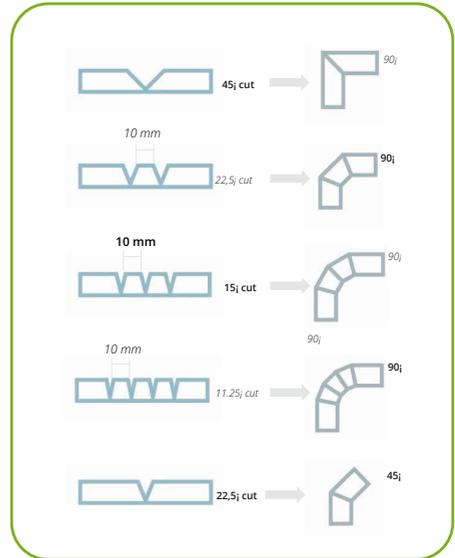
Respect the country specific health and safety regulations for working with high temperature electrical equipment.



## 4. Cut fitting segments

Cut fitting segments with the help of the Thermaflex cutting mat or mitre box according to the figures beneath.

## Bends 90° and 45°



Pre-fabricating a 90° or a 45° bend involves a simple process.

Step one: Cut the segment parts  
Step two: Weld.

## Required tools

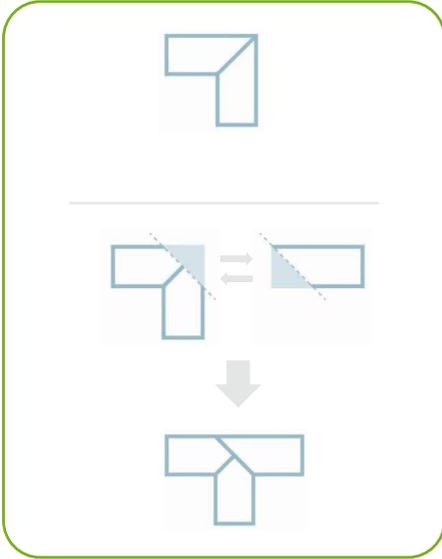


Knives & cutters



HeatPlate

## T-piece 90°

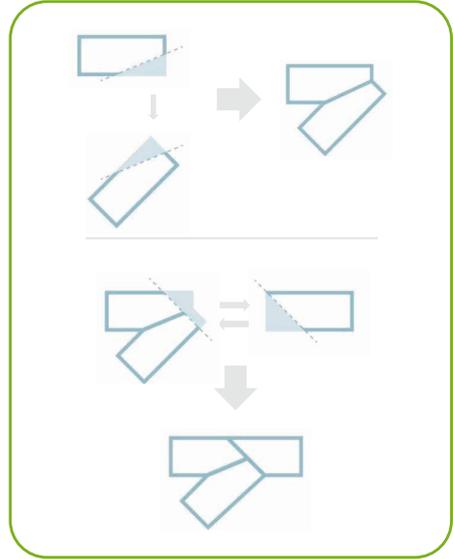


Pre-fabricating a 90° T-piece involves a two-step process.

Step one: Produce a 90° bend.

Step two: Find an additional piece of tube insulation of the same size; then, cut both pieces to fit together like shown in Figure 2 and weld.

## T-piece 45°



Pre-fabricating a 45° T-piece involves a two-step process.

Step one: Produce a 135° bend as shown in Figure 1.

Step two: Cut the bend and the tube insulation to fit together as shown in Figure 2 and weld.

## 1. Melt fitting component interface

Press both components onto the heating element and proceed with the following steps.

Equalise surface:

- Press for 1 second (to equalise the surface).
- Remove from the heating element.
- Press for 1 second (to equalise the surface).
- Remove from the heating element.

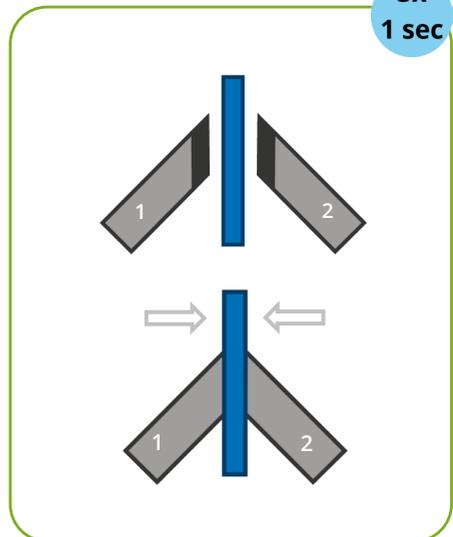
Heat up surface:

- Press for 1 second (heat up time).

### Important!

Lightly press fitting components onto the heating element.

3x  
1 sec

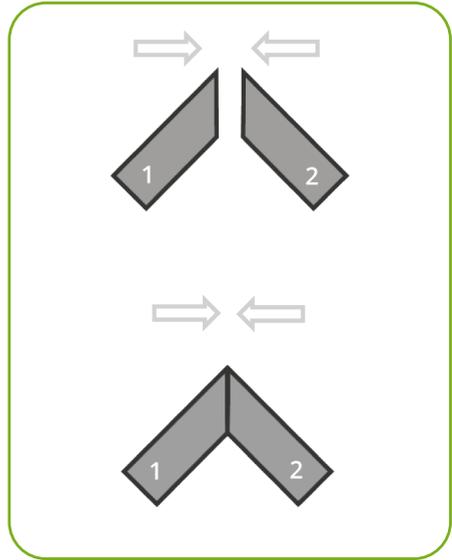


## 2. Joining

Join the two fitting components within 2 seconds (dwell time) after removing from the heating element and secure fittings by holding firmly with pressure for 3 seconds (welding time). After the welding process the two components are bound and homogeneously joined.

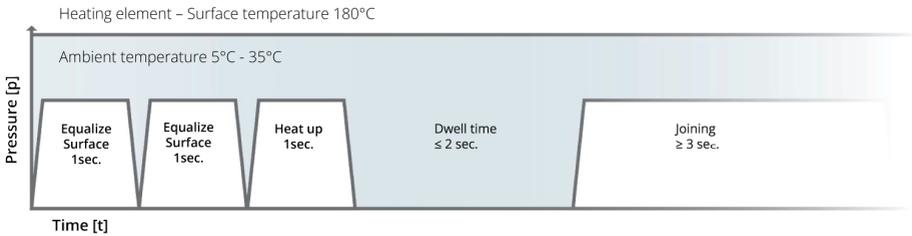
### Important!

After the welding process, carefully clean the surface of the heating element with a thick and dry paper cloth.



## Welding process

Polyfusion welding of tubular polyolefin insulation



# ThermaSmart<sup>®</sup> Marine Sheet



ThermaSmart<sup>®</sup> Marine is a polyolefin elastomer insulation system covered with black aluminium foil.

**Glue is still required for all ThermaSmart<sup>®</sup> Marine sheet installations.**

The application of ThermaSmart<sup>®</sup> Marine sheet is the same as other Thermaflex sheet insulation, but in this case the following rules should be applied:

## 1. Seam protection

All seams must first be glued with ThermaGlue, and then covered with ThermaSmart<sup>®</sup> Marine aluminium tape.



### Important!

All seams should be covered with an overlap at least 50 mm wide!

## 2. Applying tape

For accurate protection of insulation, after applying ThermaSmart<sup>®</sup> Marine Black tape to the seam, smooth the surface thoroughly so that the tape adheres strongly to the insulation surface.



## Required tools



✓ ThermaSmart<sup>®</sup> Marine sheet

✓ ThermaSmart<sup>®</sup> PRO HF sheet

⚠ The glue **MUST NOT** be used after the expiration date. See the bottom of the can.



Knives & cutters



Utility knife



Small paring knife, 8 cm



Marker



Tape measure



Folding ruler



Squeegee



Tape

### 3. Finishing assembly

After installation, make sure that the entire ThermaSmart® Marine system has been coated with black aluminium foil.



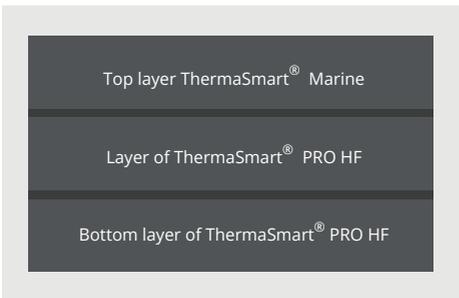
#### Important!

In the case of places without black aluminium foil they should be covered with ThermaSmart® Marine Black aluminium tape.

### Application thickness above 25 mm and up to 150 mm

ThermaSmart® Marine and ThermaSmart® PRO HF tube versions are produced in a maximum thickness of 25 mm. For applications requiring greater thickness, a multi-layer system can and should be used, as follows:

- Bottom layers ThermaSmart® PRO HF version
  - **ThermaGlue must be used to seal all seams**
- Final top layer ThermaSmart® Marine
  - **ThermaGlue must be used to seal all seams**



#### Important!

Make sure to allow an excess length of +2% for compression joining to compensate for thermal expansion!

#### Note

The three layers shown in the picture are just an example. More or fewer layers can be used, provided the total thickness does not exceed 150 mm.

- Combinations of all wall thicknesses from the range can be used for this with the remark that the total wall thickness does not exceed the maximum allowed 150 mm.
- After installing the top layer of ThermaSmart® Marine, all seams longitudinally as well as front side connections must be covered with self-adhesive ThermaSmart® Marine Black aluminium tape with a minimum width of 50 mm.
- Glueless application is only for the Marine tube insulation with the Black Alu foil. The ThermaSmart® HF tube used as a first layer in a multi-layer system should always be installed using ThermaGlue to seal the seams (see manual tube Insulation).
- Make sure that all seams are closed before using the ThermaSmart® Marine Black aluminium tape to seal and cover the seams.

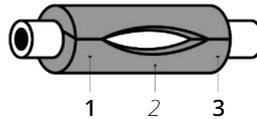
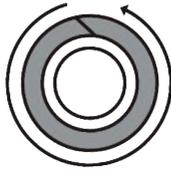
Following correct installation and bonding of the multi-layer insulation system, the subsequent layer may be installed immediately.

# ThermaSmart® PRO HF Sheet



## 1. Circumferential joining

- Wrap sheet insulation around the pipe (1, 2, 3).
- First join the edges (4, 5) and then the middle part (6) to prevent misalignment of the ends.
- Join the remaining sections.



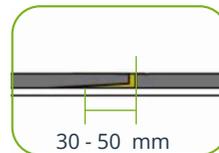
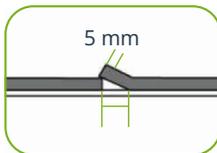
### Important!

When securing sheet insulation material, care should be taken to avoid high tension on the sealed seam caused by the bending of the sheet. See 3. Multi-layer-insulation.

Additional layer can be installed immediately after the "tack dry" glueing is applied (see page 9).

## 2. Butt joining

- Apply the insulation sheet material in longitudinal direction with an excess length of +5 mm.
- Use the wet sealing technique for the butt joint.



### Important!

Make sure that the seam is in visible area for correct installation work and quality inspection!

## Required tools



Glue pump



Brush



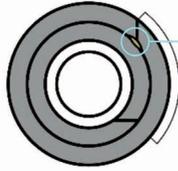
ThermaSmart® PRO HF sheet



The glue **MUST NOT** be used after the expiration date. See the bottom of the can.

### 3. Multi-layer-insulation

Ensure that the two layers are at least 90° apart from each other and the longitudinal seams do not overlap. After applying the first layer, the second layer should be applied in the same manner.



**Important!** Apply glue beneath the seam of the 2<sup>nd</sup> layer.  
> 90°



#### **Important!**

The multi-layer technique is also needed if higher insulation thicknesses are required.  
Apply glue beneath the seam of the 2<sup>nd</sup> layer.

### Required tools



Glue pump



Brush



ThermaSmart® PRO HF sheet

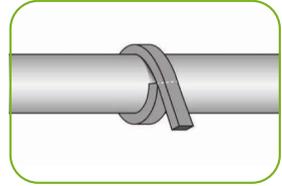


The glue **MUST NOT** be used after the expiration date. See the bottom of the can.

# Measurement & cutting

## 1. Measure

Determine the circumference (C) of the pipe by using a strip of the insulation material that matches the thickness of the insulation to be applied.

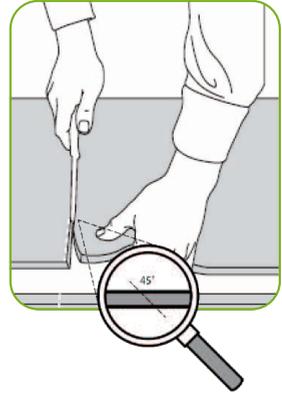
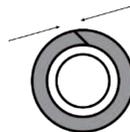


## 2. Outline guides & cut (circumferential joint)

- Plot the circumference on the sheet insulation and cut accordingly.
- For circumferential joining, cut the sheet material in a bevelled manner to maximise the joining surface.

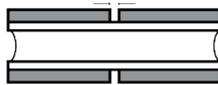
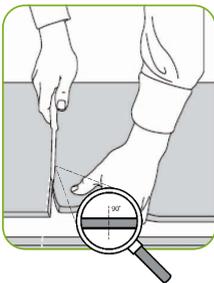
### Tip!

Before starting to mark, make sure the curve of the sheet material follows the curve of the pipe/circular duct for easy application.



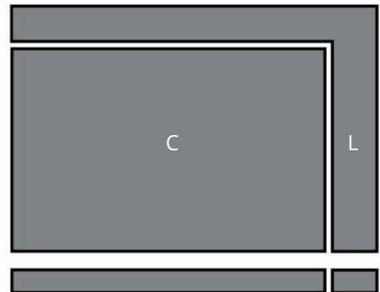
## 3. Cut (but joint)

- Cut the sheet insulation to length (L) for butt joining if necessary.
- For longitudinal joining cut with a 90° angle by using a knife.



### Important!

Don't forget to allow an excess length of 5 mm for wet sealing.



Insulation strip (C)  
C Pipe circumference  
L Length

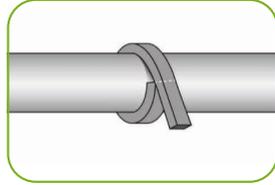
## Required tools



# Fittings

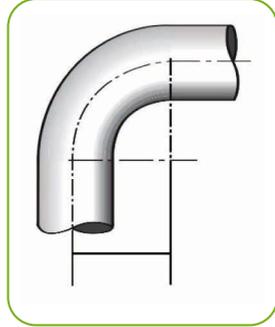
## 1. Measure

Measure the circumference (C) of the pipe using a strip of insulation material of the same thickness to be used for the insulation.



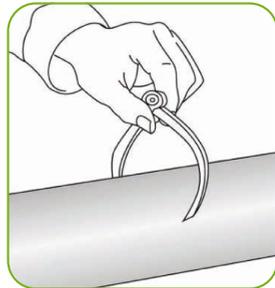
## 2. Curve radius

Measure the curve radius (R) using a folding ruler, metal ruler or Talmeter.



## 3. Pipe diameter

Measure the outer diameter of the pipe ( $\varnothing$ pipe) with the outside calipers or using the Talmeter.



## Required tools



Tape  
measure



Folding ruler



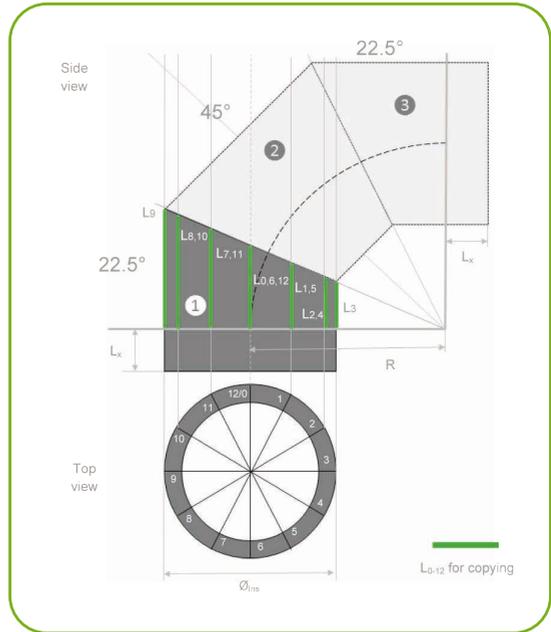
Outside calipers

# Draw cutting lines

## 1. Outline

Create an outline of the insulation bend on a piece of cardboard to obtain the length of the cutting lines on the sheet insulation.

1. Start with a top view of the pipe cross-section area including the insulation thickness.
2. Draw the side view of the fitting
  - Choose the number of segments (see table)
  - Draw the guides for the segments and draw segment
  - Copy the points 0-12 from the top view by drawing vertical guides.



### Important!

Lengths L9 should not be over 140 mm. If this length is over 140 mm, add another bend segment.

- Øpipe Outer diameter pipe
- Øins Outer diameter (pipe + 2x Insulation thickness)
- R Curve radius
- C Pipe circumference
- Lx Excess length required
- L0-12 Height of the insulation for copying to insulation with compass.

## Calculation tool

We offer a calculation program that provides you with all the measurements you need just by entering the measurements of the bend. Please contact your local Thermaflex partner to access it.

Numbers of segments	End parts angle [°]	Middle parts angle [°]
2+1	2x22.5°	1x45°
2+2	2x15°	2x30°
2+3	2x11.25°	3x22.5°
2+4	2x9°	4x18°

## Required tools

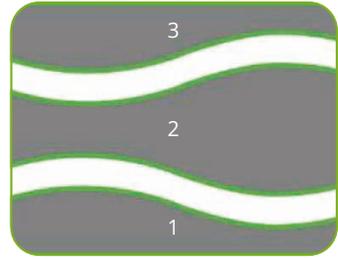




# Assemble & join segments

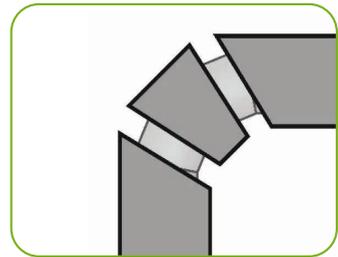
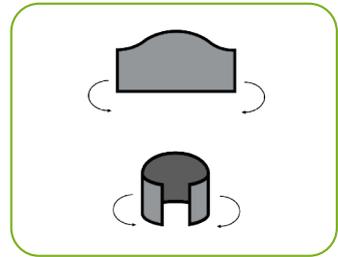
## 1. Cut out

Cut out the segments from the sheet insulation material on the cutting lines.



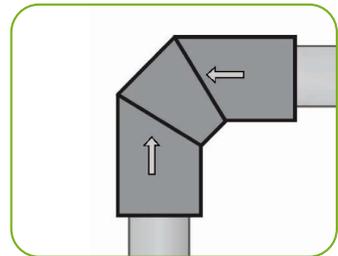
## 2. Fit

- Apply glue to the joining surface of the freshly cut sheet and allow to tack dry.
- Place sheet on the bend and glue each of the segments together.
- Due to the bending of the segments, the joining surfaces may retract inwards and outwards. Make sure to cut them straight so they fit together (especially for bigger thicknesses).



## 3. Join

Apply glue on the joining surfaces, let it dry and join the segments on the bend.



## Required tools

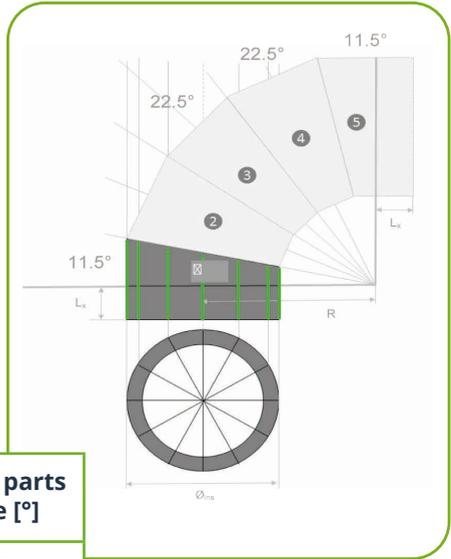


## Example: 90° Segment bend – 2 + 3 middle parts

Depending on the pipe diameter and the curve radius, sometimes more than 3 bend segments are necessary. To determine the number of bend segments, consult the table below. Make sure to respect a maximum of 140 mm for the length  $L_9$ .

### 1. Create template

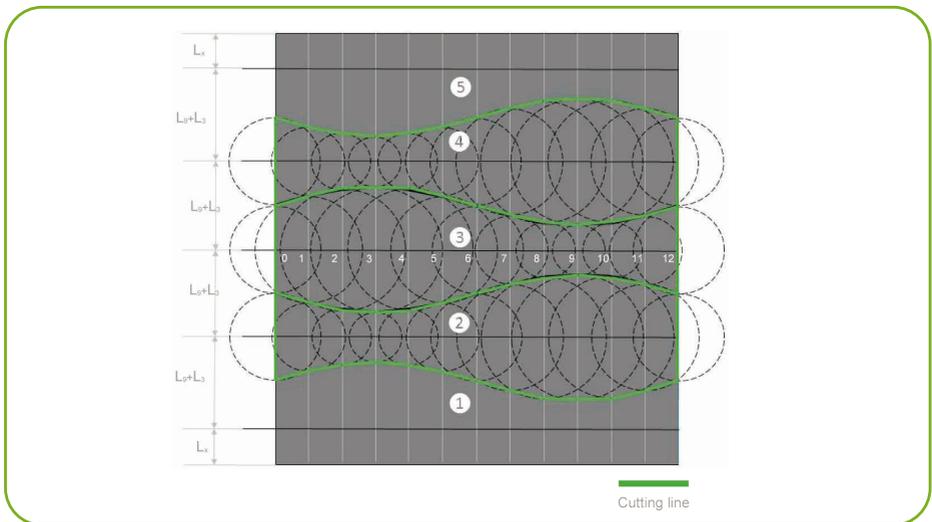
The template for a bend with 5 segments is given below.



Numbers of segments	End parts angle [°]	Middle parts angle [°]
2+1	2x22.5°	1x45°
2+2	2x15°	2x30°
2+3	2x11.25°	3x22.5°
2+4	2x9°	4x18°

### 2. Draw cutting lines

The cutting lines to cut out the 5 segments are given below.

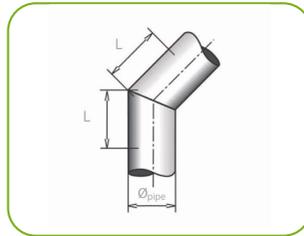
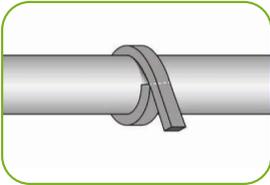


# Bend 45°

## Measure & Draw cutting lines

### 1. Cut out

- Decide on the side length (L) of the bend.
- Determine the circumference of the pipe by using a strip of insulation material that matches the thickness of the insulation to be applied.

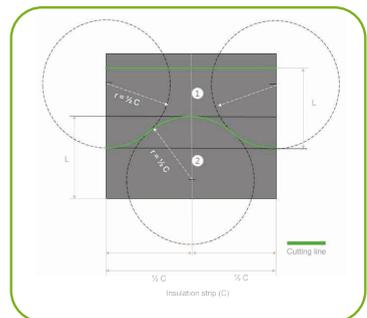


**Important!**  
The side length (L) must be more than the pipe radius ( $\text{Øpipe} / 2$ )!

- Øpipe Outer diameter pipe
- C Pipe circumference
- L Side length of the insulation bend

### 2. Draw guides on sheet insulation

- Cut piece of sheet insulation at the width of the circumference (C) or mark on a bigger piece of sheet.
- Halve the sheet and draw a vertical guide.
- Draw a horizontal line at the height L.
- Mark the centre of the circle (2) at  $\frac{1}{2} C$  and draw the circle using a compass.
- Next, use a compass to draw the other two circles with the same radius.



### Required tools

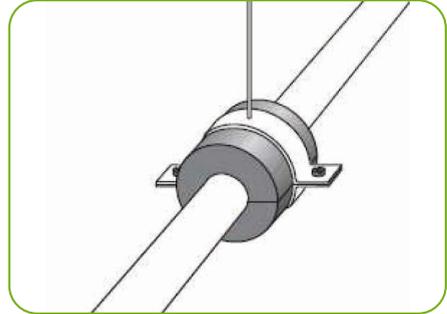


# Pipe Fixation

The choice of the pipe fixation system and the insulation thickness greatly affects the spatial layout during the pipework installation. Bracket spacing depends on pipe system!

## 1. Pipe supports

Pre-insulated pipe supports are installed together with the pipes. So designers or project planners must ensure selecting the right pipe support in the design process. That's the only way to guarantee the right components are available on site for the pipework installation.

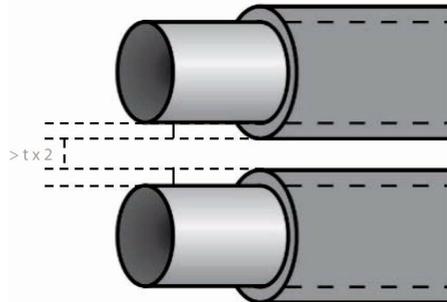


### Important!

Installation shall be carried out strictly in accordance with the manufacturer's instructions.

## 2. Ensure space between Insulated pipes

When it comes to chilled water lines or refrigeration systems, allow space between the insulated components to ensure free convection. We recommend to use at least twice the insulation wall thickness as an additional safety measure against condensation.



$t$  = wall thickness of ThermaSmart® Marine insulation material







THERMAFLEX ©

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Schedule a personal appointment with our experts!



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