BUILDING TRUST

PRODUCT DATA SHEET

SikaGrout®-212 Fluid

CEMENTITIOUS, HIGH FLOW, NON-SHRINK, GENERAL PURPOSE PRECISION GROUT

PRODUCT DESCRIPTION

SikaGrout®-212 Fluid is a cementitious, one-part, ready-to-mix, shrinkage compensated (non-shrink), free flowing, pumpable, general purpose engineering grout. Suitable for machine bases, void filling and anchoring. Application thickness: 10 to 100 mm. Meets the requirements of EN 1504-6: Anchoring of reinforcing bars.

USES

- General purpose grouting.
- Grouting heavy equipment / machine bases.
- Under stanchion plates.
- Bedding joints in precast concrete sections.
- Filling voids, cavities, gaps and recesses.
- Sealing around penetrations.
- Post fixings.
- Suitable for installing reinforcement with an anchoring product in accordance with EN 1504-6.
- Backfilling by pouring under support and distribution plates.
- Bridge and crane supports.
- Anchorages of metallic elements (e.g. rebars, bolts, etc.), metal and concrete posts, columns in prefabricated constructions, etc.
- Filling of cracks and confined voids inside concrete masses.
- For exterior and interior use.
- NOT to be used for levelling smooth and unconfined surfaces (i.e. NEVER as a flooring self-levelling underlayment).

CHARACTERISTICS / ADVANTAGES

- Easy to use (pre-bagged ready to mix powder).
- Pre-batched for quality.
- Just add water.
- Economical.
- Versatile - can be used for a variety of applications.
- High performance.
- High final strength.
- Shrinkage compensated (non-shrink).
- Fluid consistency.
- Consistency can be adjusted within the permissible water content range.
- No segregation or bleeding.
- Can be pumped long distances.
- Good fluidity, excellent for placement by pouring.
- Self-levelling.
- Free of chlorides and metallic particles (does not oxidise in contact with humidity; protects the metal against corrosion, due to its high pH).
- Slightly expansive.
- Rapid, high mechanical resistance.
- Excellent adhesion to concrete, mortar or steel. Provides a monolithic bond and resists shocks and vibrations.
- Non-corrosive and non-toxic.
- Fire rating and protection properties comparable to concrete (reaction to fire rating EuroClass A1).

APPROVALS / STANDARDS

CE Marking and Declaration of Performance to EN 1504-6 - Anchoring of reinforcing steel bar.

PRODUCT INFORMATION

Chemical Base	Special cement, selected aggregates and synergistic additives
Packaging	25 kg bag
Appearance / Colour	Grey powder

Shelf Life	12 months from date of production
Storage Conditions	Product must be stored in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +5 °C and +30 °C. Always refer to packaging.
Maximum Grain Size	D_{max}: ~4 mm

TECHNICAL INFORMATION

Compressive Strength (EN 196-1)

Water Content	1 day	7 days	28 days
3.125 Litres per 25kg Bag	≥25MPa	≥40MPa	≥45MPa
3.375 Litres per 25kg Bag	≥22MPa	≥35MPa	≥45MPa

Modulus of Elasticity in Compression: ~30 GPa

Flexural Strength (EN 196-1)

Time	Water Content	Flexural Strength
28 days	3.375 Litres of Water per 25kg Bag	~10MPa

Expansion: ≥0.1% after 24 hours (maximum 2%)

APPLICATION INFORMATION

Mixing Ratio	3.125 to 3.375 litres of water per 25 kg bag (12.5 to 13.5%)
Yield	25 kg of powder yields approximately 12.3 litres of mixed grout
Layer Thickness	10 mm minimum / 100 mm maximum
Ambient Air Temperature	+5 °C minimum / +35 °C maximum
Substrate Temperature	+5 °C minimum / +35 °C maximum
Application Time	In order to take full advantage of the expansive properties, following degasing for 1 to 2 minutes, SikaGrout®-212 Fluid should be applied without delay and preferably NOT more more than 10 minutes after mixing.
Fresh mortar density	~2.3 kg/l

VALUE BASE

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

FURTHER DOCUMENTS

Method Statement – Cementitious Grouts.

ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

- Do NOT exceed maximum water addition.
- Use only clean, potable water for mixing.
- Do NOT use vibrating pokers.
- If mixing with a drill and paddle:
  - The drill shall be high torque, slow speed (i.e. 200 to 500 rpm) with a suitable grout stirrer.
  - Use a clean, rigid mixing vessel - flexible containers (e.g. 'gorilla tubs') are unsuitable.
  - Add the appropriate quantity of clean, potable water to the mixing vessel first and gradually add the powder to the water, mixing continuously.
  - Keep the mixing head in the material - refrain from lifting in and out, as this will introduce air.
  - Once all powder has been added, mix until homogeneous (i.e. at least 3 minutes).
  - Do NOT try and mix too many bags at a time! Most drills and paddles are only capable of mixing one bag at a

time. Large volumes require specialist machinery.
  - Once fully mixed, leave the grout to de-gas for 1 to 2 minutes before use.
- Use only on clean, sound substrates (concrete shall be soaked to saturated surface dry (SSD) condition).
- Avoid application in direct sun and / or strong wind.
- Pour or pump continuously from one side only (keep header boxes / hoppers topped up for the duration of the application).
- Keep exposed surfaces to a minimum.
- Do NOT add additional water during the surface finishing, as this will cause discoloration and / or cracking.
- Protect freshly applied material from freeze-thaw action.
- If applying in cold conditions (i.e. at 0°C to +5°C) the application area should be covered (e.g. use of a heated tent system) to create a micro-climate, which should then be heated to ~+20°C for a minimum of 2 days prior to application. Store the Product, water and equipment in this environment until also at ~+20 °C.
- Following application, and if applied in cool conditions, or if cold conditions are expected, the use of insulating blankets or heated curing blankets is recommended for at least 72 hours to protect the fresh grout from cold temperatures and frost.
- To avoid cracking in warm temperatures, keep bags cool and use cold water.
- When the ambient temperature is warm, protect the working area from direct sunlight with temporary shelters or canopies. Do NOT expose equipment, materials or application to direct sunlight.
- When working in warm conditions and if being used, cover hoses with white membranes (or similar) to reflect heat and keep the hoses cool (or, if possible, do NOT use black / dark coloured hoses).
- Avoid exposure during rainfall and prior to final set.

SUBSTRATE QUALITY

Concrete, Mortar and Stone

The concrete must be structurally sound, thoroughly clean, free from ice, oil, grease, dust, loose material, surface contamination and materials which will impair the grout flow or reduce adhesion strength. Laitance, delaminated, weak, damaged and deteriorated concrete, and where necessary sound concrete, must be removed by suitable mechanical preparation as directed by the engineer or supervising officer. Any pockets or holes for structural fixings must also be thoroughly cleaned of all debris. The concrete 'pull-off' bond (tensile adhesion) strength should be >1.0 N/mm².

Steel and Iron

Clean, free from oil or grease, rust and scale, etc.

SUBSTRATE PREPARATION

Substrate Preparation

The substrate should be prepared by suitable mechanical preparation techniques such as high pressure water jetting, breakers, blastcleaning, scabblers, etc. The concrete substrates should be pre-soaked with clean water continuously for at least 2 to 6 hours (depending on porosity - 12 hours is recommended) to ensure a saturated surface dry (SSD) condition throughout the operation. Immediately before pouring / placing the grout, remove all excess or standing water from within any formwork, cavities or pockets.

Shutter / Formwork

Where formwork is to be used, all formwork must be of adequate strength, treated with release agent and sealed to prevent leakage of pre-wetting water and grout. Sealing can be achieved by using Sikaflex® - 11FC+ sealant beneath or around formwork and between joints. Ensure formwork includes outlets for extraction of the pre-soaking water (as a guide, leave a gap of approximately 150 mm on one side and 50 mm on the opposite side). A header box / hopper should be constructed on one side of the formwork so that a grout head of 150 - 200 mm can be maintained during the grouting operation.

MIXING

Measure the appropriate amount (within the stated water content range - do NOT exceed the maximum specified) of clean, potable water (if necessary, warm water to attain a temperature between +15 and +20° C) to achieve the desired grout consistency and pour into a clean, suitable mixing vessel for each complete unit of SikaGrout®-212 Fluid to be used. Flexible mixing vessels (e.g. 'gorilla tubs') are unsuitable - rigid vessels shall be used. Slowly add the powder to the water whilst continually mixing. Mechanical mixing should be carried out using either a high torque, slow speed (i.e. 200 to 500 rpm) drill with an appropriate grout stirrer, or a grout mixer set on slow speed for small mixes. The use of a drill and paddle (in most circumstances) is only suitable for mixing one bag at a time. For larger mixes, use forced action type mixers (NOT concrete tumble mixers which do not apply sufficient shear, NOR high speed or colloidal mixers, as these may cause thixotropy, leading to loss of flow). This Product is NOT suitable for mixing by hand. If using a drill and paddle, keep the mixing head in the material - refrain from lifting in and out, as this will introduce air. It is of utmost importance that the Product is mixed thoroughly (i.e. for at least 3 minutes) to the desired consistency, achieving a uniform, lump-free and smooth material. Fresh grout should be allowed to stand until the air entrapped by mixing has been released before application (typically 1 to 2 minutes). Larger volumes must be mixed using suitable grout mixing equipment combined with agitator for continuous large volume mixing. The volume capacity of the equipment must be applicable to the volume of material being mixed for a continuous operation. Equipment trials must be considered to ensure Product can be mixed satisfactorily.
Pour the minimum water ratio in the correct proportion into the grout mixer. While stirring the water, slowly add the powder to the water. Add more water within the mixing time until the desired consistency is achieved (NOT exceeding the maximum permissible). Mix continuously for a minimum of 3 minutes. For larger mixes, the mixing time must be extended to approximately 5 minutes (or as necessary) until the grout achieves a lump-free, smooth, homogeneous consist-

ency. Do NOT add more water than the maximum specified.
NOTE: Do NOT use tumble mixers or continuous mixing equipment.

APPLICATION

Reference must be made to further documentation where applicable, such as relevant Method Statement, Application Manual and installation or working instructions.

Pre-wetting
The prepared concrete substrate must be thoroughly saturated with clean, potable water for a recommended 12 hours before application of the grout. The surface must NOT be allowed to dry within this time. Prior to application of the grout, all water must be removed from within formwork, cavities or pockets and the final surface must achieve a dark matt appearance (saturated surface dry) without glistening.

Placing
Once the Product has been mixed and allowed to degas (which typically takes 1 to 2 minutes), apply the grout immediately to take advantage of the expansion properties. Pour or pump the mixed grout from one side of the formwork through the header box / hopper, ensuring continuous grout flow during the complete grouting operation to avoid trapping air. Keep header boxes / hoppers topped up for the duration of the application. Continue until the grout appears at the opposite side of the grouting area to the header box / hopper. Use steel banding or chains to assist flow where necessary. Do NOT disturb once grouting has been completed.
For large volume placement, grout mixers and pumps are recommended (e.g. Putzmeister SP11 TMR). Equipment trials must be undertaken to ensure product can be pumped satisfactorily.

Surface Finishing
Finish exposed grout surfaces to the required surface texture as soon as the grout has started to stiffen. Do NOT add additional water on the surface. Do NOT overwork the surface as this may cause surface discolouration and / or cracking. After the grout has initially hardened, remove formwork and trim edges while concrete is ‘green’.

CURING TREATMENT

After the grout has initially hardened, remove formwork and trim edges while concrete is ‘green’. Placed grout, which is exposed, should be cured in accordance with good concrete practice. Protect the fresh material from premature drying using an approved curing method (e.g. curing compound such as Sikafloor® ProSeal, moist geotextile membrane, hessian, polythene sheet, under water, etc.). In cold weather, apply insulating blankets or heated curing blankets to protect the Product and maintain a satisfactory constant temperature.

CLEANING OF TOOLS

Clean all tools and application equipment with water immediately after use. Hardened / cured material can only be mechanically removed.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika’s current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika’s recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product’s suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

SIKA LIMITED
Watchmead
Welwyn Garden City
Hertfordshire, AL7 1BQ
Tel: 01707 394444
Web: www.sika.co.uk
Twitter: @SikaLimited