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T-FIT® Hygiene
Installation Guide

T-FIT® INSULATION

Fit to perform. **Fit** to last

T-FIT Hygiene, moulded from ZOTEK® F high-performance PVDF foam, is the leading insulation tailored for sterile, aseptic production areas in food and beverage, dairy and personal care manufacturing facilities.

T-FIT Hygiene can be used to address condensation control, energy conservation, or provide personal protection, and can be applied to insulation of internal or external hot/cold, waste, chilled, specialist process, refrigeration and HVAC pipework.

Product and tape specifications

Sealant/Adhesive specifications

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Installation Guide

T-FIT® INSULATION

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Before starting installation

1 Suitable gloves must be worn at all times when handling T-FIT Hygiene to ensure the product remains clean, and free of dirt, dust or grease that can be easily transferred during handling with unprotected hands.

2 T-FIT Hygiene should not be installed in extreme temperatures or high levels of humidity as these conditions can adversely impact the performance of tapes and sealant. In general, minimum environmental temperatures should not fall below 15°C / 60°F, while max temperatures should not exceed 40°C / 105°F.

3 Pipework or any surface to be insulated should be free of contaminants, oil, grease, water/moisture etc. Any foreign matter must be wiped clean ahead of installation.

4 T-FIT Hygiene is packed in bags and should be removed from the packaging only prior to installation. Care should be taken to keep the installation environment as clean and dust free as possible.

5 T-FIT Hygiene should not be installed on live plant or processes, whether this is hot and cold pipework or ducting. Pipe/duct work should be allowed to return to ambient temperature before any installation takes place.

6 T-FIT Hygiene should not be stretched to fit, please ensure the correct dimensions prior to installation.

7 Use of sealant on all joints is considered mandatory on T-FIT Hygiene installation, and is used to seal all longitudinal joints, butt joints between tubes, assembly of elbows, tee's etc. and fitting of insulation boxes.

8 Tubes and sheet should be installed under compression, with insulation cut so that a slight excess of material pushes the joints closed.

9 In general, fittings around elbows, tee's etc. should be installed first, followed by straights, fitted under compression as detailed above. Insulation boxes are the last part to be installed and this completes installation of T-FIT Hygiene.

10 In hot and humid environments, tapes should be applied as quickly as possible to T-FIT Hygiene following removal of the release/backing film, to prevent premature drying of adhesives.

11 T-FIT Hygiene tapes are pressure sensitive activated (PSA). To ensure adhesion, a constant pressure must be applied along the entire length of the applied tape onto the T-FIT product.

12 Take care to ensure an even and consistent application of sealant is applied when making joins and ensure all gaps are fully adhered and sealed. This is especially important for cold/chilled lines, where contact between ambient air and the surface of the cold/chilled pipework can create condensation.

13 Longitudinal seams running the length of the tube and butt joints between tubes should be made with sealant and secured with tape.

14 T-FIT Hygiene is a closed cell material so water vapour barrier/outer cladding/jacketing systems are not required. However, care should be taken to ensure all seams and joints are fully sealed and vapour tight around elbows, tee's and insulation boxes etc.

15 Ideally, fabrication of fittings, elbows, tee's, etc. should take place in a suitable workshop/workstation type environment. T-FIT Hygiene recommended sealant typically requires 6 hours to cure. Planning and fabrication of fittings ahead of install is highly recommended, making installation on site much faster, easier, and improving overall workmanship.

16 With care, as an alternative to 15. above, fittings can be assembled around elbows, tee's etc, using existing pipework as a former. As an example, a segmented bend can be built up around the actual bend one segment at a time, ensuring each segment is adhered to each other with the use of sealant. Tape around each segment joint should be applied after the sealant has cured, usually 6 hours after initial application.

T-FIT® Hygiene
Installation Guide

T-FIT® INSULATION

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Tools required

Long bladed knife ~300mm/12", straight edged, non-serrated, for cutting tubes in a mitre block.

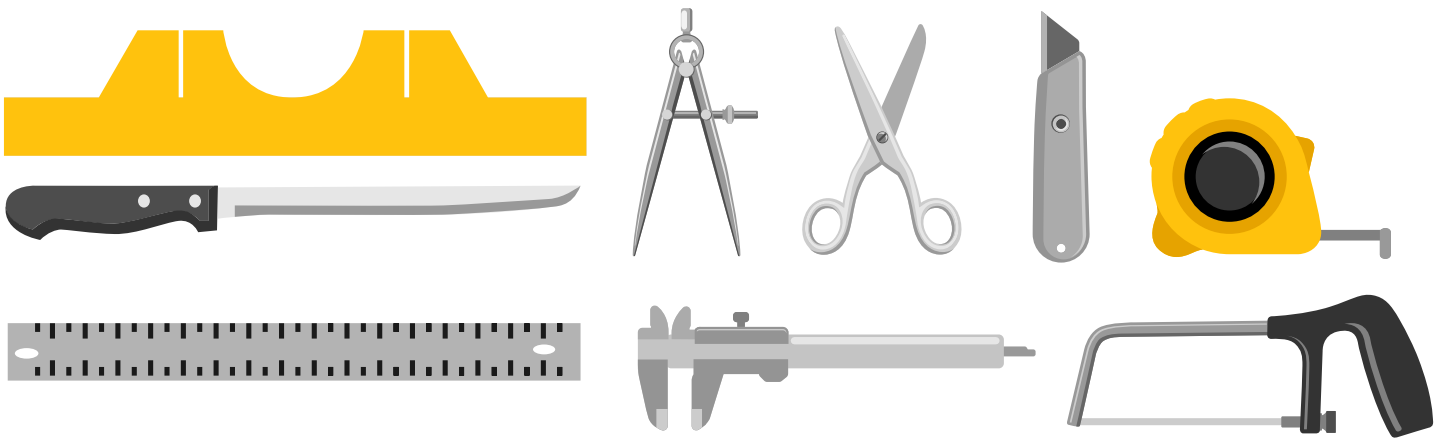
Mitre block which allows for accurate cutting of tubes at 90°, 45°, 22.5°, 15°, 11.25° angles, simplifying fabrication of segmented elbows.

General measuring tools, including flexible tape measure, steel ruler, callipers to measure tube diameter, straight edge to cut against, marker pen, small knife, scissors.

Where holes need to be cut into T-FIT products, for example fabricating a tee fitting or installing an insulation box, such openings are easy to make with the aid of a sharpened tube of appropriate size.

Preparation

1. Always use sharp knives and cutting equipment, with good quality tools in general.
2. T-FIT Hygiene products should be installed in a dust free, clean environment, with pipework cleaned prior to install.
3. Installation requires the use of tapes and sealant to make all good joints. Special care must be taken to ensure the insulation surfaces remain free of dust/dirt.
4. Reminder - T-FIT Hygiene tapes are pressure sensitive activated (PSA). To ensure adhesion, a constant pressure must be applied along the entire length of the cladding/tape.
5. Reminder - Care must be taken to ensure an even and consistent application of sealant is applied where required, with care taken to ensure all gaps are fully adhered and sealed.
6. Reminder - Installation of fittings around bends, elbows, etc. should be the starting point of any installation, followed by installation of straights, cut to length and installed under compression, followed by fitting of insulation boxes.
7. Reminder – always wear gloves when handling T-FIT Hygiene. Remove from packing only when ready to install.



T-FIT® Hygiene
Installation Guide

T-FIT® INSULATION
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Typical order of work

a Review installation and estimate quantities of fittings (e.g. elbows, bends etc.) required to complete the install.

b At the work site, ensure the plant is not active and pipework has reached ambient temperature.

c Check pipework is generally clean and free of dust and contaminants. Wipe down as required to ensure cleanliness.

d Install fittings, elbows and tee's before straights.

e Straights should be cut slightly oversize to allow insulation to be fitted under compression, pushing butt joins closed.

f Insulation boxes complete the T-FIT Hygiene installation process.

T-FIT® Hygiene
Installation Guide

T-FIT® INSULATION

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Further details are available at T-FIT.org with video showing the install process

1: Straights

In general, elbows, tee's, etc. should be installed first. Straight lengths are then measured and cut to fit tightly under compression against the installed fittings.

1.1 Using a sharp knife and mitre block, cut the Hygiene tube to length as required. The mitre block helps to ensure an accurate perpendicular cut.

1.2 Unpick a short length of the cladding adhesive tape liner at each end – this is easier to carry out ahead of installation around pipework, then install insulation around pipework.

1.3 Apply sealant down the length of the tube, and to the ends of the tube to make good butt joints.

1.4 Use of sealant on all joints is considered mandatory for T- FIT Hygiene installation, and is used to seal all longitudinal joints butt joints between tubes, assembly of elbows, tee's etc., and fitting of insulation boxes.

1.5 Remove the tape backing liner to expose the adhesive.

1.6 Applying even pressure over the whole length of the tape, squeeze the join to secure the joint.

T-FIT® Hygiene
Installation Guide

T-FIT® INSULATION
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2: 90 degree elbow

90-degree elbows are fabricated from straight lengths of T-FIT Hygiene insulation.

2.1 Using a sharp knife and mitre block, cut the Hygiene tube to length as required.

2.2 Apply sealant to the two halves and press firmly together to make the elbow fitting.

2.3 A minimum period of **6 hours** is needed for the sealant to cure.
All elbows and fittings must be fabricated with the use of sealant.

2.4 After the sealant has cured, the fitting is cut across the internal throat of the elbow, and then installed around the pipework elbow.

Further details are available at T-FIT.org, with video showing the install process

2: 90 degree elbow

Continued

2.5 Image shows installing around the pipework elbow.

2.6 Adhesive is applied to the elbow joint and secured with tape.

2.7 The elbow fitting is taped and sealed to the adjoining insulation.

As an alternative to the above

With care, elbows can be assembled around elbows, tee's etc, using existing pipework as a former. Elbows can be built up around the actual pipework one half at a time, ensuing each half is adhered to each other with use of sealant. Tape around the joint should be applied after the sealant has cured, usually 6 hours after initial application.

T-FIT® Hygiene
Installation Guide

T-FIT® INSULATION

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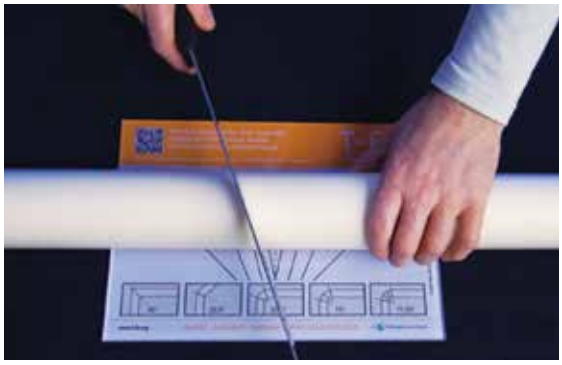
3: Radius Bend

Radius bends are made from segments of straight lengths of T-FIT Hygiene tube insulation.

3.1 The number of segments needed to make the bend depends on the type of installed bend – short radius bends need fewer segments than long radius bends. Some trial-and-error type testing may be needed to determine how many segments are required to provide for a correct fitting fabricated bend.



3.2 Tube is cut with a sharp knife in mitre block. The mitre block is an important and fundamental accessory to determine the correct angle of cutting and enables repeatedly accurate cutting.

3.3 Carefully apply sealant to each segment and build up the bend.

3.4 Once the bend is completed, the fitting **must be left for at least 6 hours** for the sealant to cure.

Further details are available at T-FIT.org, with video showing the install process

3: Radius Bend

Continued

3.5 To fit the assembled bend, cut across the throat of the fitting i.e. the internal radius and install onto the bend.

3.6 The joint needs to be completed with application of sealant, and application of tape after the sealant has cured for 6 hours

3.7 The bend fitting is taped and sealed to the adjoining insulation.

As an alternative to the above

With care, as an alternative to the above, fittings can be assembled around elbows, tee's etc, using existing pipework as a former. As an example, a segmented bend can be built up around the actual bend one segment at a time, ensuring each segment is adhered to each other with use of sealant/adhesive. Tape around each segment joint should be applied after the sealant/adhesive has cured, usually 6 hours after initial application.

T-FIT® Hygiene
Installation Guide

T-FIT® INSULATION

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4: Reducer

Changes in diameter of pipework can often be accommodated by careful selection of existing T-FIT Hygiene insulation tube sizes. Example a 50mm/2” pipe reducing to 38mm/1.5” can be insulated with 50mm/2” and 38mm/1.5” T-FIT Hygiene tubes respectively, given wall thickness of 6.35mm/¼”, the 50mm/2” Hygiene can easily overlap the smaller 38mm/1.5” insulation.

4.1 Carefully apply sealant to the longitudinal join and the end of the first insulation tube, preparing the butt join to the next item of insulation. In this example the 38mm / 1.5” tube.

4.2 Install the prepared Hygiene tube.

4.3 Carefully apply sealant/adhesive to the longitudinal join, and the end of the second insulation tube, preparing the butt joint to the next item of insulation. In this example the 50mm / 2” tube.

4.4 Install the second prepared T-FIT Hygiene tube.

4: Reducer

Continued

Further details are available at T-FIT.org, with video showing the install process

4.5 Apply tape to the ends of the installed tubes.

4.6 Apply sealant to the overlapping join between the smaller and larger T-FIT Hygiene tubes.

Further details are available at T-FIT.org, with video showing the install process

5: Tee

Insulating a tee starts with an appropriate size and length of T-FIT Hygiene straight insulation.

5.1 Using a sharpened piece of tube (see page 3), cut a hole into the straight ref above. The dimension of the hole corresponds to the outer diameter of the insulated tube that makes up the branch of the tee.

5.2 Cut down one side of the insulation to allow for installation around the tee and branch.

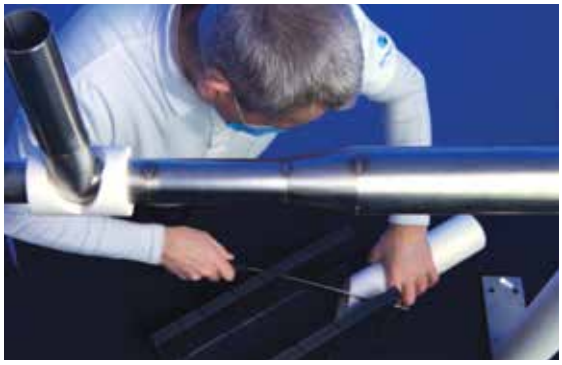
5.3 Carefully apply sealant to the longitudinal joint and install the cut tube, making good the closure tape to complete the seal.

Further details are available at T-FIT.org, with video showing the install process

5: Tee

Continued

5.4 Taking T-FIT Hygiene straight insulation appropriate to the branch, make two 45°angle cuts to one end.



5.5 Ease the straight cut surfaces and tips with a sharp knife.

5.6 Assemble the two parts to make up the tee insulation.

5.7 Apply sealant to the joint between the two parts.

Further details are available at T-FIT.org, with video showing the install process

6: Insulation Box

T-FIT Insulation boxes can be used to insulate valves, flanges and other pipeline equipment. Available in various sizes, please contact the T-FIT team to select insulation boxes of appropriate dimensions.

6.1 Using a sharpened piece of tube (see page 3), cut a hole in each end of the insulation box appropriate to the outer diameter of the insulated pipework into which the Insulation box is to be fitted.

6.2 For fitting around a valve as per example, cut a third hole into the top of the insulation box to accommodate the valve stem.

6.3 Carefully cut the insulation box down the centre stopping just short of the bottom layer of insulation.

Further details are available at T-FIT.org, with video showing the install process

6: Insulation Box

Continued

6.4 Open the insulation box and install around the valve, closing the two halves to complete the installation.

6.6 Apply sealant to the joints around the box and tape to the ends to firmly secure in place.

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Safety
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Environment
EMS 36270
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