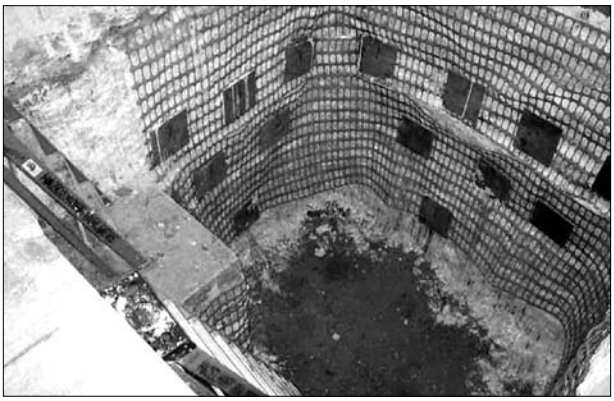
Azo-Grout™ 443

Hydrophobic Polyurethane Grout

Product Data Sheet

Product description

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



Application range

Azo-Grout 443 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

Table 1: Physical properties of uncured materials

	Azo-Grout™ 443	Measurement	Test method
Color	pale yellow		visual
Specific gravity	1.14-1.18		ASTM D891
Viscosity at 77°F (25°C)	110±20	centipoise	ASTM D1638
Storage stability	12	months	
pH	not established		
Toxicity	see MSDS		
Hazard class	not regulated		
Solids	100	percent	
Corrosiveness	non-corrosive		
Flash point	390 (199)	degrees Fahrenheit (Celsius)	

CE standards certification

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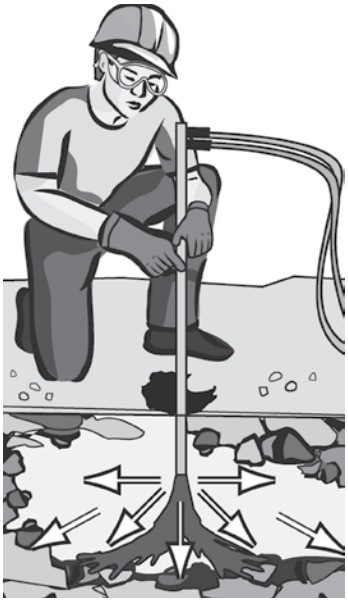
Table 2: Physical properties of cured materials

	Value	Measurement	Test method
Free-rise density	9 ± 1 (0.144 ± 0.016)	lbs/ft³ (g/cc)	
Tensile strength	250 ± 100	psi	ASTM D638
Elongation	5-10	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	> 1,500	psi	

Site preparation

In situations where sand, loam or clay need to be stabilized, Azo-Grout 443 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.

Figure 3: Soil stabilization



Grout preparation

Perform a pre-blend of the Azo-Grout 443 using on-site water to ensure the desired gel time meets the requirements for the application. Azo-Cat™ 25 can be added to the Azo-Grout 443 prior to mixing with water to accelerate the reaction time. The recommended procedure for a reactivity check of the Azo-Grout 443 / Azo-Cat 25 system is:

100 parts by weight of Azo-Grout™ 443
x parts by weight of Azo-Cat™ 25
5 parts by weight of water

- **Add the Azo-Cat™ 25 to the Azo-Grout™ 443 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 tack-free time: the time in which the surface of the material is no longer tacky.

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Table 3: Effect of Azo-Cat™ 25 on gel time at 77ºF (25ºC)

Azo-Cat™ 25 level	Cream time	Gel time	Product
2%	50 seconds	140 seconds	structural foam
4%	30 seconds	90 seconds	structural foam
8%	20 seconds	45 seconds	structural foam
12%	15 seconds	35 seconds	structural foam
16%	14 seconds	35 seconds	structural foam

Table 3 indicates how varying amounts of Azo-Cat™ 25 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

Premix the amount of catalyst needed for the desired gel time. Start with a quantity of material that can be used in a reasonable amount of time. Inject Azo-Grout 443 using a single-component injection pump. If the soil is dry, inject water first using a separate pump. The use of a second pump for injecting water reduces the risk of having a reaction, resulting in a clogged 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.

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

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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 material safety data sheets (MSDS) for further information regarding these materials. All spills of Azo-Grout 443 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 to react completely. Dispose of waste material in accordance with state and local regulations.

Packaging

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

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