

# AKWASEAL® FLEX

## FLEXIBLE, POLYURETHANE CHEMICAL GROUT

### DESCRIPTION

AKWASEAL FLEX is a flexible, hydrophobic polyurethane chemical injection grout designed to stop water infiltration through concrete cracks, joints, fractures, and improperly consolidated areas. AKWASEAL FLEX is injected as a liquid directly into a crack, fracture, hole or joint. After injection, the grout reacts with water and forms into an expanding foam that fills the void. The cured foam adheres to the concrete within the crack to form a watertight seal.

The seal works in three ways. First, it forms a chemical bond to the surface area. Second, it forms a mechanical anchor in the irregular surface areas of the joint. Third, through expansion, a compression seal is formed within the crack, fracture or hole. The elastomeric and flexible properties of the cured foam allow it to resist cracking or pulling apart and to stand up to freeze/thaw and wet/dry cycles.

AKWASEAL FLEX is non-corrosive, and adheres well to most surfaces including concrete, clay tile, metal, wood, stone, mortar and brick.

In addition, AKWASEAL FLEX can be applied without the need to stop the seepage or leaks prior to application. The grout bonds to wet or dry surfaces.

When it comes in contact with water a chemical reaction occurs changing the product to a dense polyurethane foam through which water will not pass. After curing it forms to a closed cell, flexible foam that is resistant to organic solvents, mild acids, alkali, petroleum, and micro-organisms.

### PACKAGING

AKWASEAL FLEX is available in 18.9 liter (5-gallon) plastic pails; 36 pails per pallet. Each 18.9 liter (5-gallon) pail is shipped with a one 0.95 Liter (1-Quart) can of AKWASEAL CAT-240 Catalyst.

### INSTALLATION

**Preparation:** The procedure for repairing concrete cracks and joints is essentially the same. Drill holes at a 45° angle to intercept the crack or joint at approximately one-half the thickness of the concrete. Holes should be drilled at appropriate intervals to ensure full infiltration of the crack/joint with AKWASEAL FLEX. Typically holes are drilled 600 mm (12") apart along the entire length of a hairline crack, alternating the side of the crack as drilled. Set injection packer into each drilled hole. After setting the injection packers water should be injected to remove dirt in the crack and to moisten dry cracks prior to injecting AKWASEAL FLEX.

**Mixing:** In a separate clean plastic pail, only mix enough product for immediate use. **It is not standard practice to mix the entire 18.9 liter (5 gallon) pail at once in the original pail.** The recommended mixing ratio is 40:1, 18.9 liters (5-gallons) of AKWASEAL FLEX to 0.47 liters (0.5-Quarts) of AKWASEAL CAT-240. While stirring the grout, slowly pour in the catalyst to evenly disperse it into the grout. Do not pour the catalyst into the grout all at once and then try to mix it. Care should be taken not to aerate the mix.

Test mix the ratio by placing a small amount in a separate disposable container and stir in a small amount of water. When properly mixed, (40:1 ratio), the grout should start a foam reaction within 45 seconds at 77°F, 50% relative humidity. To slow the reaction time, decrease the catalyst amount to a minimum 0.24 liters (0.25-Quarts) or an 80:1 ratio. To speed up the reaction time, increase the amount of catalyst to a **maximum** 0.95 liters (1-Quart) per 18.9 liters (5-gallons) or a 20:1 ratio.

Use a start time of when the water is added to the mix. The cream time can be determined

by when the material begins to foam. The rise time can be determined by when the material is no longer rising.

**Injection:** Starting at the base of the wall, pump the catalyzed AKWASEAL FLEX through the injection packer. Typically pump until the grout resin is seen coming out of the crack up to the next injection packer. Then repeat the injection process on the next injection port.

As the grout reacts with the moisture present, the grout will move "FOAM" in an upward direction. Depending on the width of the crack, the grout may travel up to several feet along the crack. Inject in an injection port until the grout is no longer traveling. After injecting into all the ports in sequence, immediately return to the first port and inject all ports again in sequence. Prior to the grout curing, each injection port may be pumped several times during the installation. Finally, water may be re-injected to ensure reaction.

**Note:** When cured, in a free-rise situation, it will yield a 128-160 kilograms per cubic meter (8-10 pounds per cubic foot) foam.

For cracks with a high flow rate or large void areas, it may be necessary to dam up the area with rags, oakum, or other material. Damming the area will decrease the rate of water flow to allow the grout resin time to foam and bond to the interior surfaces of the crack/joint.

When injection has been completed, injection ports should be removed or broken off with a hammer. Exposed cured grout foam should be scraped off and disposed of per all applicable regulations. Drill holes should be filled with proper patching material. Clean pump equipment and hoses with PUMP FLUSH. Do not flush out pump equipment or hoses with water.

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### PUMP EQUIPMENT

Portable airless pumps producing discharge pressures of > 1.7 MPa (250 psi) are recommended for use with AKWASEAL FLEX. Airless pumps with 1.26-liter per minute (1/3-gallon per minute) pump capacity are ideal for small projects. Airless pumps with 1.90 to 3.8 liter per minute (1/2 to 1 gallon per minute) pump capacity are better for large projects or projects with large rates of flowing water.

### SAFETY

ALWAYS WEAR PROTECTIVE EYE WEAR (FACE SHIELD RECOMMENDED) AND CLOTHING TO PROTECT EYES AND SKIN. Avoid contact with skin and eyes. If eye contact occurs, flush eyes with water thoroughly and seek medical attention. Avoid ingestion of material. If ingestion occurs, seek immediate medical attention. Industrial use only. Keep out of reach from children. Refer to the Safety Data Sheet (SDS) for additional safety and first aid information.

| TECHNICAL DATA          |             |                                     |
|-------------------------|-------------|-------------------------------------|
| UNCURED RESIN PROPERTY  | TEST METHOD | TYPICAL VALUE                       |
| Viscosity @ 77°F (25°C) | ASTM D2196  | 500 ± 100 cps                       |
| Specific Gravity        | ASTM D891   | 1.04 - 1.07                         |
| % Solids                |             | 100%                                |
| Grout Color             |             | Pale Yellow                         |
| CURED RESIN PROPERTY    | TEST METHOD | TYPICAL VALUE                       |
| Tensile Strength        | ASTM D638   | 160 ± 20 psi                        |
| Elongation              | ASTM D638   | 65 ± 20%                            |
| Density                 |             | Free Rise: 7-8 lbs./ft <sup>3</sup> |
| Shrinkage by Weight     |             | 0%                                  |
| Shrinkage by Volume     |             | 3%                                  |

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