

# AP Fill 700

## WATER-ACTIVATED SEMI-RIGID POLYURETHANE FOAM INJECTION RESIN



1-Component

### DESCRIPTION

AP Fill 700 is a single component, water-activated, hydrophobic, low viscosity, closed cell polyurethane injection resin.

### USES

- Soil permeation grouting.
- Cutting off high flow leaks.
- Filling voids behind concrete structures.
- Cutting off underground water flows.
- Stabilizing soil.
- Seawall repair.

### ADVANTAGES

- Very low viscosity.
- Water impermeable.
- Adjustable set time – as fast as 20 seconds.
- Injected as a single component.
- Phthalate free (more environmentally friendly).
- **Certified to NSF 61-5 (Approved for contact with drinking water).**



### APPLICATION

**Note:** the following are a few typical application descriptions. In case of other jobsite parameters, please contact our technical department.

#### PRELIMINARY ANALYSIS

For soil stabilization, and all other forms of geotechnical grouting, it is advised to review soil reports from the job site. Take note of all structural elements and considerations and consult with geotechnical or structural engineers as needed. Locate all utilities prior to drilling or driving pipes into the ground. Dynamic cone penetrometer testing before and after application is recommended.

#### PREPARATION OF THE SUBSTRATE

Soil probe spacing is most commonly 18" (45cm) apart in a series of 2-3 staggered rows across the surface of the substrate. Depths will vary from job to job but must be established before work is to begin. Injection Technician should always confirm clearances and paths to injection sites for large equipment and/or Alchemy-Spetec mobile injection rigs.

#### PREPARATION OF THE PRODUCT

Read the technical and safety data sheets prior to commencement of the injection work.

#### PREPARATION OF THE EQUIPMENT

Pre-flush the pump with AP Flush 121 at the start of each day to ensure that there is no moisture in the pump and that the pump is primed.

### APPLICATION

• **Drive injection pipes to the lowest point to be injected.** Pipe diameter and wall thickness requirement is only a function of strength. If you are driving deeper or through tighter soil or rocky soil, the pipes need to be larger diameter so that they can withstand the driving forces without bending. Typically, use either 1/2" (13mm) OD steel tubing or 3/8" (10mm) OD NPT black pipe or corrugated pipe. The hydraulic tubing is the least expensive, but the weakest. Hydraulic tubing does not have threads, so use a compression fitting to connect to it. 3/8" NPT pipe has 3/8" NPT threads on the end (although nothing about this pipe is actually 3/8 of an inch). Connect to this pipe with a threaded fitting. Place a small carriage bolt in the end of the pipe before driving to keep soil out of it. Secure the carriage bolt with a few wraps of painters tape or electrical tape. The pump pressure should blow the bolt out of the end of the pipe. After driving, be sure to pull the pipe back up 1" (2-3cm) to give the plug room to push out of the pipe. You can also drill small diameter holes on the last 6-8" (15-20cm) of the pipe to create a strainer pipe. Drive 1/2" (13mm) tubing with a hammer drill that has a ground rod driver attachment on it. You can also use a pneumatic hammer to drive 3/8" or larger pipe (Rhino Driver brand or equal).

• **Pipe spacing.** For excavation wall injection, pipes are driven every 18" (45cm) apart in two or three rows. Each row is staggered so the pipes in the second row are right in the middle of the pipes on the first row (but 12" in front of the first row). For deeper or more crucial projects use a third row of pipes.

For soil grouting where connection between the grout balls is not required, 3-5' (1-1.5m) on center spacing is often acceptable.

• **Injection.** For permeation grouting, lower pressure, longer duration injection is preferred. High pressure, high volume injection can cause the soil to fracture and the resin to shoot off into "lenses" of grout that travel away from the area you are trying to solidify. Permeation is done slowly. Rule of thumb is one gallon per vertical foot (3.78 liters per 30.5 cm). Inject a gallon of resin, jack the pipe up one foot, then inject another gallon of resin. Repeat until you are 3' (1m) from the surface. At this point, resin will probably start pushing to the surface. It also pushes to the surface if you inject too fast.

### REQUIRED TOOLS AND ACCESSORIES

- Pump (airless sprayer or double diaphragm pump)
- 1/2" Galvanized Steel Injection Tubing (10'/3m or 20'/6m lengths available) or 3/8" NPT pipe.
- 1/4" x any length carriage bolts (for 1/2" tubing)
- 5/8" Ground Rod Driver with SDS or SDS Plus Shank
- Painters tape or electrical tape - holds bolt in place
- Pipe cutting wheel or angle grinder with cutoff blade
- Pipe pulling apparatus - JackJaw for example
- Viton Gloves
- Safety Goggles

### CLEANING AND MAINTENANCE

After the injection at the end of the day, flush the pump with AP Flush 121. If the pump will not be used for several days, flush the AP Flush 121 out of the pump with lightweight motor oil or hydraulic fluid and leave it there until the next usage. Never rinse the pump with water.

## COMPLIMENTARY PRODUCTS

AP Flush 121 (pump flush), AP Soak 130 (softens cured resin on metal parts), AP Cat 106 (Regular Speed), AP Cat 107 (Fast Speed), 1/2" Tubing Injection Assembly for use with 1/2" steel tubing (consists of Nut, Ferrule, and Button Head Adapter), Pagani DPM 30-20 (dynamic cone penetrometer).

## ADVICE / FOCAL POINTS

Avoid injecting when temperatures are below -4°F (-20°C). In extreme cold conditions it is recommended to warm the resin and catalyst. Since AP FILL 700 is hydro active, liquid water should be present.

## TECHNICAL DATA

### APPEARANCE

#### Physical Properties - Cured

AP Fill 700		
Tensile Strength	(ASTM D-1623)	45 psi (3,102 mb)
Tensile Elongation	(ASTM D-1623)	2.9%
Shrinkage	(ASTM D-1042/D-756)	Negligible
Compressive Strength (with fine sand)	(ASTM C-39)	2,050 psi (141,343 mb)
Pre-activated mix viscosity	80 -100 cP	

#### Physical Properties - Liquid

AP Cat 106		
Viscosity at 77°F (25°C)	(ASTM D4878-98)	8-12 cP
Flash Point	(ASTM D1310-86)	> 210°F (>101°C)
Specific Gravity	(ASTM D3505-96 [2000])	0.97

#### Physical Properties - Liquid

AP Cat 107		
Viscosity at 77°F (25°C)	(ASTM D4878-98)	8-12 cP
Flash Point	(ASTM D1310-86)	> 210°F (>101°C)
Specific Gravity	(ASTM D3505-96 [2000])	0.95

### Expansion

Up to 30x expansion (free foam)

Properties will vary depending on application conditions.

## REACTION TIMES

AP Cat 106 (Not recommended to use below 2%)

Quantity by Volume	2%	5%	10%
Initial Reaction	25 sec	15 sec	8 sec
Full Rise	1 min 50 sec	1 min 27 sec	30 sec

AP Cat 107 (Not recommended to use below 5%)

Quantity by Volume	5%	7.5%	10%
Initial Reaction	5 sec	5 sec	5 sec
Full Rise	30 sec	22 sec	16 sec

## ESTIMATING QUANTITIES

Consumption has to be assessed on site and is influenced by the amount of water leaking, thickness of the concrete slab or wall, presence of voids in and around the concrete, etc.

## PACKAGING

AP Fill 700 is supplied in 5 Gallon Pails, 50 Gallon Drums, 250 Gallon Totes (18.9 Liter Pails, 189.2 Liter Drums, 946.3 Liter Totes)

## STORAGE AND SHELF LIFE

Store between 50° - 80° F (10° - 26° C).

## SAFETY PRECAUTIONS

Avoid contact with eyes and skin, always use personal protective equipment in compliance with local regulations. Read the relevant Safety Data Sheet before use. Safety Data Sheets are available on [www.alchemy-spetec.com](http://www.alchemy-spetec.com). When in doubt contact Alchemy-Spetec Technical Service.

FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN. NOT FOR INTERNAL CONSUMPTION. READ MATERIAL SAFETY DATASHEET PRIOR TO EVERY USE.