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## SOIL STABILIZATION

### Short specification

Azo-Grout™ 443 hydrophobic polyurethane injection material is used to harden quicksand in building foundations (shoring excavations and perimeters of deep-dug holes) and to stabilize soil in river and lake embankments, helipads and sand traps for golf courses. Material should be a rigid foam once reacted as stated per the processing guidelines outlined by Azon, Kalamazoo, Michigan.

### Full specification

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section Includes: The material and equipment needed to stabilize the earth in a variety of water-bearing soils.
- B. Related Requirements:
  - 1. Section 31 32 23 – Pressure Grouting Soil Stabilization
  - 2. Section 31 32 23.16 – Chemical Pressure Grouting Soil Stabilization

##### 1.02 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data:
  - 1. Submit manufacturer's product information brochures.
  - 2. Submit MSDS of each relevant product used on the job site.
  - 3. Submit manufacturer's product data sheets per grout product used.

##### 1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Contractor should demonstrate adequate experience applying polyurethane hydrophobic chemical grout.
- B. Regulatory Requirements and Approvals:
  - 1. All material components must be fabricated in the United States.

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

##### 1.04 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirement Section.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection:
  - 1. Refer to the manufacturer's product data sheet and material safety data sheets (MSDS) for storage and handling instructions.

## D. Site Precautions:

1. OSHA guidelines and local restrictions, as applicable, must be followed at all times.
2. Information, instructions and warnings on all MSDS, labels and product data sheets must be adhered to.
3. This material is intended to be used by trained individuals with the proper equipment.
4. Environmental waste—liquid, solid or vapor—must be contained within the job site and disposed of in accordance with state, province and local regulations. See the manufacturer's literature for removal information.

**PART 2 PRODUCTS**

## 2.01 GROUT

## A. Manufacturer: Azon

Contact: 643 W. Crosstown Parkway, Kalamazoo, Michigan 49008-1910; Tel: (800) 788-5942; (269) 385-5942; Fax: (269) 373-9295

B. Web site: [www.azogROUT.com](http://www.azogROUT.com)

## C. Specifier Note: Select a grout product from below.

1. Azo-Grout™ 443 [viscosity at 90°F (32°C): 40-60 centipoise]
  - a. Material: Hydrophobic polyurethane injection material that is used to harden quicksand in building foundations (shoring excavations and perimeters of deep-dug holes) and stabilize soil in river and lake embankments, helipads and sand traps for golf courses.

## D. Accessories:

1. Azo-Cat™ 25 serves as a catalyst with Azo-Grout™ 443 to increase the grout's setup time.
2. Azo-Purge MP2™ safety flush agent is recommended for purge cleaning of the grout injection pumps.

## E. Equipment:

1. 2 - Titan 440 airless injection pumps (1,500 psi). Use one injection pump for adding water to the soil (if necessary), and a separate injection pump for the actual grout injection.
2. Hammer drill with 10" bit or longer as needed per job application.
3. Machette tubes.
4. Inflatable seal or sliding seal packers.

## 2.02 PRODUCT SUBSTITUTIONS

## A. Substitutions: Contractor must submit a product data sheet of an equivalent product to ensure similar viscosity levels for a suitable substitution.

## 2.03 INJECTION

## A. Field Application: Inject product in compliance with grout manufacturer's recommendations. See the product data sheet and brochure for more details.

## 2.04 SOURCE QUALITY CONTROL

## A. Tests, Inspection: Ensure manufacturer is in compliance with ISO registration procedures for the production of the specified grout.

**PART 3 EXECUTION**

## 3.01 MANUFACTURER'S INSTRUCTIONS

## A. Compliance: Comply with the instructions and recommendations of the grout manufacturer. Refer to the product data sheet for further instruction.

### 3.02 EXAMINATION AND PREPARATION

#### A. Site Verification of Conditions:

1. Verify that site conditions are acceptable for product installation in accordance with installer's recommendation. Applications for soil stabilization may exist on the outside of tunnels, footings for bridges, utility shafts of dams or any type of excavation that requires the prevention of soil erosion.
2. In many projects, the method of stabilizing the surrounding soil is simply drilling holes through the concrete or into the soil and injecting Azo-Grout™ 443 at pre-determined intervals utilizing Machette tubes and inflatable packers.
3. The material penetrates the ground and encapsulates the granules by reacting with the water present solidifying into a stable mass of soil and rigid foam.
4. Each individual situation requires thorough evaluation on how to best add structure to the soil.

### 3.03 GROUT PREPARATION

- A. Perform a pre-blend of Azo-Grout™ 443 using on-site water to ensure the desired gel time meets the requirements for the application.
- B. Azo-Cat™ 25 can be added to Azo-Grout™ 443 prior to mixing with water to accelerate the reaction time.
- C. The recommended procedure for a reactivity check of Azo-Grout™ 443 and Azo-Cat™ 25 is as follows:
  1. Add 100 parts by weight of Azo-Grout™ 443 to xy parts by weight of Azo-Cat™ 25 and allow the two to homogenize.
  2. Add 5 parts by weight of water and mix thoroughly.
  3. Using the start time as the time mixing begins after the addition of water:
    - a. Determine the cream time – the time in which the material just begins to foam.
    - b. Determine the tack-free time – the time in which the surface of the material is no longer tacky.
- D. The temperature of the materials when mixed and the temperature of the soil into which the material is introduced can also control the speed of the reaction.

### 3.04 APPLICATION AND INSTALLATION

- A. Premix Azo-Grout™ 443 with the amount of Azo-Cat™ 25 needed for the desired gel time.
- B. Start with a quantity of material that can be used in a reasonable amount of time.
- C. If the soil is dry, inject water first using a separate injection pump. The use of a second injection pump for injecting water reduces the risk of having a reaction that would result in a clogged pump.
- D. Inject premixed Azo-Grout™ 443 using an injection pump.
- E. Refer to the manufacturer's product data sheet, MSDS guidelines and product information brochure for more information about the injection procedure.

### 3.05 CLEANING

- A. Flush the injection pumps and all mechanical components of all residual grout when injection is finished with recommended Azo-Purge MP2™ safety flush agent (see *Accessories*).
- B. Refer to the manufacturer's product data sheet, MSDS guidelines and product information brochure for more information about the cleaning procedure.

**END OF SECTION**