



# Tube Insulation

THERMAFLEX INSTALLATION MANUAL

**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 agreement by Thermaflex International Holding bv.

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# 1. General

This installation manual will guide you in professional pipe and circular duct insulation for outer diameters over 114mm (4") with Thermaflex® sheet insulation as well as the most common used fittings. For the insulation of specific fittings not covered in this installation manual, please contact your Thermaflex partner and our insulation specialists will be happy to assist you. Tailoring to all possible needs, we offer 3 main connection solutions to seal off your system! This includes, basic glues, factory prefabricated connections, and our heat plate tool to prefab-it-yourself at the speed of light!

Whether your insulation challenge is retrofit, new construction or prefabrication, we offer complete toolsets and installation training programs to ensure maximum peace of mind for owner, installer and end-user.



# Solidifying your system

## Craftmanship in the forefront

Connections are often the most vulnerable and time-consuming part of an insulation system. So, when it comes to efficiently insulating an installation, the type of connections should be carefully considered. To tailor to all possible needs, we offer 3 main connection solutions to seal off your system: from your basic glues, to factory prefabricated connections, and a heat plate tool to prefab-it-yourself at the speed of light.

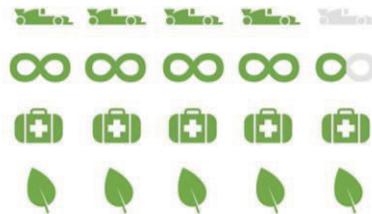
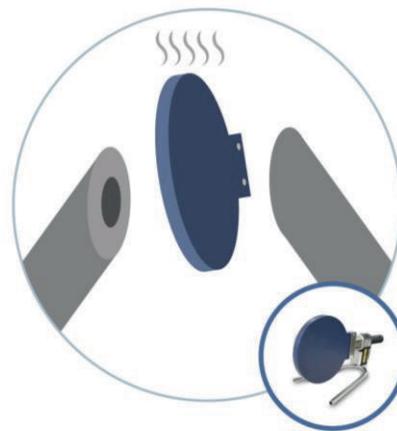
**Rating:**

-  Ease & time savings
-  Reliability
-  Health
-  Sustainability

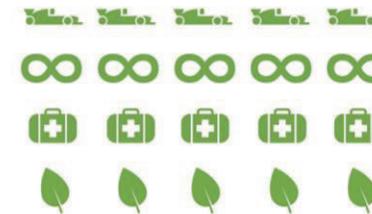
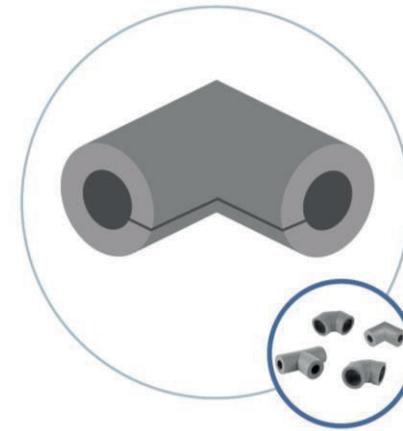
Glue



Heatplate



Readymade



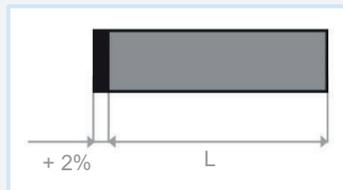


## 2. Straight length

### Measurement & Cutting

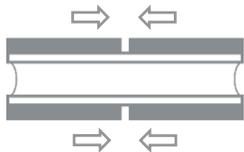
#### 1. Measure length

- Measure the length needed for the tube insulation.
- Add 2% extra length to compensate for thermal expansion.



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

- Cut the insulation tube at a 90° angle.



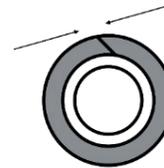
#### TIP!

Use a miter box for a perfect 90° cut!

1.

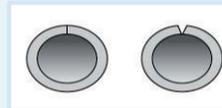
#### 3. Longitudinal cut (Circumferential joining)

- Cut open tubular insulation along the longitudinal direction using a knife.
- Maximize the joining surface as shown in figure 3. For optimum, save and vapor-tight joining.

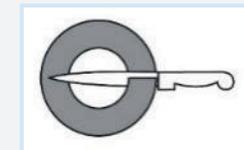
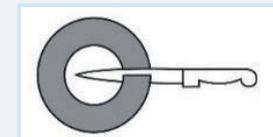
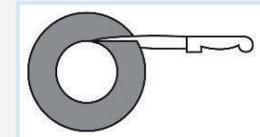
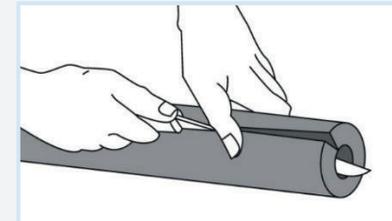


#### Important!

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

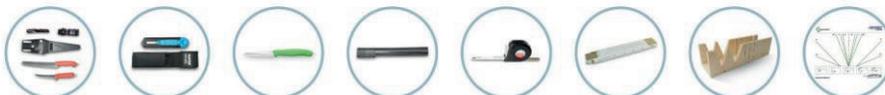


3.



#### Required tools:

6



#### Important!

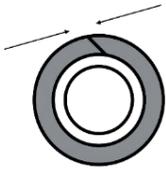
Make sure to use the right product with the right inner diameter.

- ID too small → tension in the seam.
- ID too big → hollow space.

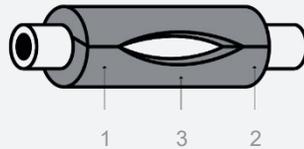
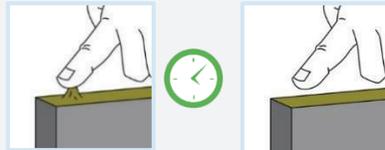
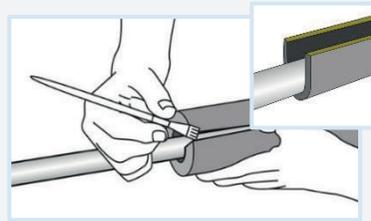
## Apply glue & join

### 1. Circumferential joining

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

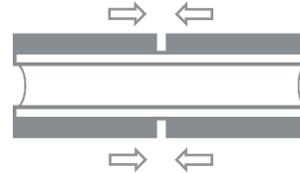


1.



### 2.1 Butt joint (Option 1.)

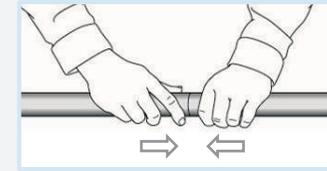
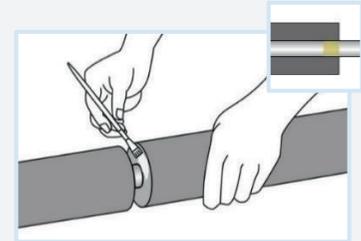
- Ensure compartmentation on the yet installed tube end.
- Apply glue on both, the surface of the installed tube end as well as on the new insulation tube.
- Wait until glue is tack-dry.
- Join both insulation tubes using light pressure onto the yet installed tube.



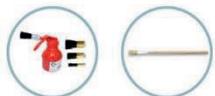
#### Important!

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

2.1.

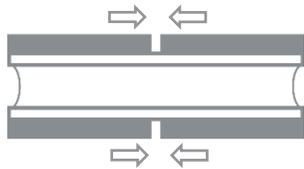


#### Required tools:



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

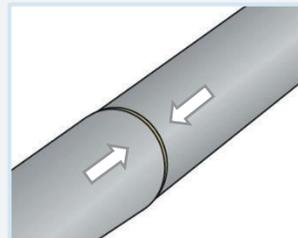
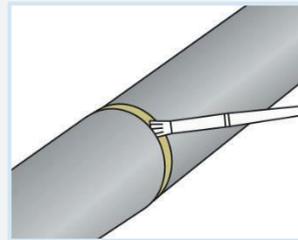
- Both insulation tubes already installed.
- Pull the the two insulation ends apart.
- Use the wet sealing technique by applying adhesive evenly between both joining surfaces.
- Use light pressure to join the two insulation tubes together while glue is still wet for a vapor tight bond.



### Important!

Don't forget to ensure compartmentation by gluing one pipe end onto the carrier pipe.

2.2



## 3. Compartmentation

- Apply at least 2cm glue around the pipe and the tube, and of at least the wall thickness of the insulation.
- Wait 15min and apply light pressure onto the tube insulation for final joining.

t Tube insulation thickness

### Important!

The tube insulation should be glued to the carrier pipe on each end.

## 4. Multi-Layer-Insulation

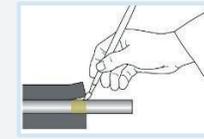
- Ensure that the two layers are at least 90° apart from each other and that the seams in longitudinal direction don't overlap as shown in figure 3. After applying the first layer, the second layer should be applied in the same manner.

### Important!

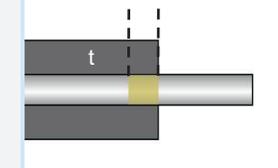
The Multi-layer technique is also needed if a higher insulation thickness is required.

Apply glue below the seam of the 2<sup>nd</sup> layer.

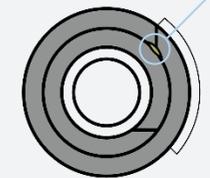
3.



min. > 2cm & > t



4.



Important!  
Apply glue beneath the seam of the 2<sup>nd</sup> layer

> 90°



### Required tools:



# 3. Slide over insulation

The tube insulation can be slide onto pipes and bends. For bends up to 42 mm outer diameter, tube insulation with an insulation thickness of maximum 13mm can be slide over.

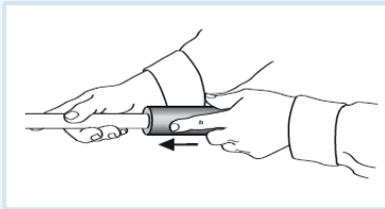
## 1. Slide on straight length

Slide insulation tube into position.

### Important!

Don't use pre-slit material for cooling applications!

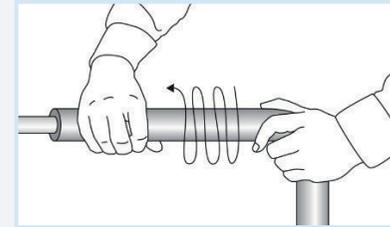
1.



## 2. Twist over bend

- Twist the tubular insulation while sliding it over the bend.

2.

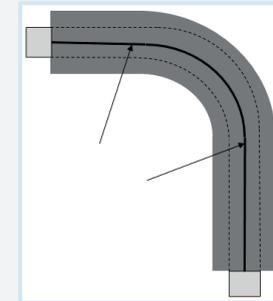


## 3. Reduce tension

- Move seams to the side to reduce tension.

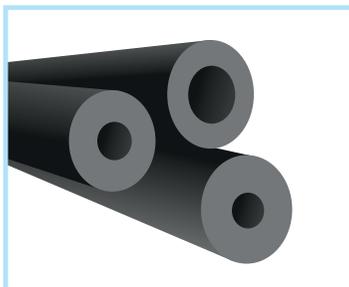
### Important!

If the tube insulation creases during this application, use segmented insulation bends instead!



### 3.1 ThermaSmart® Marine 2.0 Black

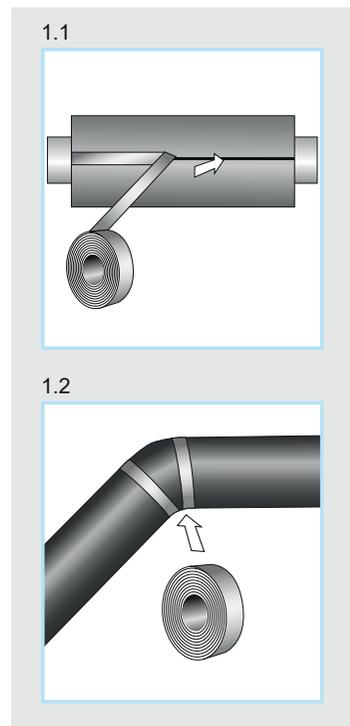
ThermaSmart® Marine 2.0 Black is a polyolefin insulation system covered with black aluminum foil



The final application of ThermaSmart® Marine 2.0 Black Tube is the same as for other Thermaflex tube insulation, but in this case the following rules should be applied:

#### 1. Seam protection

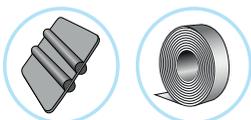
- On the installed insulation, all seams (after gluing previously with a ThermaGlue 474) should be provided with ThermaSmart® Marine 2.0 Black Tape



#### Important!

All seams should be covered with an overlap at least 25 mm wide.

#### Required tools:



#### 2. Applying tape

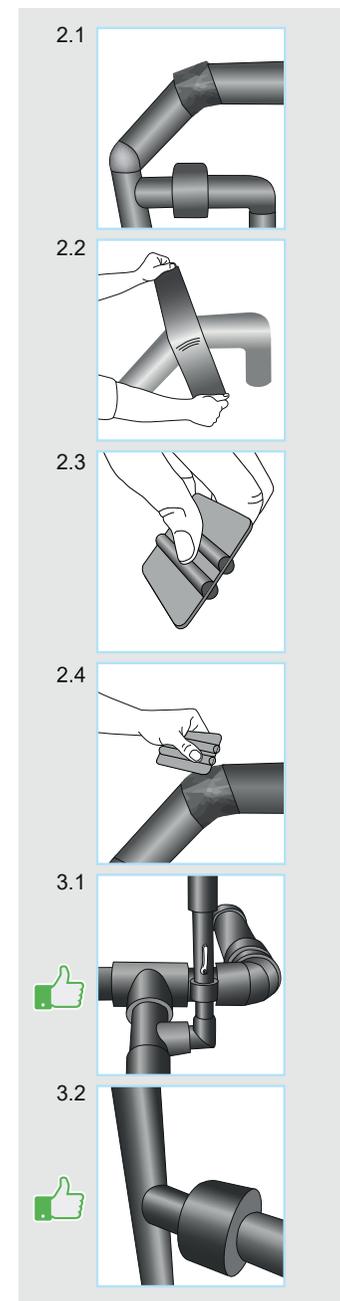
- For accurate protection of the insulation, after applying the ThermaSmart® Marine 2.0 Black Tape to the seam, smooth the surface thoroughly so that the tape adheres tightly to the insulation surface

#### 3. Finishing assembly

- After installation, make sure that the entire ThermaSmart® Marine 2.0 Black system has been coated with black aluminum foil

#### Important!

In the case of places without black aluminum foil they should be supplemented with ThermaSmart® Marine 2.0 Black Tape



## Application thickness 50 mm

Because of the limited flexibility, ThermaSmart® PRO LS version is produced in a maximum thickness of 30 mm.

- Applications may require larger thickness which can and should be done in 2 layers:

1<sup>st</sup> layer ThermaSmart® PRO LS version  
2<sup>nd</sup> layer ThermaSmart® Marine 2.0 Black

- 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 50 mm.
- After installing the 2<sup>nd</sup> layer of ThermaSmart® Marine 2.0 Black, all seams longitudinally as well as front side connections must be covered with self-adhesive ThermaSmart® Marine 2.0 Black Tape with a minimum width of 50 mm

**2<sup>nd</sup> layer ThermaSmart Marine 2.0 Black**

**1<sup>st</sup> layer ThermaSmart PRO LS version**

## 4. Fitting prefabrication

For the fabrication of tubular insulation fittings we offer two main joining techniques: our long-time performance proven ThermaGlue, and our heat plate tool for tubular prefabrications to simply and swiftly prefab-it-yourself, on site or in the workshop.

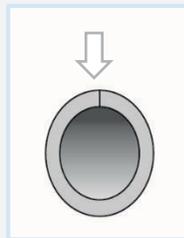


### Preparation tips & tricks

#### 1. Round tube

- Ensure a round shape of the tubular insulation by applying pressure.

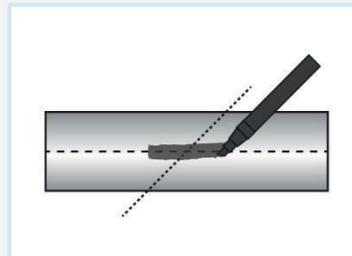
1.



#### 2. Mark before cutting

- Make longitudinal marks before cutting on both sides for oval tube insulation to ensuring easier joining.

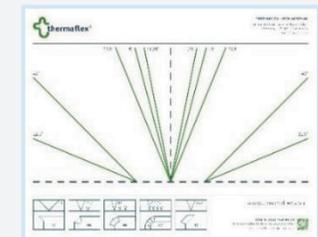
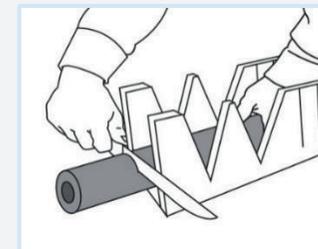
2.



#### 3. Precise angular cut

- Use a Miter box for precise angular cuts.
- Alternatively, use the ThermoFlex cutting mat.

3.



## Joining



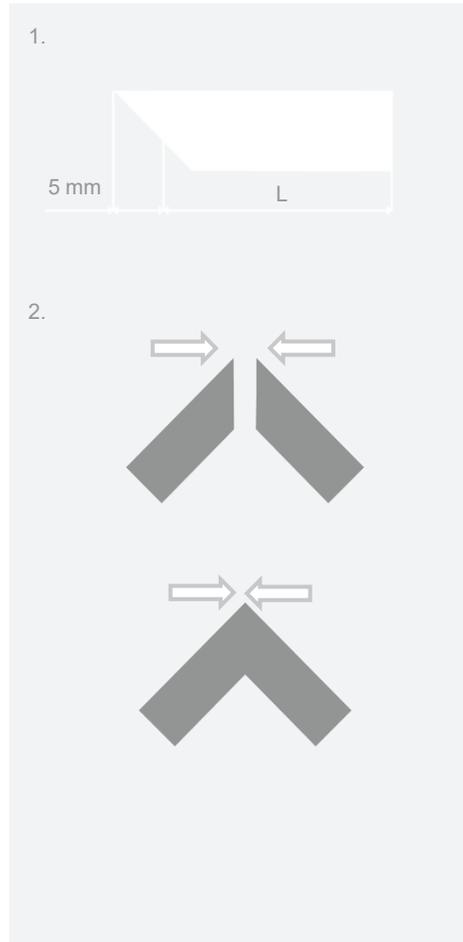
### Welding (Heatplate)

#### 1. Length allowance

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

#### 2. Join segments

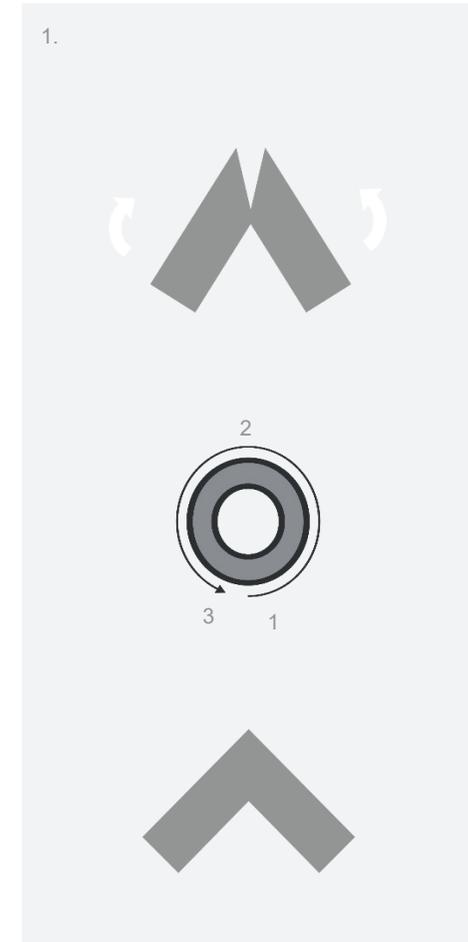
- Equalize and heat up the joining surfaces before placing the segments on the table.
- Join together within 2 seconds.



### Gluing (ThermaGlue)

#### 1. Join segments

- Make sure the glue is tack-dry on both joining surfaces.
- Join the two segments together, starting at one point on the surface and continuing with the rest in a circular movement.
- Apply light pressure on all seams.





## 4.2. Bend 90° segmented

For a perfect fit of insulation on 90° bends, we recommend segmented insulation bends.

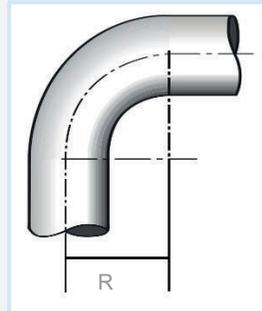


### 1. Curve radius

- Measure the curve radius (R) using a Talmeter, folding ruler or metal ruler.
- Measure the outer diameter of the pipe ( $\varnothing_{\text{pipe}}$ ).

$\varnothing_{\text{pipe}}$  Outer diameter pipe  
R Curve radius  
t Tube insulation thickness

1.



### 2. Calculation

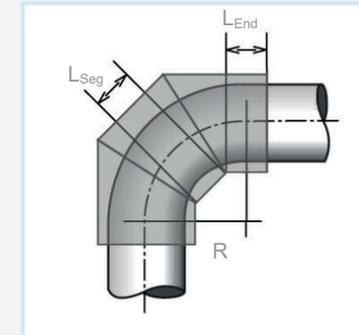
The number and measures of the segments depend on the curve radius of the pipe bend.

$L_{\text{Seg}}$  Segment length inside  
 $L_{\text{End}}$  Length end piece

#### Calculation tool

Please contact your local  
Thermaflex partner to access it.

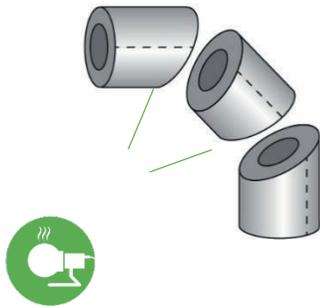
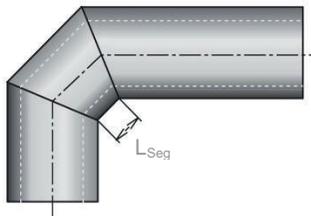
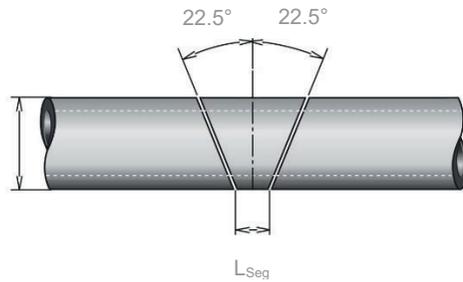
2.



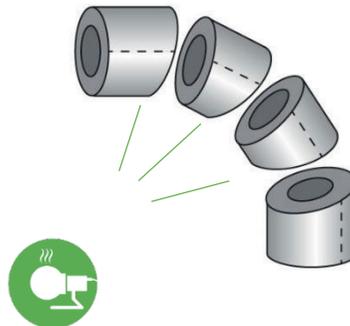
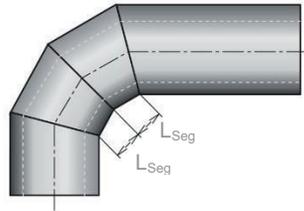
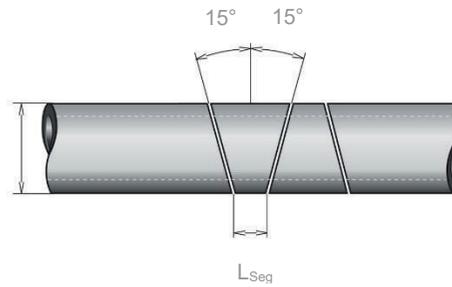


## Prefabrication

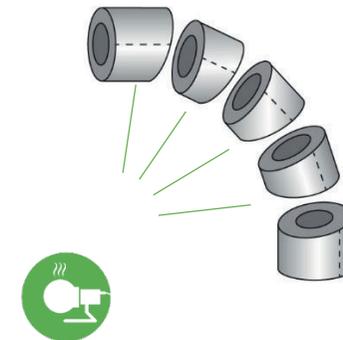
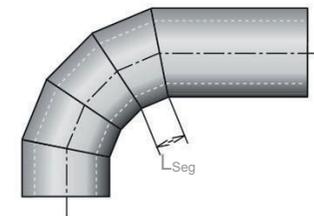
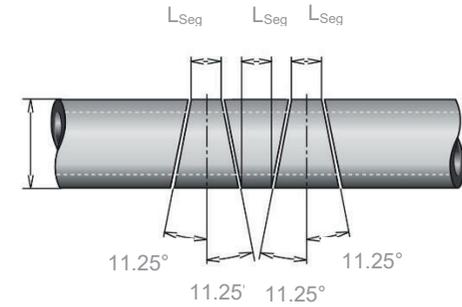
### Bend 22.5° segmented



### Bend 15° segmented



### Bend 11.5° segmented



## 4.3. Bend 45°

### Prefabrication & installation

#### 1. Cut

- Cut the tube insulation at the required length at a 22.5° angle using the miter box or cutting mat.

L Leg length

#### Important!

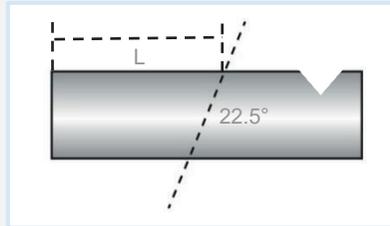
Heat plate: allow an additional 5mm length to the tube for melting.

#### 2. Join segments

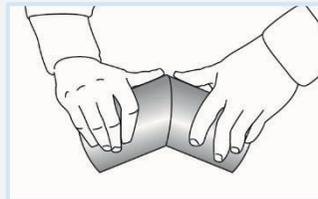
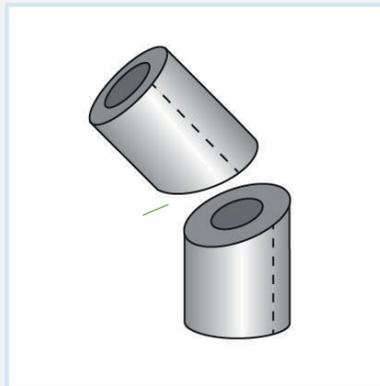
- After cutting the segments, coat surfaces on both sides with ThermaGlue.
- Wait until the glue is tack-dry.
- Join both parts using slight pressure.

Alternatively, use the Heat plate for joining!  
See manual "Prefab it yourself".

1.



2.



#### 3. Cut open

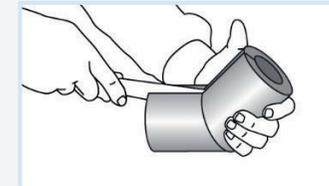
- Cut open tubular fitting at the shortest possible distance and avoid tension in the seam, as shown in figure 3.

#### 4. Install

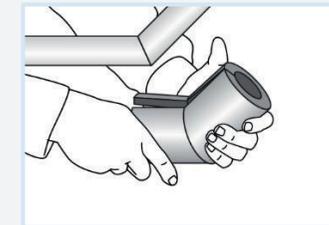
- Apply glue on both sides, let dry and re-join the cut surfaces over the pipe.
- The pipe ends of the insulation tube should be glued to the carrier pipe for compartmentation.



3.



4.



#### Required tools:



## 4.4. T-piece 90°

### Prefabrication & installation

#### 1. Make 90° bend

- Start with making a 90° bend piece.

#### 2. Cut

- Cut off the corner at a 45° angle as shown in figure 2.
- Cut an additional piece of tube insulation at a 45° angle.

$\varnothing_{ins}$  Outer diameter (pipe + 2x Insulation thickness)

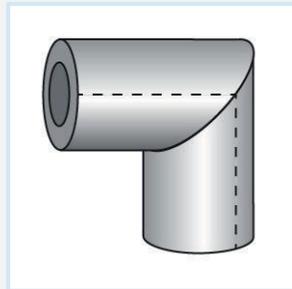
#### Important!

Heat plate: allow an additional 5mm length to the tube for melting.

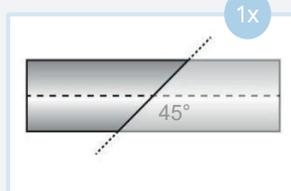
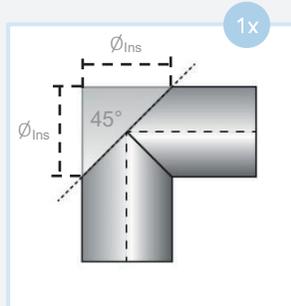
#### Required tools:



1.



2.



#### 3. Join segments

- After cutting the segments, coat surfaces on both sides with ThermoGlue.
- Wait until the glue is tack-dry.
- Join both parts applying light pressure.

Alternatively, use the Heat plate for joining!  
See manual "Prefab it yourself".

#### 4. Cut open

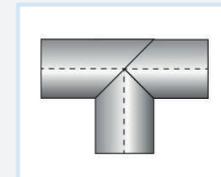
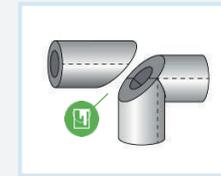
- Cut open tubular fitting at the shortest possible distance and avoid tension in the seam as shown in figure 4.

#### 5. Install

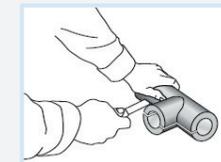
- Apply glue on both sides, let dry and re-join the cut surfaces over the pipe.
- The pipe ends of the insulation tube should be glued to the carrier pipe for compartmentation.



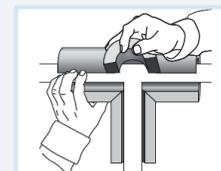
3.



4.



5.



## 4.5. T-piece 45°

### Prefabrication and installation

#### 1. Make 135° bend

- Start with making a 135° bend as shown in figure 1.

#### 2. Cut

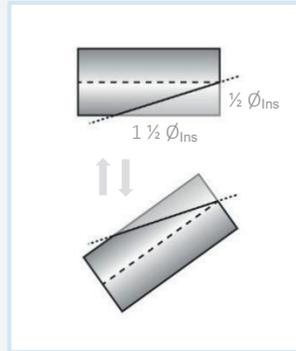
- Cut off the corner at a 45° angle as shown in figure 2.
- Cut an additional piece of tube insulation at a 45° angle.

$\varnothing_{ins}$  Outer diameter (pipe + 2x Insulation thickness)

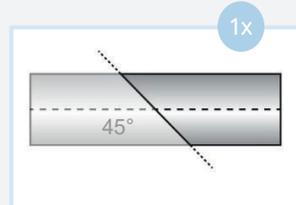
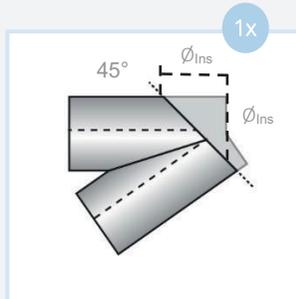
#### Important!

Heat plate: allow an additional 5mm length to the tube for melting.

1.



2.



#### 3. Join segments

- After cutting the segments, coat surfaces of both sides with ThernaGlue.
- Wait until the glue is tack-dry.
- Join both parts applying light pressure.

Alternatively, use the Heat plate for joining!  
See manual "Prefab it yourself".

#### 4. Cut open

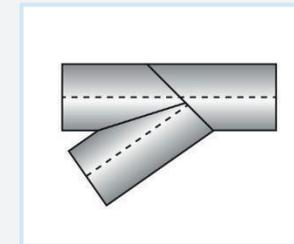
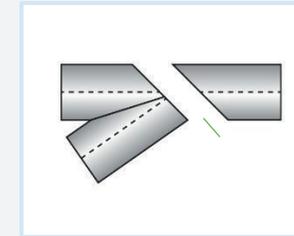
- Cut open tubular fitting at the shortest possible distance and avoid tension in the seam, seam as shown in figure 4.

#### 5. Install

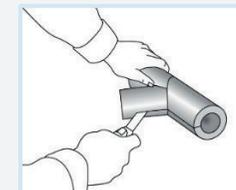
- Apply glue on both sides, let dry and re-join the cut surfaces over the pipe.
- The pipe ends of the insulation tube should be glued to the carrier pipe for compartmentation.



3.



4.



5.



#### Required tools:



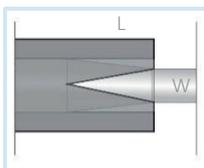


## 4.6. Reducer

### Prefabrication and installation

#### 1. Cut

- Cut out 2, 4, 6 or max. 8 wedge-shaped segments from the tube insulation at length (L) of the reducer.
- The number of segments depends on the difference between the circumference of the small pipe and the large pipe.



L Length reducer  
W width piece to be cut out

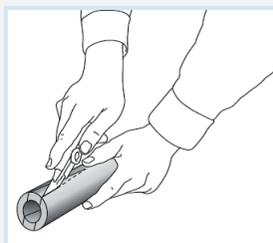
#### Tip!

The width of the wedge-shaped pieces should be maximum 20mm.

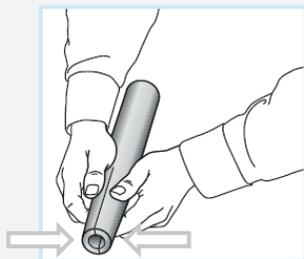
#### 2. Join together

- After cutting out the wedge-shaped segments, coat all joining surfaces with ThermaGlue.
- Wait until the glue is tack-dry.
- Join using light pressure.

1.



2.



#### 3. Cut straight

Cut the reducer end at a 90° angle to fit the smaller pipe insulation.

#### 4. Cut open

- Cut open pipe fitting on the flat side to avoid tension in the seam.

#### 5. Install

- The ends of the installed tube insulation should be glued to the carrier pipe for compartmentation before installing it on the reducer piece.
- Apply glue on both sides, let dry and re-join the cut surfaces over the pipe.
- Use the wet sealing technique for the two butt joints.

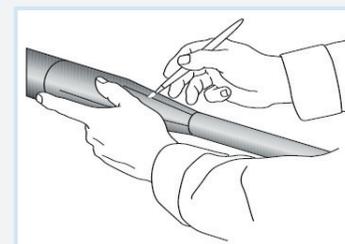
3.



4.



4.



#### Required tools:



## 4.7. Insulating oversized fittings



### Prefabrication and installation

#### 1. Insulate pipe

- Insulate the pipes up to the oversized fitting.
- The ends of the tube insulation should be glued on both sides of the fitting for compartmentation.

#### 2. Place oversized fitting cover

- Place the oversized fitting insulation cover around the fitting.
- The inner diameter of the insulation cover should be at least the size of the outer diameter of the tube insulation around the pipe.

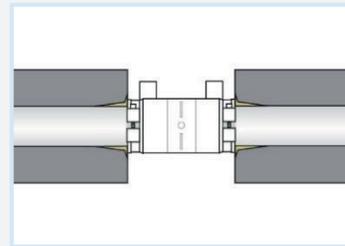
t Outer diameter (pipe + 2x Insulation thickness)

#### Important!

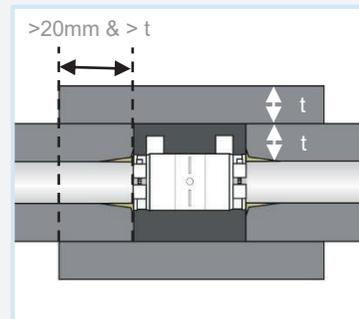
Overlap should be > 20 mm and at least the same wall thickness (t).

Use the same insulation thickness for the cover.

1.

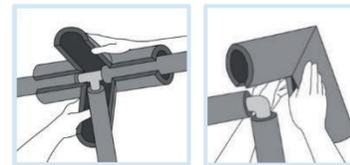


2.

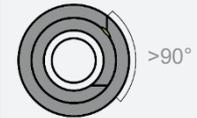
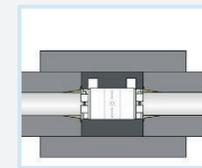


#### 3. Insulate

- Cut open insulation cover and rejoin over the fitting.
- Use the wet sealing technique to join the insulation fitting cover onto the straight length insulation.
- Ensure the seams don't overlap as shown in figure 3.



3.



## 5. Tools

The following tools have been tailor-made for the installation of Thermaflex® polyolefin insulation, and ensure sustainable functionality and convenience for insulators around the world working with our material. We therefore highly recommend to work with our toolbox, available for purchase from your local dealer. Make sure our tools comply with your national laws and safety standards for building sites.

### Knives & cutters

#### Specialized 25cm, and 12.5cm insulation knife set

##### For serious insulation functionality.

The double insulation knife set has been developed for fast, efficient and comfortable cutting and shaping of Thermaflex® insulation. The 2 knives are accompanied by a locking safety holster, belt and lanyard to ensure maximum safety, and convenient transportation.



#### Small paring knife, 8cm

##### For the finer craft.

The 8cm straight-edge paring knife is for the finer cuts and shapes. Its pointed head makes it ideal for carving, cutting, and shaping for detail and accuracy.



#### Utility knife

##### The all-rounder.

Our universal utility knife is a safe companion when you're on the move. Its long, stable 40mm blade retracts automatically upon release, ensuring maximum safety. Are you a left hander? Simply open the handle, and turn the blade around – no tools needed. Comes with belt holster for easy transportation.



#### Hollow punch set (5pcs)

##### For the perfect circle.

Our universal stainless steel hollow punches are ideal for quickly, and efficiently carving out pipe ends. The 5-piece set covers the standard, most commonly applied diameters: 21mm, 27mm, 33mm, 38mm, and 60mm.



#### Whetstone

##### Keep it sharp.

A sharpening stone is included to keep your knives razor-sharp, and ensure the best and smoothest possible cuts.



## Measurement & marking

### Talmeter (3m)

#### Measure it. Mark it. Craft it.

The ideal marking measure for insulation craftsmen. This white, impact-resistant steel tape measure has both millimeters and diameters, combining marking and measurement edges so you can quickly and simply measure and mark both internal and external lengths. Superior for marking large diameters.

### Outside calipers

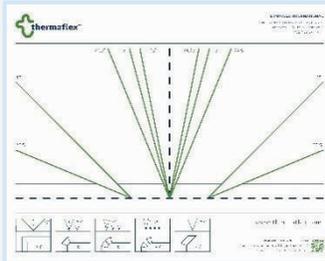
#### Who goes around, knows around.

Need to figure out your exact pipe diameter? Our outside calipers are the perfect way to do so. Just clip them round, and measure the span.

### Cutting mat

#### Cut to fit.

Use our Thermaflex-designed cutting mat for optimal angular precision, covering all the cutting angles you need. Perfectly suitable for all your elbows, bends, T and Y pieces, you name it. The cutting mat is made for both right and left handed craftsmen.



### Folding ruler

#### Unfolding precision.

Our folding ruler measures length and angular degrees all in one handy, compact tool.

### Marker

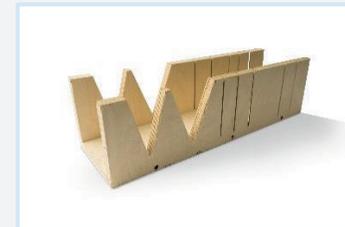
#### Swift and sure.

Draw out exactly where you need to cut, shape, or carve with our black insulation marker.

### Miter box (optional)

#### Cut to fit.

Use the miter box for optimal angular precision, covering all the cutting angles you need. Perfectly suitable for all your elbows, bends, T and Y pieces, you name it.



## Adhesive Tools

### Glue master

#### Solidity is key.

The 0,25l glue master allows for a quick, and efficient application of our specially developed Thermaflex adhesive. Our selection of 3 detachable brushes including a 11mm, 17mm and 23mm brush, makes it applicable for medium and larger surface areas.



### Spare brushes

#### For superb application.

Glue master replacement parts. Our selection of 3 detachable brushes including a 11mm, 17mm and 23mm brush, makes it applicable for medium and larger surface areas.



### Brush

#### For the delicate work.

To perfect the small and narrow gluing work, our professional glue brush is your best bet.



#### TIP!

We recommend a flat brush with sturdy and short bristles.

## Polyfusion welding

### Butt welding unit

#### For solid and homogenous joining.

Butt welding unit for polyolefin insulation with PTFE-coated heating element 230V, 50-60Hz according to DVS. Available with 110V. Temperature preset for polyfusion welding of Thermaflex® polyolefin tubular insulation at 180°C. Heating element  $\varnothing$  200 mm and  $\varnothing$  300 mm. Comes with a support stand.







[WWW.THERMAFLEX.COM](http://WWW.THERMAFLEX.COM)



Installation video's.

Thermaflex International Holding b.v.

Veerweg 1, 5145 NS Waalwijk

The Netherlands



Installation manuals.