

FST™ Foam Sealant

TECHNICAL DATA SHEET

Description:

FST™ Sealant is a two-part, high-expansion foam designed to seal ducts. It blocks water, acids, greases, gases, insects, rodents, etc. FST™ Foam Sealant expands and hardens to create a “closed cell”, rigid structure. This semi-permanent seal blocks water-head pressure and gases.

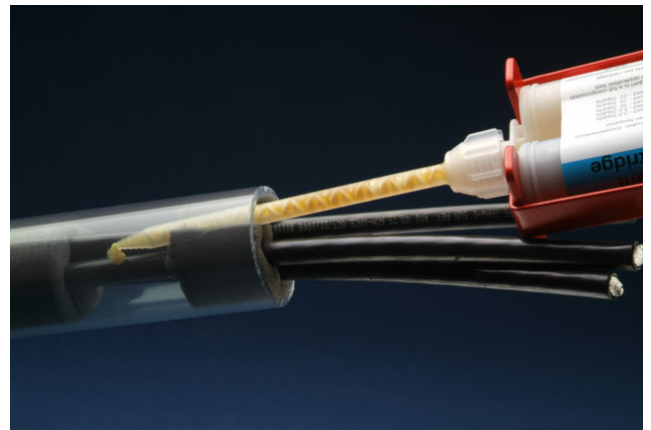
FST™ Sealant comes in a reusable cartridge that can be used with multiple duct sizes and cable fill configurations. It can be used with various styles of duct and conduit and has good wetting and adhesion to metals, plastics, and concrete. The kit contains all materials required to install the duct block (with the exception of the tool, sold separately).

Water Blockage:

Polywater® Foam Sealant is an excellent duct seal. To test water blocking performance, it is installed into conduit according to standard directions, forming a 3-inch plug. Water is added to the system and put under pressure to create a water-head as described.

<u>Condition</u>	<u>Result</u>
Sch 40 PVC Conduit	Holds 28 days at 7.25 psi (16.4 feet water-head)
Sch 40 PVC Conduit, 3 MDPE Cables	Holds 15 minutes at 40 psi (90 feet water-head)
Sch 40 PVC Conduit, 3 MDPE Cables <i>bent</i> at 45° angle, in two directions for five minutes each	Holds 15 minutes at 40 psi (90 feet water-head)
Sch 40 PVC Conduit, 3 MDPE Cables <i>pulled</i> with 15 pounds axial force for four hours	Holds 15 minutes at 40 psi (90 feet water-head)
Polyethylene Conduit, SDR 13.5	Holds 7 days at 30 psi (70 feet water-head)

FST™ Duct Seal is impervious to water and blocks considerable water-head pressure. It bonds well to both PVC and HDPE conduit and cables.



Product Benefits:

- Creates strong, resilient, chemically resistant seal
- Holds 15 feet water-head pressure over extended time
- Expands and cures even when water is present
- Re-sealable, reusable cartridge – no waste
- Tolerates cable movement, environmental extremes
- Compatible with common cable and wire jackets
- One cartridge seals multiple ducts
- Re-enterable – seal is semi-permanent and can be removed

End Use:

FST™ Duct Seal creates a conduit block and acts as a semi-permanent seal to:

- Block water
- Deter theft
- Seal out rodents, dirt, gases

For more information or to place an order, please contact Supply Solutions at 866-978-7759. Courtesy of Polywater Corp.

Component Properties:

Polywater® Foam Sealant FST is a two-part, “water-blown” urethane foam. It is a slightly gelled liquid formulated to a 1/1 ratio for use in side-by-side cartridges with a special static mixer provided.

<u>Property</u>	<u>Part A (Resin)</u>	<u>Part B (Curing Agent)</u>
Color	Amber	Clear
Form	Viscous Liquid 250 cps	Viscous Liquid 900-1200 cps
VOC Content:	0 g/L	0 g/L
Specific Gravity	1.2	1.1

Cured Properties:

FST™ Foam Sealant cures to form a solid, closed cell foam.

<u>Property</u>	<u>Typical Result</u>
Appearance	Light yellow color with small, even cells
Closed Cell Content	98%
Density	6 lbs/cu. ft.
Compressive Strength (ASTM D1691)	330 psi
Tensile Strength (ASTM 1623)	270 psi
Flexural Strength (ASTM D790)	460 psi
Water Tightness	40 feet intermittent 15 feet continuous
Air Tightness	>5 psi

Cable Compatibility

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

Chemical Resistance

FST™ Foam Sealant is chemically resistant to gasoline, oils, dilute acids and bases, and most unsaturated hydrocarbons.



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Air Tightness Testing:

Polywater® Foam Sealant will seal against various manhole gases. To test air tightness, it is installed into conduit according to standard directions, forming a 3-inch plug. The system is pressurized with both air and helium. Helium is a small molecule, less than half the size of methane gas. It is used in place of methane.

<u>Condition</u>	<u>Result</u>
Air, 10 psi, 168 hours	Holds Seal
Helium, 5 psi, 72 hours	Holds Seal

The FST™ closed cell foam will block air and gases for an extended period of time.

Cable Pull-Out Testing

Polywater® Foam Sealant will act as a theft deterrent by sealing cables into the conduit system. To test pull-out force, FST is installed into conduit according to standard directions, forming a 3-inch plug. Three wires are sealed into a schedule 40 PVC conduit. The force to pull out each cable is measured.

<u>Cable</u>	<u>Average Pulling Tension, lb_f</u>
2 AWG THHN	171
4/0 XHHW	320

The FST™ Foam Sealant increases the force required to remove cables.

Environmental Resistance:

FST™ Foam Sealant withstands the rigors of the environment.

Temperature Use Range

-20°F to 200°F (-29°C to 93°C) Continuous
-40°F to 250°F (-40°C to 121°C) Peak

FST™ Foam Sealant withstands direct sunlight with no decrease in functionality. Any portion of the reacted foam exposed to uv will discolor and become yellow. The foamed product retains its hardness and continues to act as a duct block. Discoloration will not harm the performance of the material.

The foam sealant may also be protected with a weather proofing paint or coating. Both urethane and epoxy based products have been tested with good results and excellent adhesion to the foam.

Application:

For full installation information, please see the [FST Installation Instructions](http://www.polywater.com/FSTuse.pdf). (www.polywater.com/FSTuse.pdf)

It is important to use and properly space the damming strips.

Field-Ready Kit

FST Sealant kit includes the materials required to install finished duct block.

Application Temperature

Working temperature for Polywater® Foam Sealant FST is 35°F to 95°F (2°C to 35°C).

Water in Duct

FST Sealant will cure in duct with small amounts of water. Water should not be flowing, and should be relatively clean. FST Sealant will incorporate water into the body of the cured foam seal. Too much water will weaken seal.

More thorough information can be found in the Installation Instructions.

Cure Rate:

FST Sealant can be used in temperatures down to 35°F (2°C). Reaction is slow, 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:

	Reaction Time, Minutes	
	40°F (4°C)	70°F (21°C)
Foaming,		
Expansion Complete	8 - 9	4 - 5
Hard, Non-sticky		
Skin Formation	15 - 18	7 - 9

Installation

Once skin has formed, foam may be visually inspected to determine whether or not seal has completely filled the void. After sealant has cured, the positioning rod or a screwdriver can be used to check for voids in the finished seal.

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

Clean-up

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.

Removal:

FST Sealant can be mechanically removed with some effort. Use a long screwdriver to puncture holes throughout the seal. With a hammer, push the screwdriver through the foam, twist it to enlarge cavity, and pull out. Once the foam is weakened, material can be chipped away, and the cable should break free.

Safety:

Polywater® Foam Sealant FST is a two-part urethane foam containing highly reactive chemicals. Polyurethanes are common in the construction industry and have been used for many years. Some individuals may become sensitized to components of the unreacted resin. Precautions must be observed during use and handling of these materials.

The use of FST in the prepackaged cartridge controls and reduces exposure. Once reacted, the foam is solid, closed-cell polyurethane. The finished product may be considered non-toxic. See MSDS for more information.

Combustion of Cured Foam

Irritating and toxic smoke and vapors may form during combustion of cured FST Foam Sealant. If burning the sealant material cannot be avoided, provide appropriate ventilation/respiratory protection against decomposition products during flame cutting operations.

Storage and Handling:

Keep containers cool, dry and away from sunlight. Leave cartridges in the protective foil pouch until ready to use/reuse.

Product shelf life is one year.



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Model Specification:

The statement below may be inserted into a customer specification to help maintain engineering standards and ensure work integrity.

The foam duct sealant shall be a two-part "water-blown" urethane foam with 98% closed cell content. The foam duct sealant shall have a compressive strength of 300 pounds (ASTM D1691), and shall have a tensile strength of 250 pounds (ASTM D1623). The foam duct sealant shall have a flexural strength of 450 pounds (ASTM D790), and shall withstand temperatures from -20° F to 200° F. The foam duct sealant shall be chemically resistant to gasoline, oils, dilute acids and bases.

The foam duct sealant shall be available as a kit to seal various sized ducts. Product shall react in five to ten minutes at 70° F.

Once installed, the sealant shall hold 40 psi air pressure, the equivalent of 90 feet of water-head pressure for 15 minutes. Foam sealant shall hold same pressure when used to enclose systems with one and three cables that are bent at a 45° angle for 5 minutes in two directions. Foam sealant shall hold same pressure when used to enclose systems with one and three cables that are pulled with 15 pounds axial force for 4 hours. Foam sealant shall hold 7.25 psi air pressure, the equivalent of 16.4 feet water-head pressure continuously.



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Courtesy of Polywater Corp.

Order Information:

Cat #	Package Description
FST-250 (6 units/case)	8½-oz two-part Foam Sealant, caulking tube style with resealing cap 1 Static mixing nozzle
FST-250KIT (6 units/case)	8½-oz two-part Foam Sealant, caulking tube style with resealing cap 3 Static mixing nozzles 2 24-inch Foam damming strips 1 Pair disposable gloves 1 Position rod 1 Pre-treating wipe 1 Instruction sheet
FST-180 (12 units/case)	6-oz cartridge Foam Sealant, side-by-side tubes with resealing cap 3 Static mixing nozzles
FST-180-KIT (6 units/case)	6-oz cartridge Foam Sealant with resealing cap 3 Static mixing nozzles 2 24-inch Foam damming strips 1 Pair disposable gloves 1 Position rod 1 Pre-treating wipe 1 Instruction sheet
FST-TOOL (1 unit/case)	Ratchet application tool for FST-180
FST-TOOL250 (1 unit/case)	Ratchet application tool for FST-250
FST-DAM (24 units/case)	24-inch Foam damming strip
HP-P158ID (144 units/case)	Conduit pre-treatment, cleaning wipe

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Important Notice: The statements here are made in good faith based on tests and observations we believe to be reliable. However, the completeness and accuracy of the information is not guaranteed. Before using, the end-user should conduct whatever evaluations are necessary to determine that the product is suitable for the intended use.

American Polywater expressly disclaims any implied warranties and conditions of merchantability and fitness for a particular purpose. American Polywater's only obligation shall be to replace such quantity of the product proven to be defective. Except for the replacement remedy, American Polywater shall not be liable for any loss, injury, or direct, indirect, or consequential damages resulting from product's use, regardless of the legal theory asserted.

Makers of Polywater® and Dyna-Blue® Cable Lubricants
and Pull-Planner™ Software

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