



technical data sheet

TECHFLOW GROUT HS

Class C High Strength Cementitious Grout

PRODUCT

Techflow Grout HS is a high performance, high strength, nonshrink dual expansion Class C cementitious grout.

DESCRIPTION

Techflow Grout HS is a high performance, high strength nonshrink dual expansion, precision Class C cementitious grout. The highly fluid free flowing grout is a blend of Portland cement and graded aggregate which complies with US Corps of Engineers Specification of non-shrink grout, CRD-C621-82A and ASTM C1107-91 (Type C). Dual expansion compensates for shrinkage in both plastic and hardened states. For grouting gap distances 10mm to 140mm in a single application. Techflow Grout HS is supplied as ready to use dry powder requiring only the addition of a controlled amount of clean water to produce a free flowing non-shrink grout.

RECOMMENDED USES

- Cementitious grouting where high early strength is required
- Critical equipment base plates
- Heavy duty support beneath machine base plates
- Bridge bearing and crane rails
- Anchoring bolts, bars and fittings
- Underpinning
- Bridge bearing and crane rails
- Applications subject to continuous vibrations and dynamic loads.
- Precision grouting application.

FEATURES & BENEFITS

Dual expansion compensates for shrinkage in the plastic and hardened state Gaseous expansion system compensates for shrinkage and settlement whilst in the plastic state.

- Can be dry packed, rammed, trowelled, poured and pumped
- Economical, low in place cost
- Ready to use, pre-mixed, requires only the addition of water
- Non metallic iron content eliminates staining
- Lower water/cement ratio reduces drying shrinkage, increases durability and reduces permeability
- Excellent flow characteristics when used in fluid consistency, fills intricate cavities
- Complete void filling resulting from gaseous expansion in plastic state, Complies with the requirements ASTM C1107-91 and CRD-C-621-82A
- Excellent flow retention

PERFORMANCE PROPERTIES

Mixing Consistency

The table is a guide to the typical water addition requirements for various consistencies.

Litres of water per 20kg bag	Dry Pack	Flowable	Fluid
Range	2.8-3.1	3.2-3.5	3.6-4.0
Test Levels *	3.1	3.5	4.0

*Refers to the water content used to carry out performance testing as indicated in the tables below.

Setting Times

Vicat setting times at 20°C	Dry Pack	Flowable	Fluid
Initial Set	3.0hrs	4.5hrs	5.5hrs
Final Set	4.0hrs	6.0hrs	7.0hrd
Time for expansion Start (plastic state)	-	15-25min	15-30min
Time for expansion Finish (plastic state)	-	2-4hrs	2-4hrs
Unrestrained Expansion	-	1.5%	1.1%
Bleeding	0%	0%	0%

Tested at 20oC and 50%RH to AS1012.18 for setting times, AS2073 for expansions and AS1012.6 for bleeding.

Compressive Strength

Tested in accordance with AS1012.9, AS2073 at 20°C

Age	Dry Pack	Flowable	Fluid
1 day	44Mpa	40Mpa	22Mpa
3 days	72Mpa	67Mpa	45Mpa
7 days	83Mpa	75Mpa	59Mpa
28 days	90Mpa	83Mpa	67MPa

Flexural Strength

Tested in accordance to ATM C348-86 at 20°C

Age	Flowable	Fluid
1 day	4.1Mpa	3.9Mpa
7 days	10.5Mpa	9.8Mpa
28 days	11.5Mpa	10.5Mpa

Bond Strength

Tested in accordance to ASTM C882-1987 Slant/Shear method.

Age	Consistency	Strength
7 days	Flowable	>5Mpa
28 days	Flowable	>10Mpa

Drying Shrinkage

Tested in accordance to As1012.13

Time (days)	Consistency	Strength
7 days	Flowable	< 350 microstrain
28 days	Flowable	< 500 microstrain
56 days	Flowable	< 500 microstrain

Flow Characteristics

Using CRD-C flow core (Efflux time)

Initial Flow	20-30 seconds
Flow after 15 minutes	25-35 seconds
Flow after 25 minutes	35-45 seconds

YIELDS

The approximate yields are obtained if mixed in accordance with recommended procedures and accurately measured water content.

	Dry Pack	Flowable	Fluid
Litres per 20kg bag	10.2	10.7	11.0
Fresh wet density kg/m ³	2265	2196	2181
Bags req. per cubic metre	98	93	91

* Density tested to AS1012.5

PACKAGING

Techflow Grout HS is supplied in a 20kg polylined bag.

APPLICATION INSTRUCTIONS

SUBSTRATE AND SURFACE PREPARATION:

The substrate must be clean, sound and free from oil, grease, curing compound or any loose materials. It must be mechanically abraded back to a sound concrete. Bolts or anchor holes must be clean and free from dust or loose material. This can be achieved by blowing clean the hole.

PRE SOAKING:

It is essential to presoak the concrete substrate prior to application of Techflow Grout HS. Pre soak substrates for a minimum of 6 hours prior to grouting. Immediately before grouting, the excess water should be removed, all water in the anchor and bolt holes must be blown out and no traces of free water present whilst grouting.

BASE PLATE:

All traces of rust, oil or grease must be removed. It is essential to provide air pressure relief holes for venting.

FORMWORK:

It is essential that the formwork be constructed to facilitate rapid continuous and complete filling of area to be grouted. It is essential that the formwork constructed be leak proof and water tight. Use methods of forming that will allow grout to flow by gravity between the base plate and foundation ensuring grout is kept in full contact with these surfaces until it has hardened.

UNRESTRAINED SURFACES:

As Techflow Grout HS is an expanding grout, unrestrained areas must be kept to a minimum. It is advised not to have any unrestrained areas.

LOW TEMPERATURE WORKING:

Normal precautions for winter working with cementitious materials should then be adopted. At temperature below 5°C, 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 Grout HS to 25°C. Do not exceed these temperatures.

HIGH TEMPERATURE WORKING:

At temperatures above 30°C, it is advisable to use water below 20°C when mixing grout. All materials must be kept cool and away from direct sunlight with the installation area shaded by erecting shade screens. If ambient temperatures are excessive, perform grouting in early morning or late evenings.

MIXING

For optimum results, Techflow Grout HS must be mixed with a mechanical forced action mixer with a high shear stirrer. It is essential that the grouting operation is continuous therefore, ensure sufficient labour and mixing capacity is available. **DO NOT MIX BY HAND.**

The selected water content should be accurately measured into a mixing vessel. Slowly add the dry powder, Techflow Grout HS while mixing. The mixing should continue for a maximum of 5 minutes until a uniform homogeneous consistency is obtained.

DO NOT ADD ADDITIONAL WATER.

Discard any unused grout that has stiffened or hardened in the mixing bucket.

PLACING

It is essential that at ambient temperatures (approximately 20°C) the grout is placed within 25 minutes of mixing as this will ensure the expansion process is maximised. Techflow Grout HS can be placed in thickness ranging from 10mm to 140mm in one single application.

Where thickness is greater than 140mm, special procedures may be necessary. Consult your Bosik office for advice.

DO NOT ADD EXCESS AGGREGATE AS THIS WILL EFFECT WATER CONTENT.

Avoid trapping air and water by placing grout from one side only. It is recommended that a suitable head box be used to ensure continuous flow of grout. Ensure entire area to be grouted is filled by bringing level to above underside of machine base plate and remain at this level throughout grout placement. The grout head must be maintained at all times so that a continuous grout front is achieved. Do not use mechanical vibrators to assist in flow as this will cause segregation of aggregate. For large areas it is recommended that Techflow Grout HS be pumped. Contact your local Bostik office for further information.

Sufficient grout must be available prior to starting and the time taken to pour a batch must be regulated to the time taken to prepare the next one.

CURING

On completion of grouting exposed area should be covered with wet hessian, plastic sheeting or Bostik Bond N Cure to prevent excessive moisture loss. Keep grout covered for a minimum of 24 hours.

Remove formwork no sooner than 24 hours after completion of grouting and continue to cure with wet hessian, plastic sheeting, water or Bond N Cure curing agent. Lack of sufficient curing could result in plastic cracking and drying shrinkage on the surface. The surface should be protected for at least 7 days with either Bostik Bond N Cure, wet hessian or plastic sheeting

PRECAUTION

- Do not add additional water other than specified
- For large areas apply grout in a continuous operation
- Do not apply in areas less than 10mm depth
- Unrestrained areas must be kept to a minimum
- Cure time and set will be extended when applied at temperatures lower than 5°C.

STORAGE

Techflow Grout HES has a shelf life of approximately eight (8) months if kept in a dry environment completely away from moisture.

HEALTH AND SAFETY

HAZARDOUS

Risk: Irritating to eyes, respiratory system and skin. Risk of serious damage to eyes. Harmful: danger of serious damage to health by prolonged exposure through inhalation.

SAFETY DIRECTIONS: Avoid contact with skin and eyes. Avoid breathing dust. Wear overalls, safety shoes, impervious gloves and chemical goggles. Use only in well ventilated areas. If inhalation risk exists wear dust respirator. Avoid contact with foodstuffs. Wash hands thoroughly after use. Store in a cool place and out of direct sunlight. Keep containers closed when not in use. Do not empty into drains.

FOR FIRE: Non-combustible, however, if involved in a fire use water fog, foam or dry agents. Avoid breathing products of combustion.

FOR SPILLS: Clear area of all unprotected personnel. Slippery when spilt. Wear protective equipment. Collect and seal in properly labelled drums. Refer to State/Territory Land Waste Management Authority for disposal.

FIRST AID: If poisoning occurs, contact a Doctor or Poisons Information Centre (Phone Australia 131 126; New Zealand 0800 764 766).

SWALLOWED: If swallowed, do NOT induce vomiting. Give a glass of water. Seek medical assistance.

EYE: If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

SKIN: If skin contact occurs, remove contaminated clothing and wash skin thoroughly. If irritation occurs seek medical advice.

INHALED: Remove from contaminated area. Seek medical advice.

DO NOT REUSE CONTAINER UNLESS THOROUGHLY DECONTAMINATED.

SEE THE MATERIAL SAFETY DATA SHEET FOR ADDITIONAL INFORMATION.

EMERGENCY INFORMATION: 1800 033 111 (ALL HOURS)

CLEAN UP

Techflow Grout HS should be removed from tools and equipment with clean water immediately after use.

ITEM NO.	STOCK SIZE	COLOUR
TECHFLOW GROUT HS		
267759	20kg	Grey
TECHFLOW GROUT HES		
267767	20kg	Light Grey
TECHFLOW EPOXY GROUT		
267783	4 Litre Kit	Grey
267791	16 Litre Kit	Grey

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