Tecgrout HS

High strength Dual shrinkage compensated Class C Cementitious Grout

Uses

Tecgrout HS is a specially designed cementitious non shrink grout for use in critical applications where shrinkage needs to be eliminated, and high strength is required.

Advantages

- Dual expansion system compensates for shrinkage and settlement in the plastic state as well as longer term shrinkage.
- No metallic iron content to cause staining.
- Pre-packaged material overcomes potential on site batching variations.
- Develops high early strength without the use of chlorides.
- High ultimate strength and low permeability ensure the durability of the hardened grout.

Technical support

Aitken Freeman offers a comprehensive range of high quality, high performance construction products. In addition, Aitken Freeman offers technical support and on-site advice to specifiers, end users and contractors.

Application instructions

Preparation

Foundation surface

The substrate surface must be free from oil, grease or any loosely adherent material. If the concrete surface is defective or has laitance, it must be cut back to a sound base. Bolt holes or fixing pockets must be blown clean of any dirt or debris.

Pre-soaking

Several hours prior to grouting, the area of cleaned foundation should be flooded with fresh water. Immediately before grouting takes place, any free water should be removed with particular care being taken to blow out all bolt holes and pockets.

Description

Tecgrout HS is supplied as a ready to use dry powder. The addition of a controlled amount of clean water produces a flowing no shrink grout for gap thicknesses from 10mm up to 100mm.

Tecgrout HS is a blend of Portland cement, graded fillers and chemical additives which impart controlled expansion in the plastic state whilst minimising water demand. The low water demand ensures high early strength. The graded filler is designed to assist uniform mixing and produce a consistent grout.

Specification clauses

Performance specification

All grouting shown on the drawing must be carried out with a pre-packaged cement-based grout which is chloride free.
It shall be mixed with clean water to the required consistency. The plastic grout must not bleed or segregate.

A positive volumetric expansion shall occur while the grout is plastic by means of a gaseous system.

The compressive strength of the grout must exceed 60 MPa at 7 days and 85 MPa at 28 days.

The storage and placement of the grout must be in strict accordance with the manufacturer's instructions.

Suppliers specification

All grouting where shown on the drawing must be carried out using Tecgrout HS as manufactured by Aitken Freeman and used in accordance with the manufacturer's data sheet.

Properties

The following properties were obtained at a water: powder ratio of 0.20 and temperature of 20°C.

Base plate

It is essential that this is clean and free from grease, oil or scale. Air relief holes should be provided to allow venting of any isolated high spots.

Levelling Shims

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Formwork

The formwork should be constructed to be leakproof. This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints.

In some cases, it is practical to use a sacrificial semi-dry sand and cement formwork. The formwork should contain outlets for pre-soaking.

Unrestrained surface area

This must be kept to a minimum. Generally, the gap width between the formwork and the plate edge should not exceed 150mm on the pouring side and 50mm on the opposite side. It is advisable to have no gap at the flank sides.

Mixing

For best results a mechanically powered grout mixer should be used. When quantities up to 40kg are used, a slow speed drill fitted with a high shear mixer is suitable. Larger quantities will require a high shear vane mixer. Do not use a colloidal impeller mixer.

To enable the grouting operation to be carried out continuously, it is essential that sufficient mixing capacity and labour are available. The use of a grout holding tank with provision to gently agitate the grout may be required.

Consistency of mixed grout

The quantity of clean water required to be added to a 20kg bag to achieve the desired consistency is given below.

Flowable 3.8 – 4 litres

The selected water content should be accurately measured into the mixer. The total contents of the Tecgrout HS bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency.

Typical properties

Compressive strength	30MPa @ 1 day
	45MPa @ 3 days
	65 MPa @ 7 days
	90 MPa @ 28 days
Flexural Strength	3.0 MPa @ 1 day
	9.5 MPa @ 7 days
	12.0 MPa @ 28 days
Time for expansion	
Start:	5 minutes
Finish:	2 hours
Fresh Wet Density	Approximately 2160 kg/cu.m
	depending on the
	consistency used
Young's Modulus	25 GPa
Expansion	An expansion of up to
characteristics	1% overcomes plastic
	settlement in plastic
	material.
Setting Times	
Initial	165 minutes
Final	270 minutes

Placing

At 20°C, place the grout within 20 minutes of mixing to gain the full benefit of the expansion process. Tecgrout HS can be placed in thicknesses up to 100mm in a single pour when used as an underplate grout. For thicker sections it is necessary to fill out Tecgrout HS with well graded silt free aggregate to minimise heat build-up. Typically, a 10mm aggregate is suitable.

Any bolt pockets must be grouted prior to grouting between the substrate and the base plate. Continuous grout flow is essential. Sufficient grout must be prepared before starting. The time taken to pour a batch of grout must be regulated to the time to prepare the next one. Pouring should be from one side of the void to eliminate any air or pre-soaking water from being trapped under the baseplate. It is advisable to pour the grout across the shortest distance of travel. The grout head must be maintained at all times so that a continuous grout front is achieved.

Where large volumes have to be placed, Tecgrout HS may be pumped. A heavy-duty diaphragm pump is recommended for this purpose. Screw feed and piston pumps may also be suitable.

Estimating

Supply

Tecgrout HS is supplied in 20kg moisture resistant bags.

Yield

Allowance should be made for wastage when estimating quantities required. The approximate yield of a 20kg bag for different consistencies is:

Consistency	Flowable
Yield (litre)	12

Storage

Tecgrout HS has a shelf life of 12 months if kept in a dry store in sealed bags. If stored in high temperature and high humidity locations, the shelf life may be reduced.

Precautions

Health and safety

Tecgrout HS contains cement powders which, when mixed or become damp, release alkalies which can be harmful to the skin. During use, avoid inhalation of dust and contact with skin and eyes. Wear suitable protective clothing, gloves, eye protection and respiratory protective equipment. The use of barrier creams provides additional skin protection. In case of contact with the skin, rinse with plenty of clean water, then cleanse with soap and water.

In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice.

If swallowed, seek medical attention immediately - do not induce vomiting.

Material Safety Data Sheets (MSDS) are available to users of Aitken Freeman products on request to nearest Aitken Freeman distributor, or from our website. Always read the MSDS, data sheet and label carefully before first use of any product.

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Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of a Pavecure curing membrane, continuous application of water and/or wet hessian.

Cleaning

Tecgrout HS should be removed from tools and equipment immediately after use. Cured material can only be removed mechanically.

Limitations

Low temperature working

When the air or contact surface, temperatures are 5ºC or below on a falling thermometer, warm water (30-40ºC) is recommended to accelerate strength development.

For ambient temperatures below 10ºC the formwork should be kept in place for at least 36 hours.

Normal precautions for winter working with cementitious materials should then be adopted.

High temperature working

At ambient temperatures above 35ºC cool water (below 20ºC) should be used for mixing the grout prior to placement.

Store bags of Tecgrout HS under cover and keep as cool as possible.

Fire

Tecgrout HS Ultra is non-flammable.

Allied Products

Aitken Freeman manufactures a broad range of construction products including.

- Grouts
- Coatings
- Admixtures
- Adhesives
- Sealants
- Floor Toppings
- Floor Levelling Compounds
- Concrete Repair