STERLING® TECHNOTRADE
The Specialist Construction Chemical Company

TechFlow® ProGrout WT

High performance fluid precision, Zero-bleed, Sand-free Washout resistant & Non-shrink Cementitious Grout.

Description:

TechFlow® ProGrout WT is a pre-bagged factory quality controlled ready to use, high performance, Non-Shrink, High compressive strengths, cementitious specialty grout specifically formulated for grouting of stressed cables, bars, anchorages and tendons requiring corrosion protection. Addition of controlled amount of clean potable water on site the material readily mixes with water to produce a particularly fluid flowing grout which will penetrate and fill fine voids within and around the cables then harden without shrinking to give a high strength product.

TechFlow® ProGrout WT is a neat, high performance, shrinkage-compensated, anchoring grout. It is an unsanded, precisely proportioned blend of Portland cement-based, expanding, shrinkage-compensated, anchoring grout containing supplementary cementing materials and special chemical additives, silica fume and other carefully selected components.

TechFlow® ProGrout WT resists water washout, making it ideal for anchoring cables, tendons or bolts in rock or soil media containing sulphates. **TechFlow® ProGrout WT** meets the performance requirements of ASTM C 1107-02.

Application Includes:

TechFlow® ProGrout WT is specially designed for uses-

- Where high fluidity, extended working time, no bleeding, segregation or plastic settlement shrinkage, high strength and resistance to chloride penetration are required.
- Pumping grout through small opening over long distances.
- Grouting cable anchorages for highly stressed reinforcing steel.
- Repairs to concrete, such as cracks and honeycombing, filling small voids
- Pumping into areas around pre-tensioned or posttensioned cables and rods to encapsulate the steel and protect it against corrosion, and to provide maximum anchorage.
- Shrinkage compensated grouting in restricted spaces between precast wall panels, beams and columns where grout will be in contact with highly stressed steel.

Features & Benefits:

- **Pumpable-** into areas inaccessible to conventional grouts or grouting methods.
- **Non- shrink-** hardens without shrinkage within the sheath or hole ensuring maximum bond and protection against ingress of water while in service.
- **Specially formulated-** to enhance flow and protect stressed tendons, bolts or bars from corrosion.
- No bleeding or settlement shrinkage

Applications Instructions

Substrate Preparation

Remove all dirt, oil, grease, and other bond-inhibiting materials by mechanical means. Anchor bolts to be grouted must be degreased with suitable solvent which will not inhibit grout bonding. Follow solvent manufacturer's instructions and warnings. Concrete must be sound and roughened to promote mechanical adhesion. Prior to placing, surface should be brought to a saturated, surface-dry (SSD) condition.

Water Demand

Actual amount of water required will depend on desired consistency for the job and temperature (both ambient and grout). **TechFlow® ProGrout WT** is designed to be placed at fluid consistency (20 to 30 seconds on the flow cone, ASTM C939). As a guide, 30 KG (66 lb) bag of **TechFlow® ProGrout WT** placed at 23°C requires approximately 8.0 L to 10.0 L litres of water to provide a fluid grout.

For a 30 KG (66 lb) bag **TechFlow® ProGrout WT**, a lower water: Powder material ratio 8.0 L, should be used for pumpable consistencies while a higher water: Powder material ratio 10.0 L, should be used for flowable consistencies.

DO NOT use water in an amount or at a temperature that will cause the mixed grout to bleed or segregate.

Typical Properties at 25°C

Appearance		Free flowing grey powder (Typical Value)					
Wet Density ASTM C138		~ 2000-2020 kg/m3kg					
FLOW ASTM C 939		20-30 seconds					
Application time		~ 30 minutes					
Fine Aggregate		Contains none (sand-free)					
Compressive Strength ASTM C942*	Consistency	Unit	W/P Ratio	1day	3 Days	7 days	28 days
	Free flowing	50mm cube	0.33	> 20 MPa	> 34 MPa	> 45 MPa	> 55 MPa
Expansion ASTM C940		3 hrs between 0.0 and + 2.0 %					
Set Time	Free flowing Mix	Initial			Final		
		<4 hours			< 12.0		
Flow ASTM C 939		20-30 seconds					
Bleeding: ASTM C940		Nil					
Flow Characteristics (efflux Time) ASTM C939		25 – 35 sec					
R.H.		50 %					
Segregation		Nil					
Standards		Complies with ASTM C1107, Grade C.					

*Utilizing a high shear Colloidal Mixer anticipated efflux times will be between 6 to 15 Seconds using the Manufacturer's recommended water dosage. * Typical compressive strengths of 50mm cubes cured at 22°C, 25 second flow by flow cone. (Test Methods: AS 1478.2, Appendix A and Appendix C). The performance data is typical and based upon controlled

- **Long open time-** can be pumped and/or recirculated for relatively long periods of time.

Curing:

Cover any exposed grout with wet Cover any exposed grout with wet rags for 24 hours to prevent excessive moisture loss. Coat with **TechnoFinish® ConKure 101/102** curing compound after removal of wet bags. In cold weather, keep grout temperatures above 4°C until after final set. Thereafter keep grout temperature above freezing until a compressive strength of 28 Mpa is achieved for 24 hours. At ambient temperature, formwork should be removed no sooner than 24 hours after completion of grouting. The covering should stay in place for a further 6 days. Lack of sufficient curing could result in plastic cracking and drying shrinkage on the surface.

Cleaning:

All tools should be cleaned immediately after application on using fresh water. Hardened materials must be cleaned mechanically

Packaging:

TechFlow® ProGrout WT is available in 30 kg bags.

Storage & Shelf Life:

TechFlow®ProGrout WT has a shelf life of 12 months from date of manufacture if stored at temperatures between 5°C and 40°C in original unopened bags. If these conditions are exceeded, STIPL Technical representative should be contacted for advice.

Mixing

For best results use a colloidal mixer or other type of high shear mixer at approximately 1800 rpm. Mix for approximately three (3) minutes after the addition of the last bag or until a homogeneous mix is achieved. Continue to agitate material in the holding hopper to achieve best flow. Alternately, for quantities less than 1 bag, such as when vacuum grouting voids, mechanically mix with high speed drill (2500 rpm) and a Jiffy paddle for a minimum of six (6) minutes. Method of mixing will significantly affect the material properties, particularly flow. At higher temperatures and/or with higher water amounts, the grout will behave more non-thixotropically. Therefore, it may be more appropriate to measure the flow using the standard flow cone test (ASTM C939). The preferred efflux time is between 15 and 30 seconds under these conditions.

Add appropriate quantity of clean water. Add bag of material to mixing vessel. Start by using 7.5 L of water per 30 kg (66 lb) bag of material. Add additional water as needed [a total maximum of 9 L per 30 kg (66 lb) bag] in order to achieve the flow specified on the product data sheet. Ambient and material temperature should be as close as possible to 21°C (70°F). If higher, use cold water; if colder, use warm water.

laboratory conditions. Actual performance on the job site may vary from these values based on actual site conditions.

Formwork

It is essential that the formwork to be constructed is leak proof and water tight. In order to achieve this it is recommended that foam rubber strips or a suitable sealant such as polyurethane or silicone be used underneath the formwork. The formwork should be constructed, which will allow and ensure a grout head is maintained on the side above the level of the underside at the base plate. The formwork should allow for gravity flow of grout with a suitable grout head allowing for continuous flow between the base plate and the concrete substrate.

To ensure ease of formwork removal, the formwork should be coated with form oil or release oil prior to grouting (consult STIPL's Technical representative for additional information). It is recommended that **TechFlow® ProGrout WT** be kept in a cool environment and the use of cold water be used for mixing. It is recommended that in instances where the temperature is greater than 30°C, the grouting be conducted early in the day or late in the evening and sheltered from sunlight and direct heat.

Temperature

The recommended temperature range of the grout as mixed and of the hole or duct into which the grout is to be pumped is 10°C to 23°C. Higher temperatures increase the amount of mixing water needed for a given fluidity of the grout and limit working time. Lower temperatures retard set and early strength gain but permit reduced mixing water content for a given fluidity and, thus increase ultimate strength.

Low Temperature Working

At temperatures below 5ºC the cure rate and strength development rate will be dramatically reduced. If early strength is required, it is advisable to use heated water and condition **TechFlow® ProGrout WT** to 23ºC. Do not exceed this temperature.

High Temperature Working

When ambient and/or duct temperatures are above 30°C, consider mixing the grout at as cool a temperature as possible, but not below 10°C. Ducts should be cooled by circulating cold water. Cool the bags of **TechFlow® ProGrout WT** by storing them in a shaded area or a cool place and away from direct sunlight, and use cold or iced water for mixing the grout. If practical, the installation area should be shaded by erecting shade screens. If ambient temperatures are excessive, grouting should be scheduled for early morning or late afternoon.

Pumping

Before mixing grout, fill pump hopper with water and pump through grout lines to wet the pump, hose and pipe. Close valve at the end of the line, run pressure to above expected level and check for leaks. Then pump water out until pump hopper is empty. Make sure free water from pump lines has been removed before grout placement. Pour mixed grout into pump hopper through a screen with 3 mm openings. Start pump, catching and disposing of discharge until proper grout mixture flows out. For vertically drilled, anchor holes; pre-saturate holes for 24 hours prior to grouting. Then remove free water just before grouting.

Caution: some high speed, shear mixers require only 20 to 30 seconds to mix the grout, after which the grout must be immediately transferred to a slow speed agitator for holding until it is pumped. Failure to do so will cause the grout to overheat and cause loss of flow. Do not mix more grout than can be put through the pump in 10 to 15 minutes. Grout that becomes unworkable should be discarded.

Health & Safety Instructions:

TechFlow® ProGrout UW may cause irritation to skin or eyes. In case of accidental contact with eyes, immediately flush with plenty of water and seek medical advice is necessary. For further information refer to the Material Safety Data Sheet.

Disclaimer: The product information & application details given by the company & its agents has been provided in good faith & meant to serve only as a general guideline during usage. Users are advised to carry out tests & take trials to ensure on the suitability of products meeting their requirement prior to full scale usage of our products. Since the correct identification of the problems, quality of other materials used and the on-site workmanship are factors beyond our control, there are no expressed or implied guarantee / warranty as to the results obtained. The company does not assume any liability or consequential damage for unsatisfactory results, arising from the use of our products.

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Additional Information: Techno Builders Solutions® By Sterling Technotrade India Pvt.Ltd -The Specialist Construction Chemicals Company® range of associated products includes high performance concrete Admixtures, Adhesives, Protective Coatings, Concrete Repairs, Industrial Flooring, Grouts & Anchors, Joint Sealants, Surface Treatments, curing compounds, repair mortars, release agents, Grinding Aids & Waterproofing.

*Separate datasheet are available on these products.

Application

- Make sure all forming, mixing, placing, and clean up materials are on hand. The grout shall be used within 60 minutes from the start of mixing. When grouting ducts or critical elements, it is highly recommended that experienced, certified technicians complete the work.
- Underwater applications (using the minimum permissible water for mixing): To place the grout underwater with minimum aminimum of loss, inject the grout through a tube of 2.5 to 5 cm (1 to 2 in) in diameter with the lower end of which is embedded in the grout already in place.
- The tube is then raised as the injection proceeds, taking care that the extremity always remains sufficiently embedded in the grout to prevent any material washout.

Estimating Data

When mixed at 23°C with recommended amount of potable water for making flowable consistency grouts one 30 Kg (66 lb) bag of TechFlow®ProGrout WT will yield at approximately 0.020 m^3 (0.7 ft^3)

Optimum Performance

Not recommended for areas subjected to extremely high vibrations. Adhere to recommended water additions. Exceeding the recommended water: powder material ratio will result in reduced compressive strengths and inferior physical properties.

Precautions & Safety instructions

Do not use-
Where concrete rock surfaces with which the grout will be in contact cannot be pre saturated.
for the precision grouting of heavy operating machinery, crane rails, structural plates and column bases, expect for repairs where grout will be pumped into small clearances i.e. less than 25 mm.
Sterling Technotrade is not responsible for stress corrosion caused by contaminants in the water, in the space to be grouted or by other materials in the system.
TechFlow® ProGrout WT is non-toxic, but as with other materials containing Portland cement it has an alkaline nature and thus can be irritating to skin and eyes. Wear simple dusk mask and gloves when handling. Keep out of reach of children. Wash off splashes of grout with clean water. If irritation persists, seek medical advice.
For further information refer to the Material Safety Data Sheet.