

Hydrophobic Polyurethane Grout



Product description

Azo-Grout™ 553 is a two part polyurethane injection material. When reacted with Azo-Nate™ 300, the Azo-Grout 553 will produce a hydrophobic, rigid foam capable of lifting concrete slabs or roadbeds. The advantage of this hydrophobic nature, is that water present in the soil has little effect on the performance of the Azo-Grout 553. Azo-Grout 553 can even be injected into standing water with little change in properties.

Azo-Grout 553 and Azo-Nate 300 are both low viscosity liquids which are easily injected under concrete slabs of roadbeds. When reacted with the Azo-Nate 300, the mixture will expand ~ 20 times its original volume and produce a foam with density of 2.5 – 3 pounds per cubic foot (pcf).

Table 1: Physical properties of uncured materials

| | Azo-Grout™ 553 | Azo-Nate™ 300 | Measurement | Test method |
|--------------------------|-----------------|-----------------|------------------------------|-------------|
| Color | clear | brown | | visual |
| Specific gravity | 1.04-1.05 | 1.22-1.24 | | ASTM D891 |
| Viscosity at 77°F (25°C) | 400-500 | 175-225 | centipoise | ASTM D4878 |
| Storage stability | 12 | 12 | months | |
| pH | not established | not established | | |
| Toxicity | see SDS | see SDS | | |
| Hazard class | not regulated | 9 | | |
| Solids | 100 | 100 | percent | |
| Corrosiveness | non-corrosive | non-corrosive | | |
| Flash point | 190 (88) | 390 (199) | degrees Fahrenheit (Celsius) | |

Table 2: Processing characteristics

| | Azo-Grout™ 553 | Azo-Nate™ 300 | Value | Measurement |
|-----------------|-------------------|------------------|-----------------------|---------------------------|
| Mix ratio | 100 | 100 | | by volume |
| Mix ratio | 100 | 116.7 | | by weight |
| Mix temperature | Cream time | Rise time | Tack free time | |
| Reaction | 20 seconds | 40 seconds | 40 seconds | 75°F (24°C) - 77°F (25°C) |

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Table 3: Physical properties of cured materials

| | Value | Measurement | Test method |
|------------------------|-------------------------|----------------------------|-------------|
| Free-rise foam density | 2.5 - 3 (0.096 ± 0.008) | lbs/ft ³ (g/cc) | |
| Shrinkage by volume | 0 | percent | in-house |
| Toxicity | non-toxic | | |
| Compression strength | 35 - 38 | psi | |
| Elongation | 3.5 | percent | |
| Tensile strength | 38 ± 7 | psi | |

Site preparation

In situations where sand, loam or clay need to be stabilized, Azo-Grout 553 can be utilized. These applications may exist on the outside of tunnels, footings for bridges or in utility shafts of dams. For many projects, the method of stabilizing the surrounding soil is simply drilling holes through the concrete and injecting the grout at predetermined 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 1.

Grout preparation

Perform a pre-blend of the Azo-Grout 553 with Azo-Nate 300 to ensure the desired gel time meets the requirements for a particular application. Note that the temperature of the components will 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.

Figure 1: Soil stabilization



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Application method

Azo-Grout 553 / Azo-Nate 300 are best installed using multi-component pumps adjusted for a 1:1 volume ratio of the two materials. Some form of mechanical mixing such as in-line static tube or impingement mixing is recommended to ensure a good mix. The mixture can be pumped into the soil beneath the slab or roadbed that needs to be lifted. Professional application methods are needed to control the amount of material injected avoiding cracking the concrete or lifting the slab too high.

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

Precautions

Azo-Grout 553 and Azo-Nate 300 are intended to be used by trained individuals with proper equipment.

This grout contains reactive materials, which result in an exothermic reaction and have the potential to cause burns when in contact with skin. Consider the following safety measures:

- 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 to tepid 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 553 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 553 to react completely. Dispose of waste material in accordance with state and local regulations.

Packaging

Azo-Grout 553 is available in 45 pound five-gallon pails or 463 pound 55-gallon steel drums. Azo-Nate 300 is available in 45 pound five-gallon pails or 550 pound 55-gallon steel drums.

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