Azo-Grout™ 675

Product Data Sheet

Hydrophilic Polyurethane Grout Cartridge Application

Product description

Azo-Grout™ 675 is a single-component, hydrophilic polyurethane that cures when mixed with water. Depending on the amount of water in the mixture, Azo-Grout 675 will vary in consistency from a resilient, rubber-like foam to a flexible gel. The product is capable of absorbing water up to 800 percent of its own mass and then deflects excessive water away from penetrating into a structure. This unique feature allows Azo-Grout 675 to be used for large water inflow applications. Manhole joints are the primary place of use.

Water Quality Association has tested Azo-Grout 675 in accordance with the National Sanitation Federation (NSF) standard 61 and has approved this material for contact with potable water.

For NSF/ANSI 61 use restrictions visit: www.wqa.org

Gel encapsulation injection.

Manhole joint injection.

Application range

Azo-Grout™ 675 is used for stopping water infiltration in the following applications:

Municipal and utility facilities

- Precast manhole joints
- Brick manholes
- Sewer pipes

Pedestrian and automotive tunnels

- Curtain injection
- Gel encapsulation
- Joint sealing

Concrete dams and powerhouse galleys

- Curtain injection
- Gel encapsulation

Azon, 643 W. Crosstown Parkway, Kalamazoo, MI 49008-1910
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Table 1: Physical properties of uncured materials

	Azo-Grout™ 675	Measurement	Test method
Color	light brown		visual
Specific gravity	1.1		ASTM D891
Viscosity at 77ºF (25ºC)	800-900	centipoise	ASTM D2196
Storage stability	12	months	
pH	not established		
Toxicity	non-toxic		
Hazard class	not regulated		
Solids	100	percent	
Corrosiveness	non-corrosive		
Flash point	>220 (>104)	degrees Fahrenheit (Celsius)	

Table 2: Physical properties of cured materials

	Water: Grout ratio				Measurement	Test method
	1:1	3:1	5:1	8:1		
Gel time	110	100	90	100	seconds	
Tensile strength	431.1	261	>163.9	>145	psi	ASTM D638
Elongation	462.1	1,140	>1,250	>1,250	percent	ASTM D638
Die-C tear	49	51.7	43.1	43.3	pli	ASTM D624
Physical form	resilient foam	resilient foam	expansive gel	expansive gel		

Note: Table 2 represents physical properties at a range of resin to water ratios. These values were generated while simulating a situation where Azo-Grout™ 675 was applied under pressure similar to typical field condition applications.

Table 3: Temperature effects on viscosity

Temperature		Viscosity
Degrees Fahrenheit	Degrees Celsius	Centipoise
50	10	1,960
68	20	1,020
77	25	850
86	30	750
104	40	390

Processing parameters

The unique applications and places where Azo-Grout 675 is used exposes the product to a wide range of weather conditions and temperatures. Temperature of the chemical affects viscosity (liquid thickness) of the material. Table 3 illustrates the approximate viscosity levels of Azo-Grout 675 when exposed to various temperatures during the time of injection.

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Table 4: Temperature effects on reaction times at various ratios

Temperature		Water: Grout ratio		
Degrees Fahrenheit	Degrees Celsius	1:1	5:1	10:1
70	21	110 seconds	90 seconds	110 seconds
80	27	85 seconds	65 seconds	70 seconds
90	32	65 seconds	55 seconds	60 seconds

Note: Temperature also influences the reaction (working) time; hotter materials will decrease and colder temperatures will increase the reaction time. Table 4 illustrates the effects at different ratios.

Site preparation

Job site preparation depends on the type of injection method that is selected. Three methods of injection are described below along with the site preparation.

Crack injection: Prepare the work site by drilling holes at approximately 45 degree angles to intersect the application site at about half the depth of the fissure. Holes are typically drilled on opposing sides of the application site in an alternating pattern. The spacing is dependent on the crack size. Flush drill waste from holes to ensure a strong bond prior to installing packers. Securely install injection packers in the pre-drilled holes and clean the application site of extraneous and loose materials. Azo-Grout 675 can be injected directly into the construction joints of manholes at a 1 to 1 ratio with water.

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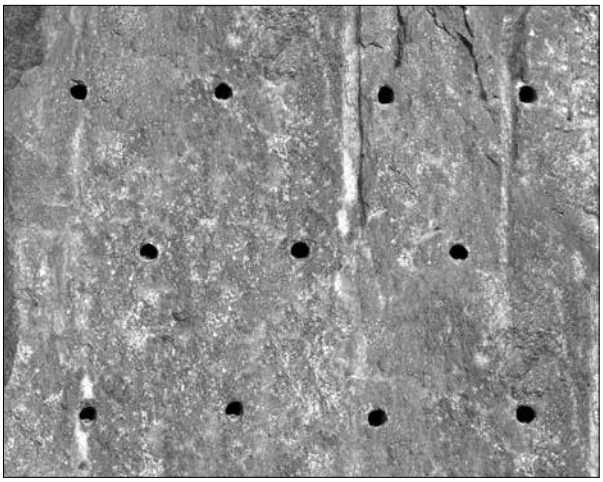

Gel encapsulation: Gel encapsulation is used for below-grade applications where it is advantageous to use Azo-Grout 675 as a seal membrane wrap on the outside surface of a structure. Holes are drilled completely through the structure to allow injection to take place from the inside. The pattern and spacing of holes may vary depending on each repair project. A common drill pattern is shown in the picture above. Packers are installed and injection begins in one corner. Continue injecting in one packer until grout material penetrates the surrounding drill holes (open packers).

Activated oakum technique: A method to help reduce or eliminate heavy water inflow in wide cracks or joints is called the activated oakum technique. The process is started by saturating oakum rope or industrial absorbent towels in the grout and then soaking the rope or towels in water. The grout will begin reacting once dipped in the water. Place the saturated pieces into the leaking crack or joint. Push deeply into the crevice using a blunt instrument. Once the water infiltration has been substantially reduced, drill holes and proceed with either the encapsulation or the crack injection method as mentioned above.

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This product can be injected as a single component when sufficient water is present. It is recommended in certain situations to inject water as a second component by means of a mixing/metering machine. The components are pumped into the injection packers generally beginning with the lowest. Continue introducing grout into the packer until the material reaches the next highest packer, then move to the next injection packer and continue. It is recommended to move back and repeat injection on previous packers until each port refuses to take more material. It is important to apply a sufficient amount of Azo-Grout 675 to allow a satisfactory ratio to be obtained for maximum effectiveness. Visual inspection of injection material penetrating the surrounding drill holes will determine the consistency of the reacted material. Once the injected material has cured at the application site, clean the site. Water blasting is a recommended technique for cleaning the concrete.

Cartridge

Azo-Grout 675 is available in a cartridge system which may be suitable for repairs in confined spaces where pump injection is not practical. Please see Azo-Grout *Application User Guide* (AG675UGFOLD001) for further information regarding cartridge usage.

Precautions

This material is intended to be used by trained professionals with the proper equipment. The following safety measures are recommended:

- Wear protective gloves, clothing, goggles, hearing protection for noise reduction and hard hats for falling debris.
- Do not eat, drink or smoke while in active contact with these materials.
- Avoid skin contact.
- Wash hands thoroughly with soap and cool water. Never wash the skin with a solvent.
- Anyone experiencing difficulty breathing when working with these materials or showing an allergic reaction should seek fresh air immediately and consult a physician if symptoms persist.

Depending on the scope of the project, it may be advisable to consult a manufacturer's representative during installation.

Health and safety

Safety data sheets and product labels must be reviewed prior to use or handling the material.

Material storage

Open containers of material should be used quickly to avoid moisture contamination. If a container needs to be resealed, it should be blanketed with nitrogen or dry air [less than -40°F (-40°C) dew point] to minimize water exposure. Refer to the safety data sheets (SDS) for further information regarding these materials. All spills of Azo-Grout 675 should be cleaned up by absorbing the substance into an inert material and transferring it to an open top drum. Do not seal the waste drums for 24 hours to allow the Azo-Grout 675 to react completely. Dispose of waste material in accordance with state and local regulations.

Packaging

Azo-Grout 675 is available in cartridges, 5-gallon pails at 45 pounds and 55-gallon drums at 463 pounds.

A typical cartridge will fill a volume of 302 cubic inches (4.94 liters) or a 3/16-inch (4.8-millimeter) crack in an 8-inch (203-millimeter) thick by 8-foot (2.4-meter) high wall.

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