



Insulation Plain 79 Series Installation Procedures

Important: Please read these instructions before beginning installation. TechLite® Plain 79 insulation is the same quality insulation used in our factory jacketed insulation systems. The insulation is supplied without a jacket and a jacket must be field applied. All forms of lagging may be used to protect the insulation. Aluminum, stainless and plastic are the most common. Because TechLite Insulation is NOT supplying the jacket material, it is ultimately up to the installer to determine the suitability of any jacketing and products used to attach and seal it.

For the purposes of this guide a “Below ambient application” refers to any situation where the pipe or vessel being insulated will be operating below the temperature of the surrounding air. This will often result in moisture buildup on an un-insulated pipe. A jacket vapor barrier must be maintained in these instances so that water vapor will not be drawn into the TechLite insulation. The service temperature of TechLite® Foam per ASTM C-1410 is -40°F to +350°F. Service temperatures may be as low as -150°F or up to +400°F with precautions. Please consult factory.

The following products are tested and approved for use with the TechLite® Plain 79 series insulation: Read the product data sheets and be familiar with the safety information before using them. Contact information for the manufacturers of these products can be found at the end of this guide.

Product name	Description	In service temps.
GE RTV 6708®	100% silicone sealer for plastics	-70° F to 400° F
Foster Vapor Safe® Coating 30-80	water based brush-able vapor barrier	-20° F to 180° F
Foster Vapor Safe® Mastic 30-90	water based trowel-able vapor barrier	-20° F to 180° F
Foster Monolar® Coating 60-95	solvent based brush-able vapor barrier	-50° F to 220° F
Foster Monolar® Mastic 60-90	solvent based trowel-able vapor barrier	-50° F to 220° F
Foster Mast-A-Fab®	membrane reinforcing polyester fabric	-50° F to 250° F
Childers CP-70® Sealant	oil based non drying vapor barrier sealer	-100° F to 300° F
3M Scotch-Grip™ 4550	solvent based pressure sensitive adhesive	-20° F to 200° F
3M Fastbond™ # 49	water based pressure sensitive adhesive	-20° F to 300° F

Call TechLite® Insulation if you have any questions regarding these products or procedures. 1-800-922-5252

General Instructions for Installing TechLite®:

1. Be sure the pipe surface is clean and dry. All pipes should be leak tested prior to installing insulation.
2. Use a knife or large scissors to cut the insulation.
3. Use only the recommended sealants and tapes on TechLite foam.
4. A complete tool kit is available from the factory. You may also need a caulk gun, putty knife, brushes, etc. depending on the sealant application required.
5. All jacket seams and overlaps should be positioned to provide for the best water shedding.
6. All seams, both straight lap joints and circumferential lap joints, should be sealed. This is important in both indoor and outdoor applications to prevent the ingress of water or wash down fluids into the TechLite® foam. In below ambient piping applications and severe wash down environments, all seams should be completely sealed to prevent water vapor from getting into the foam. We recommend using GE RTV 6708® as it has proven to perform best in metal and/or plastic jacketing situations. Be sure any sealers used will maintain the required vapor barrier.

Installing TechLite® straight sections:

1. Install the TechLite halves onto the pipe and temporarily tape them in place until the lagging is installed.
2. Install the field lagging following industry accepted practices and procedures.
3. TechLite foam should not be left exposed in either hot or cold applications, indoors or outdoors.

4. *Below ambient applications only:* Before adding the next section of TechLite®, vapor seal the flush end of the previously installed section with Childers CP-70®. Apply the sealer generously being sure to completely seal the face of the foam from the pipe out to the jacket. A small brush works well to spread the sealer. Vapor seal the butt joints every 12 feet on pipes operating from below ambient down to 32°F. Vapor seal every butt joint in pipes operating below 32°F. (See Photo #2)
5. Add the next section of TechLite® in the same manner as the first and butt the end up against the last one installed.
6. *Severe wash down situations or below ambient applications only:* It is highly recommended to over seal the jacket joints with a bead of GE RTV 6708® in any below ambient applications or where severe wash down conditions may occur. Apply a small bead of GE RTV 6708® to the seam and smooth it down with a small tool or applicator. This is the best protection against water vapor entering through an unseen gap in the jacket seam. This over sealing is not needed in most above ambient applications. (See Photo #1)
7. Any exposed TechLite® insulation (end runs without a cover, unusual shapes that are difficult to jacket, etc.) must be sealed with a vapor barrier sealer or mastic. Foster Monolar® and Vapor Safe® require two coats with sufficient time between coats to tack up. On large areas, Foster Mast-A-Fab® membrane should be embedded between the first and second coats to increase the strength of the mastic covering. Below ambient piping applications need a third coating to guarantee a positive vapor barrier. Feather the mastic (and membrane, if needed) out onto the jacketing at least 2 inches. Generally, the solvent-based sealers are used outdoors and the water-based sealers are used indoors. Do not use the water based Foster Vapor Safe® outdoors unless it is shielded from direct rain and sunlight. (See photo # 3)
8. Any *un-insulated* protrusions through the jacketing (anchors, supports, flanges, tank legs, etc.) should be sealed with GE RTV 6708®. This 100% silicone is formulated to adhere to both metals and plastics better than most silicone glues. Be sure to feather the silicone out onto each surface at least 2 inches and don't allow the fillet at the joint to become too thick. The joint needs to remain flexible in order to maintain the seal. If the temperature of the protrusion will exceed 140°F, be sure the jacketing is not fit too closely. Leave at least a 3/8-inch gap from the hot metal surface to prevent jacket damage. The RTV is rated for temperatures from -70°F to +400°F. (See photo #4)

Fittings

Fittings are insulated with TechLite® in one of 3 different methods depending on the application.

-Factory pre-formed inserts

-Factory supplied, pre-conditioned TechLite® diapers

-On-site, miter cut pieces using straight TechLite® sections

If a fitting cover is not available due to an unusual shape, or a clearance problem prevents the use, then a cover will need to be fashioned from Mast-A-Fab® cloth and mastic. (Refer to the information on Tanks and Vessels on page 4.)

-Pre-formed inserts

1. Install the pre-formed TechLite® insert around the fitting with the joints tightly together and the ends flush. If needed, secure with vinyl tape in a few places until the cover is installed.
2. *Below ambient applications only:* It is sometimes difficult to vapor barrier seal the butt joints on the fittings without fouling the adjacent jacket and subsequent jacket glue joint. Be sure to vapor seal the butt joints of any sections adjacent to the fitting if the fitting itself cannot easily be vapor barrier sealed.
3. Install the fitting cover and if necessary sand or shave the TechLite® foam slightly to get a good fit.
4. *Severe wash down situations or below ambient applications only:* It is highly recommended to over seal the fitting cover and jacket joints with a bead of GE RTV 6708® in any below ambient applications or where severe wash down conditions may be used. Apply a small bead of GE RTV 6708® to the seam and smooth it down with a small tool or applicator. This is the best protection against water vapor entering through an unseen gap in the fitting or jacket seam. This over sealing is not needed in most above ambient applications. (See photo # 1)

-Diapers

1. Trim the width and length of the TechLite® insulation diaper to the desired size. Wrap the diaper around the fitting and tuck the ends into the fitting throat. Be sure the insulation is butted properly to adjacent sections. Trim and add a diaper (or partial) as needed to be sure the fitting has the full depth of insulation required. Where the insulation needs to be thicker than 1 inch, a second 1-inch diaper may be added as needed. Temporarily tape the diaper layers until the cover is fitted.
2. *Below ambient applications only:* It is sometimes difficult to vapor barrier seal the butt joints on the fittings without fouling the adjacent jacket and subsequent jacket glue joint. Be sure to vapor seal the butt joints of any sections adjacent to the fitting if the fitting itself cannot easily be vapor barrier sealed.
3. Install the fitting cover and if necessary, trim the TechLite® foam to get a good fit.
4. *Severe wash down situations or below ambient applications only:* It is highly recommended to over seal the fitting cover and jacket joints with a bead of GE RTV 6708® in any below ambient applications or where severe wash down conditions may be used. Apply a small bead of GE RTV 6708® to the seam and smooth it down with a small tool or applicator. This is the best protection against water vapor entering through an unseen gap in the fitting or jacket seam. This over sealing is not needed in most above ambient applications. (See photo # 1)

-Mitered fittings

1. From a plain section of TechLite® foam, miter cut the appropriate segments of foam and install the mitered pieces to the fitting. Use tape to hold the pieces together tightly if needed.
2. *Below ambient applications only* Be sure to vapor seal the butt joints of any mitered sections of insulation.
3. Install the fitting cover.
4. *Severe wash down situations or below ambient applications only:* It is highly recommended to over seal the fitting cover and jacket joints with a bead of GE RTV 6708® in any below ambient applications or where severe wash down conditions may be used. Apply a small bead of GE RTV 6708® to the seam and smooth it down with a small tool or applicator. This is the best protection against water vapor entering through an unseen gap in the fitting or jacket seam. This over sealing is not needed in most above ambient applications. (See photo # 1)

Tanks and Vessels

Please note: TechLite insulation sheets, over 1 inch in thickness, are special cut with V-grooves to aid in wrapping curved tank surfaces. These V-grooved sheets are precision cut by the factory, for the specific diameter of the tank being insulated. If the tank requires more than 1 inch of insulation, multiple, overlapping layers of 1 inch thick TechLite may be applied. However, to cut installation time, please order factory V-groove sheets cut to the exact diameter you require.

1. Plan the layout of the entire tank before starting. Always overlap the jacket seams to facilitate water shedding. Begin at the bottom of the walls and insulate one row at a time.
2. Cover the tank or vessel surface (roll, brush or spray) with 3M Fastbond™ #49 or 3M Fast-bond™ 4550 and allow the adhesive to become tacky. The 3M Fastbond™ #49 has an unlimited open time and remains tacky indefinitely. The 3M Fastbond™ 4550 has a limited open time based on temperature and humidity. Press one sheet at a time onto the pressure sensitive glue.
3. On tank bottoms, mechanical fasteners are required to support the insulation. *Severe wash down conditions or below ambient applications only:* The hangers must be sealed if they have punctured the jacket. Use GE RTV 6708® and seal any holes in the jacket from the hangers.

4. *Below ambient applications only* Vapor seal the edges of the TechLite® before placing another sheet in place. Use Childers CP-70® and be sure to seal the foam edge completely from the tank surface to the jacket surface. This will help prevent a vapor barrier failure in the jacket from compromising the entire tank insulation. (See photo #5)
5. Place the next piece of sheet stock into position and then press it into the adhesive.
6. Continue adding new sections of TechLite®. Stagger the vertical seams when starting a new row of insulation on a large tank.
7. Apply jacketing being sure to seal all the seams.
8. Tank ends or shapes that are not easily jacketed should be covered first with plain TechLite® sheet or V-groove sheet. Cut and miter the sheet as required. Cover the bare TechLite® foam with a coating of Foster Monolar® or Vapor Safe® mastic. Both of these products have a thick and thin version for ease of application depending on the surface being covered. Generally, the solvent-based sealers are used outdoors and the water based sealers used indoors. Do not use the water based Foster Vapor Safe® outdoors unless it is shielded from direct rain and sunlight.
9. Apply the mastic to the foam and feather the mastic out onto the jacketing several inches. After the first coat gets tacky, add a layer of Foster Mast-A-Fab® membrane cloth over the entire area and overlap the jacket on the sides. This will add strength to the mastic covering. Add a second coat of mastic on top of the membrane and smooth, then let dry. A third coat will be required for below ambient applications to insure that a vapor barrier will be maintained. See the mastic product application sheets for more detailed information and safety information for working with these products. (See photo #3)
10. Any *un-insulated* protrusions through the jacketing (anchors, supports, flanges, tank legs, etc.) should be sealed with GE RTV 6708®. This 100% silicone is formulated to adhere to both metals and plastics better than the average silicone glue. Be sure to feather the silicone out onto each surface at least 2 inches and don't allow the fillet at the joint to become too thick. The joint needs to remain flexible in order to maintain the seal. If the temperature of the protrusion will exceed 140° F be sure the jacketing is not fit too closely to the hot metal surface. Leave at least a 3/8-inch gap from the hot surface to prevent jacket damage. The RTV is rated for temperatures from -70° F to +400° F. (See Photo #4)



Photo# 1 All seams over sealed with RTV

On below ambient applications or severe wash down situations, apply a small bead of GE RTV 6708® over all seams and smooth with a small tool or a scrap piece of foam. Be sure to fill any voids found in the lap joints. This is your best insurance against water vapor ingress through unseen gaps in the lap joints. (See text for details.)



Photo #2 Butt joint vapor sealing

On below ambient applications, just before adding another section of TechLite® insulation, apply a vapor barrier sealer to the flush end of the installed TechLite® section. In this photo Childers CP-70® has been applied to the flush end of a TechLite® section of insulation. Be sure to seal completely from the outer edge of the jacket to the inner contact with the pipe leaving no voids. Sealer should be applied generously. (At least 1/8 inch thick.) If the outer jacket gets damaged, this barrier will prevent water vapor from migrating throughout the insulation to adjoining sections. Water ingress would then be limited to the section damaged.

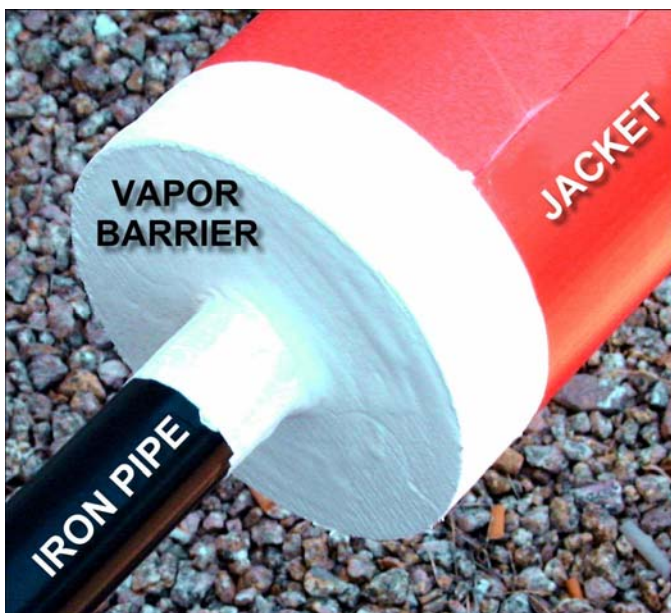


Photo #3 Special fittings

Where there is not room for a fitting cover or and unusual shape needs to be sealed, apply a minimum of two layers of mastic to the bare TechLite® foam. Use three layers in below ambient applications and use Mast-A Fab® membrane on large areas. Feather the mastic out onto all surfaces to maintain a secure seal. (See text for details.)



Photo # 4 Penetrations

When an un-insulated pipe, support leg, man way etc. goes through the jacketing, the edges must be sealed. (Picture shows a pipe exiting the jacket.) Seal the joint generously on each side with GE RTV 6708®. The extra wide flash allows for a better grip to both surfaces and allows more flexing if the jacket is impacted in this area. On high temperature applications keep the jacket clear of the hot metal surface by trimming back 3/8 inch and let the RTV fill in the gap and protect the PVC jacket from the heat.



Photo # 5 Tanks and Vessels

In below ambient applications a vapor barrier must be applied to the edges of installed sheet stock before adjoining the next section. This will prevent water vapor from traveling throughout the insulation in the event of a breach in the jacketing. Apply Childers CP-70® generously. (At least 1/8 inch thick.) Be sure to coat the exposed foam entirely from the tank surface to the jacket edge leaving no voids.

Index of TechLite® approved product manufacturers:

Please contact TechLite® Insulation if there are any questions about your application.

TechLite® Insulation

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1-800-922-5252 Fax 1-480-894-6255

<http://www.techlite.net>

Contact these manufacturers for specific information about the approved products listed on page 1.

Foster Products Corporation

2900 Granada Ln.

Oakdale MN 55128

1-800-999-2845

<http://www.fosterproducts.com>

Childers Products Company, Inc.

34799 Curtis Blvd.

Eastlake, Ohio 44095-4107

1-440-953-5200

<http://www.childersinc.com>

GE Silicones

260 Hudson River Rd.

Waterford NY 12188

1-800-255-8886

<http://www.gesilicones.com>

3M Adhesive Systems

3M Center Building 220-7E-01

St Paul MN 55144-1000

1-612-733-1110 Operator 55

<http://www.3m.com/US/>



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