



Product description

Azo-Grout™ 443-C is a low viscosity, hydrophobic polyurethane used for soil stabilization in a variety of water-bearing soils. The low viscosity characteristics of the Azo-Grout™ 443-C with Azo-Cat™ 23 allow the material to penetrate the earth, adding structure and stabilization by encapsulating the granules and forming a rock-like mass.

Water Quality Association has tested Azo-Grout 443-C in accordance with the National Sanitation Federation (NSF) standard 61 and has approved this material for contact with potable water.



Application range

Azo-Grout 443-C is used for stabilizing ground and hardening quicksand in the following applications:

Building foundations

- Shoring excavations
- Perimeter areas of deep-dug holes

Soil stabilization

- River and lake embankments
- Helipads for helicopters
- Sand trap for golf courses

Underground repair

- Mines
- Tunnels
- Subways

Table 1: Physical properties of uncured materials

	Azo-Grout™ 443-C	Measurement	Test method
Color	light brown		visual
Specific gravity	1.122 – 1.130		ASTM D891
Viscosity at 77°F (25°C)	220 ± 20	centipoise	ASTM D2196
Storage stability	12	months	
pH	not established		
Toxicity	see SDS		
Hazard class	not regulated		
Solids	100	percent	
Corrosiveness	non-corrosive		
Flash point	390 (199)	degrees Fahrenheit (Celsius)	

Hydrophobic Polyurethane Grout



Table 2: Physical properties of cured materials

	Value	Measurement	Test method
Free-rise density	1.1 ± 0.2 lbs/ft ³	lbs/ft ³ (g/cc)	
Tensile strength	2000 ± 350	psi	ASTM D638
Elongation	3.5 ± 1.0	percent	ASTM D638
Shrinkage by weight	0	percent	in-house
Shrinkage by volume	0	percent	in-house
Toxicity	non-toxic		
Compression of soil stabilized material	> 1150	psi	

Site preparation

In situations where sand, loam or clay need to be stabilized, Azo-Grout 443-C can be utilized. These applications may exist on the outside of tunnels, footings for bridges or in the utility shafts of dams. In many projects, the method of stabilizing the surrounding soil is by simply drilling holes through the concrete and injecting the grout at pre-determined intervals. Each individual situation requires thorough evaluation on how to best add structure to the soil. An illustration of one application method is shown in Figure 3.



Hand-mix reactivity check

A pre-blend reactivity test can be performed by hand mixing in cups. Azo-Cat™ 23 can be added to Azo-Grout 443-C prior to mixing with water to accelerate the reaction time. The recommended procedure for a reactivity check is:

100 parts by weight of Azo-Grout™ 443-C
 10 parts by weight of Azo-Cat™ 23
 5 parts by weight of water

- Add the Azo-Cat™ 23 to the Azo-Grout™ 443-C and homogenize.
- Add the water and mix thoroughly.
- Using the start time as the time mixing begins after the addition of the water:

1. Determine the cream time: the time in which the material just begins to foam.
2. Determine the top of rise time: the time in which the material is no longer rising.

Hydrophobic Polyurethane Grout



Table 3: Effect of Azo-Cat™ 23 on gel time at 77°F (25°C)

Azo-Cat™ 23 level	Start of rise	Top of rise	Product
2%	30 ± 2 seconds	6 minutes	soil foam
4%	18 ± 3 seconds	3 minutes	soil foam
8%	12 ± 3 seconds	1.5 minutes	soil foam
10%	6 ± 2 seconds	1.25 minute	soil foam

Table 3 indicates how varying amounts of Azo-Cat™ 23 affect gel time. Note that the temperature of the components will also affect the reaction time; hotter materials will decrease the reaction or working time and colder materials will increase the reaction time. Furthermore, pH and other factors present within the application site may affect the reaction or work time.

Application method

After performing the hand-mix reactivity check, mix the proper amount of Azo-Cat™ 23 to Azo-Grout™ 443-C to obtain the desired gel time shown in Table 3. As noted, temperatures of the repair area at the job site may also affect actual reaction speed. Start with a quantity of material that can be applied in a reasonable amount of time. Inject the mixture using a single-component injection pump.

Flush the pump and all mechanical components of all residual grout when injection is finished with Azo-Purge MP2™.

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.





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 443-C should be cleaned up by absorbing the grout into an inert material and then transferring the mixture to an open top drum. Do not seal the waste drums for 24 hours to allow the Azo-Grout 443-C to react completely. Dispose of waste material in accordance with state and local regulations.

Packaging

Azo-Grout 443-C is available in 5-gallon pails at 45 pounds and 55-gallon drums at 463 pounds.

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