

# Polywater® Duct Sealant (FST-250)

## Instructions for Use

### **FST-kit contents:**

Foam Base Cartridge (in protective pouch)  
Mixing Nozzles (in protective pouch/kit bag)  
Positioning Rod

Foam Strips  
Pair Protective Gloves  
HP Cleaning Wipe



UL Recognized  
Sealant

**See alternate Saturated Dam Method for specialty applications such as running water, vertical conduit, or other complex/unusual geometries.**

### Installation Tips

- *Conduit cleaning and preparation is key to a good seal.*
- *Rapid injection will produce better mixing.*
- *For large ducts, use multiple injections. See Quantity Recommendation. (Page 3)*
- *Mixing nozzle is reusable 7-10 minutes after injection.*



Clean duct with wire brush,  
solvent wipe.

- 1.) If conduit has loose debris or rust, use a wire brush to remove all loose material. Abrade the surfaces with sand paper or steel wool to increase the effectiveness of the FST Sealant.

Clean cable(s) and duct with Type HP cleaning wipe (cat. # HP-P158ID) as provided in the kit. This will remove contaminants and any organic residue.

*Note: Steel type conduit must be sanded and cleaned.*

- 2.) Create a foam dam by loosely wrapping foam strip around cable(s) so that it fills the space between the cable(s) and duct. It should be slightly wider than duct and compress slightly when inserted. (If more than one cable, separate cables with foam strip.)

Tail end of foam strip should be at top of wrap. Foam strip will slow any existing water flow and contain the FST Sealant. Cut foam to size as necessary.

- 3.) Using the positioning rod, push foam 5 inches (125 mm) into duct. Make sure there are no voids in the foam dam for FST Sealant to flow through.



Separate cable(s) then wrap  
with foam strip.



Insert foam 5 inches



Separate cable(s) with foam



Prepare cartridge



TOOL-250 contains FST-250



Dispense Foam Sealant



Rising Foam

- 4.) Wrap the second foam strip around cable. (If more than one cable, separate cables with foam strip.) Tail end of foam strip should be at top of wrap. Push second foam strip into the duct until the edge is flush with the duct entrance.

- 5.) Remove Foam Cartridge from pouch. NOTE: Do not remove cartridge from protective foil until ready to use. Wear impermeable gloves and eye protection. **Holding cartridge upright**, remove nut and plug. (Plug can be saved for re-use of cartridge.) Attach mixing nozzle and tighten nut back into place. **Nut must be replaced or mixing nozzle will detach from cartridge and material may spill.**

- 6.) Use a **heavy-duty**, high-ratio caulking tool for best performance, (Cat. # TOOL-250). Dispense and discard the first liquid to run through the nozzle (about 1 squirt with the application tool). This initial material will not be well mixed or have the proper ratio of material.

- 7.) Insert mixing nozzle into top wrap of foam dam so that tip extends into space between foam strips. Inject sealant above cables for better coverage. Use desired amount of foam sealant (see Table 1).

**Rapid injection will produce better mixing.**

**For large ducts, use multiple injections.**

- 8.) Remove cartridge with the static mixer attached. Sealant may seep between the crevices of the foam dam as it expands. After cure, excess foam may be trimmed and removed.

**Sealant will expand fully in 2 to 5 minutes.**

**Sealant will harden (set) in 10-15 minutes.**

**Mixing nozzle is reusable 7-10 minutes after injection.**

Duct Size, O.D. Inches/mm	Quantity Liquid Foam Sealant	
	0% Cable Fill	20% Cable Fill
2/50	1.5 cm <i>(1 injection)</i>	1 cm <i>(1 injection)</i>
3/75	3 cm <i>(1 injection)</i>	2.5 cm <i>(1 injection)</i>
4/100	2 + 2.5 cm <i>(2 injections)</i>	2 + 2 cm <i>(2 injections)</i>
5/125	3 + 4 cm <i>(2 injections)</i>	3 + 3 cm <i>(2 injections)</i>
6/150	3 + 3 + 4 cm <i>(3 injections)</i>	4 + 4 cm <i>(2 injections)</i>
8/200	4 + 4.5 + 4 + 4.5 cm <i>(4 injections)</i>	3 + 4 + 3 + 4 cm <i>(4 injections)</i>

**Table 1**

There are approximately 8.5 cm per FST-250 Cartridge. Use side markings to measure quantity by difference.



Use as a starting point only, actual required quantity will vary.

*For small ducts  
(1-1/2 inch diameter or smaller)  
the FST-MINI is recommended.*



*Use screwdriver to check for voids*

- 9.) After sealant has fully set and cured, use the positioning rod or a screwdriver to check for voids in the FST Seal. Foam seal should be solid throughout the duct. If any holes or voids are detected in the inspection, use a screwdriver to cut into top of foam and enlarge a path for new material. Attach a new mixing nozzle and inject sealant directly into the void area.

Dispose of any excess material in accordance with local and national regulations.

**Storage:** FST Foam is sensitive to sun, water and heat. To keep the FST Foam up to a month after initial use, place the partial used cartridge into the foil bag and tape it shut. Place the foil bag in a dry cool dark place until ready to use.

### **FST Foam Seal Application and Use**

Polywater® Foam Sealant FST cures to a strong, rigid closed-cell structure. It has excellent wetting and adhesion to metal, concrete and plastic surfaces. It holds 20 feet (6 meters) water-head, and acts as a barrier to smoke and air. It provides superior resistance to water, acids, greases and bases and most organic compounds. Performance and test results can be found in the FST Tech Data Sheet and Lab Reports.

## **Clogged/leaking cartridge**

The small orifices in the cartridge tip may become clogged. Poke through and loosen hard material or crust with a wire. Material may be used as directed once the clog is cleared. If the back plugs are leaking, do not use cartridge.

## **Re-use and Clean-up**

Cartridge can be reused for several weeks after initial use. Remove mixing nozzle and visually ensure that orifices are not blocked. Seal with replaceable plug and nut. When ready to use, remove end cap assembly and check to make sure orifices are clear of any hardened sealant. Attach a new, unused mixing nozzle, tighten nut and insert used cartridge into ratchet application tool.

Unreacted material may be cleaned from surfaces with a solvent wipe such as Polywater's Type HP Cleaner/Degreaser. Part A, amber resin will react with water if surfaces are washed with soap and water solution. Once reacted, material has strong adhesion, and may be scraped or cut from surface. For skin contamination, wash thoroughly with soap and water. See MSDS for further information.

## **Water in duct**

FST Sealant will cure if the duct contains less than 10% water. If water is relatively clean and not flowing, the foam dam will work as a good block. FST Sealant will incorporate any excess water into the body of the cured foam seal. Too much water and/or contamination will weaken the seal.

For flowing water, use the saturated foam method. See alternative instructions or watch video.

## **Removal**

FST Sealant produces a good, water-tight seal intended for permanent use. It can be mechanically removed with some effort. Use best practices and comply with the NEC by de-energizing equipment before any seal removal is attempted. Use a long screwdriver (7 inches/15 cms) to puncture holes  $\frac{1}{4}$  to  $\frac{3}{4}$  inch (0.5 to 2 cm) throughout the seal. With a hammer, push the screwdriver through the foam, twist it to enlarge cavity, and pull out. Go around the inside duct diameter to remove plug. Once the foam is weakened, material can be chipped away, and the cable should break free. At this time the cable can be removed or the remaining FST Foam can be detached from the cable.

## **Cold Weather Use**

FST Sealant can be used in temperatures down to 35°F (2°C). Reaction is slower, but the sealant will completely foam and cure with time. At cold temperatures, the Foam Sealant (FST) becomes slightly viscous and flows through the mixing nozzle at a slower rate. Cure times are as follows:

	<b>40° F (4° C)</b>	<b>70° F (21° C)</b>
<b>Foaming, Expansion Complete</b>	8 - 9 Minutes	4 – 5 Minutes
<b>Hard, Non-sticky Skin Formation</b>	12 – 15 Minutes	7 – 9 Minutes

To decrease cure time in cold temperatures, keep FST Sealant cartridges warm prior to use.

## **Large voids**

Seal should be inspected after installation. If voids or holes are discovered, additional FST Sealant may be added at any time. It will bond very well to existing, cured material. Use a screwdriver to cut into top of foam and enlarge a path for new material. Attach a new mixing nozzle and inject sealant directly into the void area. Dam the fill area if larger than 2 inches (50 mm).

## **Urethane safety**

Irritating and toxic smoke and vapors may form during combustion of cured FST Foam Sealant. Hazardous or irritating decomposition products include oxides of carbon, oxides of nitrogen and hydrogen cyanide. If possible, remove cured sealant prior to any torch cutting operations. The Sealant can usually be removed from the conduit using chisel style tool or pick. If burning the sealant material cannot be avoided, provide appropriate ventilation/respiratory protection against decomposition products during flame cutting operations.

## **Cable Compatibility**

FST Foam is compatible with cable jacket materials. The foam is an inert solid that will not attack the jacket material.

## **Web Support**



Standard Installation Video



Saturated Foam Method Installation Video



Quantity Calculator