

General-purpose, shrinkage-compensated, cementitious grout for dry packing, grouting, bolt fixing and bedding of machinery

Five Star* grout



Uses

- Under stanchion plates and machinery (static loads only)
- Grouting bearings, precast units, floors etc
- Fixing anchor bolts, ballustrades, crash barriers, starter bars
- Underpinning
- Void filling

Constraints

Five Star grout must only be used in confined situations, e.g. under baseplates, in holes etc.

About this product

Five Star grout is a premixed cementitious grout developed for applications where an economical grout with good flow and strength is required.

Five Star grout is based on specially selected Portland cements, graded aggregates and admixtures including a special form of carbon.

This special formulation produces a grout which conforms to ASTM C827 *Early Volume Change of Cementitious Mixtures*. It does not contain iron, aluminium or other additives which produce non-shrink characteristics by chemical reaction.

This eliminates any subsequent problems of dimensional instability, corrosion or staining.

Five Star grout is designed primarily as a flowing grout but can also be used at a trowellable or dry pack consistency.

Features and benefits

- ▲ **Five Star grout** is shown to be effectively non-shrink by ASTM C827 Early Volume Change of Cementitious Mixtures which, unlike other methods, measures expansion or shrinkage from time of placing
- ▲ Volume expansion to ASTM C827 when unrestrained is greater than 1.0%
- ▲ Precision grout suitable for use over a range of temperatures and site conditions
- ▲ Can be pumped, poured, trowelled or dry packed
- ▲ Does not contain iron, aluminium or other additives which have not withstood the tests of time
- ▲ Thermal expansion similar to that of good quality concrete
- ▲ Good flow properties
- ▲ Can be applied in thicknesses from 10 mm to 100 mm
- ▲ Does not significantly lose workability during pot life

Technical data

All tests carried out at max. water addition of 5 litres at 20°C unless otherwise stated

| | | | | |
|-----------------------------------|-------------------------|-----------------------|----------------------|----------------------|
| Water addition | 5 litres | | | |
| Water content % | 16.7% | | | |
| Cone flow (ASTM C939) | < 50 sec | | | |
| Table flow (CRD-C227) | 77% | | | |
| Final set (ASTM C191) | 6-7 hours | | | |
| Bleeding | none | | | |
| Short-term expansion (ASTM C827) | 1.0% | | | |
| Plastic density | 2100 kg/m ³ | | | |
| Long-term expansion (CRD-C588) | none | | | |
| Compressive strength | | 5°C | 10°C | 20°C |
| | 1 day | 0 | 3 N/mm ² | 12 N/mm ² |
| | 3 day | 12 N/mm ² | 14 N/mm ² | 23 N/mm ² |
| | 7 day | 25 N/mm ² | 28 N/mm ² | 45 N/mm ² |
| | 28 day | 38 N/mm ² | 45 N/mm ² | 55 N/mm ² |
| Flexural strength | 28 day | 9 N/mm ² | | |
| Tensile strength | 28 day | 3.5 N/mm ² | | |
| Bond strength (grout to concrete) | 7 day | 1.5 N/mm ² | | |
| Elastic modulus | 23.3 kN/mm ² | | | |

Five Star* grout

Preparation

All surfaces should be clean and sound. Concrete surfaces must be free from any contamination including oil, grease, laitance and dust – and for maximum bond, the surface should be roughened and pre-soaked with clean water.

Immediately prior to grouting, remove free water including that in bolt holes or recesses.

Metal surfaces must be free from rust, scale, oil or grease but removable metal shims should be lightly oiled.

Ensure bolt holes are free of dust, water or any loose material. Formwork should be well sealed to prevent leakage.

Mixing

This grout needs only to be mixed with sufficient water to give the consistency required. Mixing should be carried out in a proprietary grout mixer or in a bucket (where the height is at least 1½ times its diameter) by using a medium-speed drill (650 rpm) with an MR4-type helical attachment.

When using the maximum water to obtain a pourable grout, the following procedure is recommended. Pour about 2 litres of water into a suitable bucket, then add half the powder and mix to a thick paste consistency, ensuring any lumps are broken down by the shearing action. Continue mixing, adding more powder and some more water gradually into the vortex. After adding all the powder and having produced a mix of uniform creamy consistency, add the rest of the water slowly into the vortex to obtain the pourable grout. **Do not mix the grout for more than 5 minutes.**

Avoid entraining excessive quantities of air during mixing by keeping the mixing head below the grout level at all times.

To obtain the consistency required, add water as follows:

- Dry pack mix** Approx. 2.25 litres of water per 25 kg bag
- Trowellable mix** Approx. 3.5 litres of water per 25 kg bag
- Pourable mix** Up to 5 litres of water per 25 kg bag

Chemical resistance

When properly placed and cured **Five Star grout** is a dense low permeability material which does not suffer damage from frost attack and freeze/thaw conditions. The product does not contain any chlorides, sulphates or other harmful chemicals. Its permeability means it is highly durable and resistant to petrol, oils, diesel fuels, anti-freeze liquid and de-icing salts.

Application

When pouring, the area to be grouted should be shuttered and a header box used to maintain a grout head of 150 – 200 mm during the pour. Machine mixing is recommended to achieve continuous pouring. For large applications **Five Star grout** should be placed by pump and has been formulated to give a 35 minute working time. It does not contain metal particles; wear and tear on equipment is similar to conventional sand/cement mixes.

Mixing and placement can be carried out between +5°C and +40°C. In service, **Five Star grout** will perform similarly to other cementitious mixes based on Portland cement in the temperature range of –20°C to +150°C.

Continuous grout flow is essential and sufficient grout and water should be available to be mixed to ensure there is no discontinuity of the flow.

Where the thickness of grout is greater than 100 mm, use **Five Star repair concrete**.

The grout around the edges of baseplates must be finished flush with the sides by cutting the grout while still green after stripping formwork. Cracking due to expansion may result in such areas where there is no restraint.

Precautions

Five Star grout is based on Portland cement and good concreting practice with regards to placing and curing especially under winter conditions must be observed.

Do not add water above the recommended stated dosages.

Use only clean (potable) water. Avoid leaving unconfined areas of grout proud around bearings etc.

Packaging

Five Star grout is supplied in 25 kg polythene lined bags.

Coverage

For a pourable mix each 25 kg bag produces approximately 14.0 litres of grout i.e. 71 bags per cubic metre. When using a trowellable mix the yield is 13 litres i.e. 77 bags per cubic metre. For estimating purposes, 5% extra should be allowed for spillage during mixing and placing.

Storage and shelf life

When stored unopened in a dry place at temperatures above 5°C, shelf life is 12 months from date of manufacture.

Health and safety

Contains cement (Contains chromium (VI). May produce an allergic reaction). Harmful by inhalation. Irritating to eyes and skin. Keep out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical help. After contact with skin, wash immediately with plenty of soap and water. Wear suitable protective clothing, gloves and eye/face protection.

For further information, please request the Material Safety Data Sheet for this product.



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Technical services

Weber's Customer Services Department has a team of experienced advisors available to provide on-site advice both at the specification stage and during application. Detailed specifications can be provided for specific projects or more general works. Site visits and on-site demonstrations can be arranged on request.

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Weber products are distributed throughout the UK through selected stockists and distributors. Please contact the relevant Customer Services Team below for all product orders and enquiries.

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