MINOVA

MINING / CONSTRUCTION

TERRASET® SYSTEM

SILICATE-BASED CHEMICAL GROUT SYSTEM

DESCRIPTION

Terraset® grout is a low-viscosity, chemical grout system used for ground consolidation and stabilization of foundations and footings located on fine to medium sands. The Terraset® System comprises Terraset® Component A Sodium Silicate Grout and Terraset® Component B Hardener.

Both components are completely water soluble. On a volume basis, the amount of Terraset® Component B Hardener needed ranges from 10% to 15% based on the silicate concentration. The higher hardener concentration creates the most durable gels. Gel time of the mixed grout solution is approximately 12 minutes at 70°F (21.1°C). Terraset® Component B hardener obtains predictable gel times over a wide range of temperatures when mixed with Terraset® Component A silicate. The resulting gels are homogenous, dense, and well structured.

USES

Other important uses include control of water inflow into shafts and tunnels during excavation, pre-grouting of TBM/EPBM tunnel headings, formation of impervious grout curtains to contain pollution by hazardous waste, and cut-off walls into alluvial deposits at dam sites.

ADVANTAGES

- Adaptable – Mix concentrations allow project-specific formulation; low viscosity enables maximum strata penetration, minimal product waste
- Chemical resistivity – Unaffected by acids, alkalis, salts and hydrocarbons, resistant to fungi, and bacteria
- Low viscosity – 2 to 5 cps enables maximum permeation into fine sands and cracks.

APPLICATION METHOD

Mixing (batch method)

Batch mixing permits only one predetermined gel time to be used for each batch. The mixing tank can be steel or plastic and should be fitted with a good agitator. Tank capacity should be related to the pumping rate and selected gel time to ensure the entire batch of Terraset® grout is dispensed within the established gel time.

1. Add the required volume of water to the mixing tank. (See Table 1 Batch System).
2. Start the agitator, then add the appropriate volume of Terraset® Component B Hardener and continue stirring for a few minutes.
3. Add the correct amount of Terraset® Component A Silicate to Terraset® Component B Hardener. Normal grout concentration used is 50% by volume. In order to achieve practical working strengths, silicate concentrations of less than 30% are not recommended.
4. Terraset® grout is now ready for injection. Continue stirring the grout mixture throughout the grouting operation.

TECHNICAL DATA

The data below are laboratory data only. They may vary in practice due to thermal exchange between resin and strata, surface properties of the stone, humidity, pressure and other factors.

BATCH SYSTEM

Tank Volume	Percent Terraset® Grout	Gallons Terraset® Comp A	Gallons Terraset® Comp B	Gallons Water
10 Gallons	30 40 50 60 70	3 4 5 6 7	0.3 0.4 0.5 0.6 0.7	6.7 5.6 4.5 3.4 2.3
20 Gallons	30 40 50 60 70	6 8 10 12 14	0.6 0.8 1.0 1.2 1.4	13.4 11.2 9.0 6.8 4.6
30 Gallons	30 40 50 60 70	9 12 15 18 21	0.9 1.2 1.5 1.8 2.1	20.1 16.8 13.5 10.2 6.9
40 Gallons	30 40 50 60 70	12 16 20 24 28	1.2 1.6 2.0 2.4 2.8	26.8 22.4 18.0 13.6 9.2
50 Gallons	30 40 50 60 70	15 20 25 30 35	1.5 2.0 2.5 3.0 3.5	33.5 28.0 22.5 17.0 11.5

COMPRESSIVE STRENGTH

Compressive Strength ASTM C39	
1 day	115 psi (0.80 MPa)

PACKAGING AND TRANSPORTATION

CONTAINER TYPE	TERRASET COMPONENT A	TERRASET COMPONENT B
5 Gal (Can)	-	22.6 kg 50 lbs
Steel Drum	240 .4 kg 530 lbs	-

Other packing units available on request.

Metering System

The metering method typically allows a more convenient way of mixing and pumping Terraset® than with the batch method.

1. In one tank, blend water with Terraset® Component B Hardener.
2. In another tank, blend water with Terraset® Component A Silicate to lower the viscosity.
3. Using a positive displacement pump, bring the two liquids together at the end of the discharge line, sending the combination through a static mixer at the injection point. (See Figure 1. Field Equipment)
4. Terraset® grout is now ready for injection.

The convenience of the metering system over the batch method is illustrated below.

Figure 1. (Field Equipment) Illustrates a layout using two variable speed positive displacement pumps feeding into a mixing chamber, located just before the point of injection. Terraset® Component A Silicate is blended with water in Tank (TA-1). This effectively cuts the viscosity of the base grout and ensures efficient mixing with the Terraset® Component B Hardener in the mixing chamber. Terraset® Component B Hardener is blended with water in Tank (TA2).

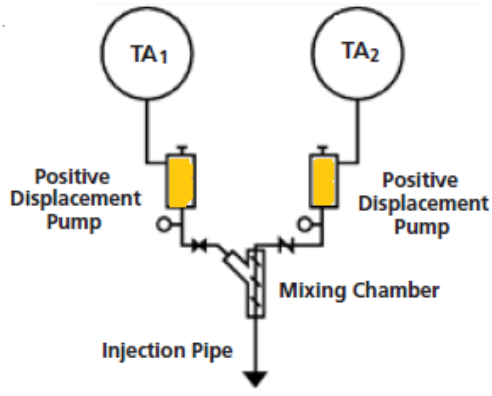

Figure 1. Field Equipment

SAFETY INSTRUCTIONS AND LIMITATIONS

Terraset® Component A silicate must be protected from freezing and should be monitored regularly for thickening that may occur.

STORAGE AND SHELF LIFE

One year in a cool dry place but do not allow material to freeze. Store away from direct sunlight or other heat sources which can reduce products usability and shelf-life.

DISPOSAL

If this product as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Dispose of material in accordance with all applicable federal, state/provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

APPROVALS AND CERTIFICATES

an ISO 9001:2015
Quality Management System Certified Company.

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ADDITIONAL DOCUMENTATION

Started more than 135 years ago, Minova is a global manufacturer and supplier of chemical and mechanical earth control products and support equipment. With manufacturing plants on five continents and operations in more than 25 countries, Minova is an industry-leading provider of ground support solutions for the underground mining, construction and energy industries.

If further information is required consult Minova Americas website: www.minovaglobal.com.

- Terraset® Component A Safety Data Sheet (SDS)
- Terraset® Component B Safety Data Sheet (SDS)
- Minova Technical Handbook for the Safe Use of injection Resins within the Mining Sector
- Minova Field Manual – Handling Injection Resins in Tunneling and Civil Engineering
- Minova Terraset® Product Specification

MANUFACTURER

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