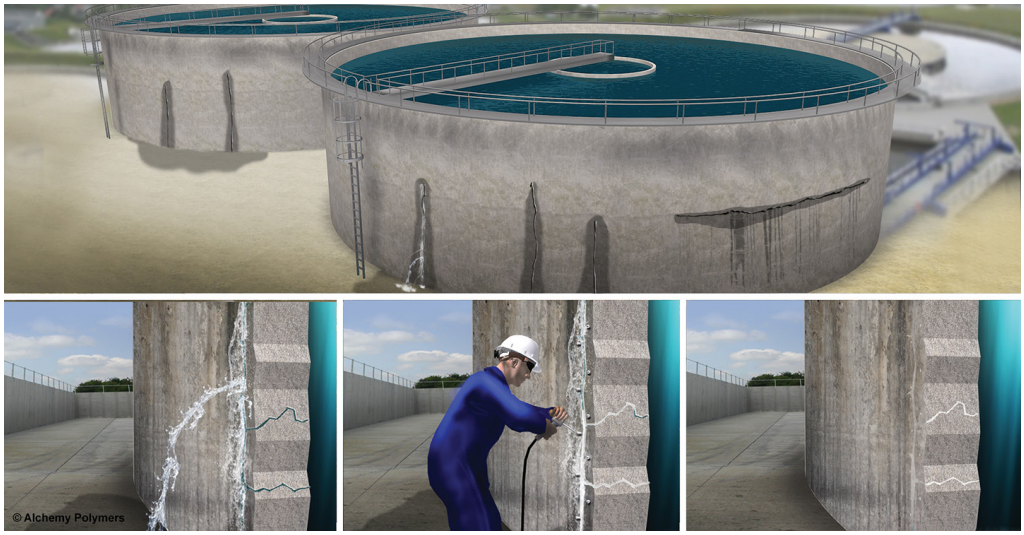
Advanced
Leak Seal
Solutions

LEAK SEAL **PROCEDURES**

Standard Application for **Injecting Cracks and Joints**

Powerful Polumers
Painless Procedures
Rapid Results



Alchatek, LLC
4508 Bibb Blvd, Suite B5
Tucker, GA 30084

Alchatek.com

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Standard Application for **Injecting Cracks and Joints**

Injection Procedures

Chemical grouts are commonly injected into leaking cracks and joints to stop the flow of water, sealing off cracks and filling voids. This procedure can be performed in both wet and dry situations, in potable water or waste water tanks, and in a variety of other structures where water is leaking.

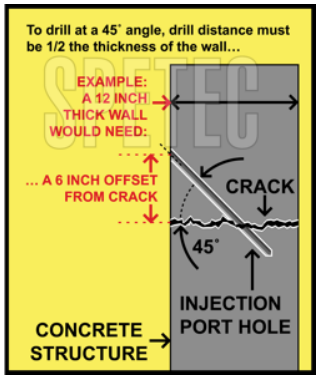
Procedure

Identifying and Preparing the Structure

- Clean crack surface using a wire brush, a grinder with wire cup wheel or other mechanical means, to remove mineral deposits, coatings or other debris. Pressure washing of the surface is also an option. If severe contamination exists, a chemical cleaner may be used, but must be flushed or neutralized before proceeding to the next step.
- When addressing wide cracks, use Alchatek Oakum, hydraulic cements or epoxy gels as a surface seal over the crack prior to injection to contain chemical grout in the structure. When addressing high flow leaks, use Alchatek Oakum soaked in chemical grout. Soak Alchatek Oakum in chemical grout and insert into the leaking crack or joint with a screw driver or similar tool. This will slow the water flow.
- pH notice: water used to activate Alchatek chemical grouts must be in the pH range of 3-10 to achieve optimum performance.

Injection Port Spacing and Drilled Holes

- Port spacing is determined by the width of the crack: 3–4 inches apart in tight cracks and up to 24 Inches apart in wide cracks. Staggering ports from side to side (stitching) is always recommended.



- To intersect a crack at the mid-point, drill injection port holes toward the crack at a 45 degree angle, at a distance of one-half the thickness of the concrete. Example: In 12 inch thick concrete, drill the injection port hole 6 inches back from the crack at a 45 degree angle to ensure crack is intersected at mid-point (longer drill bits may be needed to reach mid-point). See Diagram.
- Drilled holes should intersect the crack or joint at the midpoint, so the chemical grout can enter the crack in the center of the concrete and expand in both directions sealing the entire crack, filling any voids and micro cracks in the structure as the material expands and cures.
- Drilling injection holes is commonly performed using 3/8, ½, or 5/8 inch diameter drill bits.
- Flush drilled holes with clean water to remove dust and debris before inserting drive in port or mechanical packer.

Standard Application for **Injecting Cracks and Joints**

Installing Injection Ports / Packers

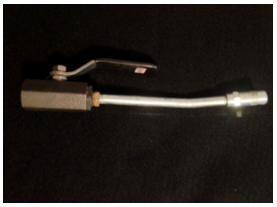
- Various types of drive in ports and mechanical packers are available in the market.
- Drive in ports should be driven/hammered into the drilled hole until snug.
- Once the port is snug in the hole, insert a grease or zerk fitting into the port. Insert mechanical packers into the drilled holes until the top of rubber sleeve is just below the concrete surface.
- Tighten the packer using a wrench or ratchet, turning clockwise until firm. Do not over tighten.
- Install each port before injection, but leave the grease coupler/zerk fitting off so you can monitor the travel.
- Avoid hammering on the grease coupler/zerk fitting.





Equipment and Equipment Set Up

- When using chemical grouts that are water reactive, use two separate pumps: one for water and the other for chemical grout. Caution: Never allow water to enter the chemical grout pump.
- Flush out the chemical grout pump and lines prior to use with an approved pump cleaning agent. This will ensure that the pump has no moisture in the system. Repeat flushing procedures when injection operations stop for a prolonged period of time.
- Pump hoses should be equipped with a high pressure ball valve assembly. This allows easy connection to the injection port and an on-off grouting operation.
- Keep injection pump pressures low at the beginning of injection, and increased slowly as needed to achieve full grout penetration. Extra high pump pressure may result in cracking or spalling of the concrete.



Flushing the Crack Prior to Injecting

- Flush the crack prior to injecting chemical grout to ensure that the crack is free of debris, that injection ports have intersected the crack, and that there's enough water to cause the resin to react.
- Begin injecting water at the lowest port on vertical cracks or at one end (and then work across) on horizontal cracks. Continue injectiing water until the crack has been flushed and clean water appears.

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Standard Application for **Injecting Cracks and Joints**

LEAK SEAL **PROCEDURES**

Injection of Chemical Grout

- Inject the liquid (catalyzed) resin into the injection packer.
- When injecting a vertical crack, start at the bottom and work upward as the material seals the crack.
- When injecting a horizontal crack, start at one end and work across the crack.
- REMEMBER: Keep pump pressures low at the beginning of the injection process and increase slowly as needed to achieve full grout penetration. Extra high pump pressures may result in cracking or spalling of the concrete.
- Inject at a rate that allows material to travel and completely seal the crack. Once you see material seep out at the adjacent port, pause injection and insert a grease coupler/zerk into that port. Then resume injection on the existing port.
- Advanceme to the next port when movement of material has stopped on the existing port, or when material is exiting the crack at an excessive rate.

Completion and Clean-up

- After fully injecting the crack with chemical grout, attempt to re-inject water into each port to ensure that the crack and drilled holes have been completely sealed.
- Next, remove each injection port/packer by pulling the port/packer out of the structure, or by drilling them clear to below the surface by 3 inches or more.
- After removing the ports/packers, fill the injection holes with hydraulic cement, non-shrink grout or epoxy gel material.
- Remove any wasted cured resin, used ports/packers, and construction debris.

Common Mistakes To Avoid

- Drilling too close to the crack can cause spalling of concrete.
- Drilling too close to the crack will not allow material to seal entire crack, which can result in re-occurring leaks.
- Injection of cracks with manual equipment (ex. grease guns) will not produce enough volume and may cause extreme waste and injection failure.
- Poor preparation of wider cracks may cause material waste, leading to re-occurring leaks.
- Injection pump pressure which is too high can cause spalling and damage to the surface.

Consult Alchatek technical service at 404-618-0438 for more information.

Alchatek, LLC
4508 Bibb Blvd, Suite B5
Tucker, GA 30084
Phone: (404) 618-0438
Alchatek.com

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