

PRODUCT DATA SHEET

SikaGrout[®]-214 IN

High strength non-shrink pourable cementitious precision grout

DESCRIPTION

SikaGrout[®]-214 IN is a cement based 1-component, ready to mix, non-shrink, pourable and flowable, two stage expanding engineering grout in dry powder form. It is widely used for precision grouting in engineering applications subjected to static and dynamic loads.

USES

- To grout bearings, machine foundations, columns joints in precast construction etc.
- To grout anchors in concrete
- To grout cavities, gaps and voids in concrete
- To grout base plate of turbine, compressor, boilers, pumps and heavy machinery
- Sealing around penetrations
- Post fixings

CHARACTERISTICS / ADVANTAGES

- Dual shrinkage compensated
- Suitable for temperature of above 0 °C up to +200 °C
- Easy to mix, only add water
- Adjustable consistency
- Very good flow characteristics
- Rapid strength development
- Excellent bond to concrete
- No segregation or bleeding
- High final strengths
- Initial expansion by gas generation
- Impact and vibration resistant
- Non-corrosive to anchor bolts, base plate / saddle / frame, sliding plate
- Not harmful to concrete and reinforcing steel
- Not flammable
- Non-toxic
- Frost, oil and fire resistant
- Require normal curing
- Suitable to use under restraints and grout thickness required
- Expansive to counteract initial shrinkage
- Maximum flow distance is compatible to the dimensions of base plate / saddle / frame
- Resistant to the chemicals, gases etc. being handled in equipment
- Chloride free

PRODUCT INFORMATION

Product declaration	ASTM C1107
Chemical base	Portland cement, special additives and aggregates
Packaging	30 kg bag
Shelf life	6 months from date of production
Storage conditions	The product must be stored properly in undamaged and unopened original sealed packaging in dry conditions at temperatures between +5 °C and +35 °C. Protect from moisture, direct sunlight and frost.

Appearance / Colour	Grey powder
Maximum grain size	D _{max} : 2.36 mm
Density	Mixed density : 2.15 kg/L (EN ISO 2811-1)

TECHNICAL INFORMATION

Compressive strength	Curing time	Compressive strength	(ASTM C109)
	1 day	~25 N/mm ²	
	3 days	~35 N/mm ²	
	7 days	~45 N/mm ²	
	28 days	~65 N/mm ²	
Values at water : powder = 0.15, cube size 70.6 mm, curing temperature +30 °C			
Dynamic load test:			
Specimens of SikaGrout®-214 IN remained undamaged and show no change in compressive strength after subjecting to alternate stress fluctuation of 5 N/mm ² and 25 N/mm ² at 500 cycles per minute for 2 million cycles.			
Modulus of elasticity in compression	~30 000 N/mm ²		(ASTM C469)
Flexural strength	Curing time	Flexural strength	(ASTM C293)
	7 days	~9 N/mm ²	
	28 days	~10 N/mm ²	
Values at water : powder = 0.15, curing temperature +30 °C			
Splitting tensile strength	~3.5 N/mm ² (water : powder = 0.15, 28 days, +30 °C)		(ASTM C496)
Tensile adhesion strength	~2 N/mm ² (28 days, +30 °C)		(EN 1542)
Pull-out bond strength	Time	Pull out bond strength	(IS : 2770 Part 1)
	7 days	~19 N/mm ²	
	28 days	~20 N/mm ²	
Shrinkage	No shrinkage after initial setting		
Expansion	Upto 4 %		(ASTM C1090)

APPLICATION INFORMATION

Mixing ratio	Application	Water to powder ratio	Quantity of water per bag
	Flowable	Water : Powder = 0.15 to 0.16 (by weight)	4.5 L to 4.8 L
	Pourable	Water : Powder = 0.14 (by weight)	4.2 L
Fresh mortar density	2000–2300 kg/m ³		
Consumption	~1950 kg/m ³ (water : powder = 0.15)		
Layer thickness	100 mm max. Note: Higher layer thickness can be done with addition of aggregates. Contact Sika Technical Services for additional information.		
Ambient air temperature	+5 °C min. / +40 °C max.		
Substrate temperature	+5 °C min. / +40 °C max.		
Pot life	~20 minutes at +30 °C (water : powder = 0.15)		

BASIS OF PRODUCT DATA

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

Sika Method Statement : Cementitious grouting of machine bases and base plates

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

SUBSTRATE QUALITY / PRE-TREATMENT

Concrete

- The concrete must be structurally sound, thoroughly clean, free from 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 unsound 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 cleaned of all debris.

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.
- Ensure formwork includes outlets for removal of the pre-soaking water or use vacuum extraction equipment to remove water.
- For manual grout application, a header box or hopper must be constructed on one side of the formwork so that a minimum grout head of 150–200 mm can be maintained during the grouting operation.

MIXING

IMPORTANT

Do not add more water than the maximum specified.

IMPORTANT

Do not use continuous mixing equipment.

IMPORTANT

For large bedding holes and higher gaps or based on some specific customer requirements, duly washed coarse aggregates of size 6 mm down may be mixed with SikaGrout®-214 IN in the proportion of grout : aggregate = 2 : 1 (by weight). Trials are recommended to confirm suitability of aggregates to be used.

Electric single or double paddle mixer

1. Pour around 80 to 90 % of recommended amount of

- clean water into a clean mixing container.
2. Stir water slowly with a spiral paddle (< 500 rpm).
3. Add the complete bag of powder into the water while stirring slowly.
4. Add balance quantity of water and mix continuously for 3 minutes to achieve a uniform and lump free smooth consistency.
5. Wait for 1–2 minutes to allow the entrapped air to escape.

Grout mixer

IMPORTANT

Product must be mixed using suitable grout mixing equipment combined with agitator for large volume mixing.

IMPORTANT

Volume capacity of equipment must be proportionally greater than the volume of material being mixed.

Note: Equipment trials must be considered to make sure product can be mixed satisfactory before full project application.

1. Pour the minimum water ratio in the correct proportion into the grout mixer.
2. While stirring the water, slowly add the powder to the water.
3. Add more water within the mixing time up to the maximum allowed until the required consistency is achieved.
4. Mix continuously for a minimum of 4 minutes. For larger mixes the mixing time must be extended to approximately 6 minutes or as necessary until the grout achieves a lump free smooth consistency.

APPLICATION

IMPORTANT

Do not use SikaGrout®-214 IN for patch repair work or overlay in unconfined spaces etc.

IMPORTANT

Avoid application in direct sun and/or strong wind.

IMPORTANT

Protect freshly applied material from freezing and frost.

Strictly follow installation procedures as defined in method statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

Pre-wetting

- The prepared concrete substrate must be thoroughly saturated with clean water for a recommended minimum 2 hours before application of the grout.
- The surface must not be allowed to dry within this time.
- Before 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: Manual application

1. Apply the material within ~10 minutes after mixing to take advantage of the expansion properties.
2. Immediately after mixing, pour the mixed grout into the header box or hopper ensuring continuous grout

flow during the complete grouting operation to avoid trapping air.

Placing: Grout pump application

- For large volume placement, grout pumps are recommended.
- Equipment trials must be considered to ensure product can be pumped satisfactory.

Surface finishing

IMPORTANT

Do not add additional water on the surface.

IMPORTANT

Do not over work the surface as this may cause surface discolouration and cracking.

1. Finish exposed grout surfaces to the required surface texture as soon as the grout has started to stiffen.
2. After the grout has initially hardened, remove formwork and trim edges while concrete is 'green'.

Cold weather working

- Consider storing bags in a warm environment and using warm water to assist with achieving strength gain and maintaining physical properties.

Hot weather working

- Consider storing bags in a cool environment and using cold water to assist with controlling the exothermic reaction to reduce cracking and maintaining physical properties.

CURING TREATMENT

- Protect exposed grout surfaces after finishing from premature drying and cracking by curing under water for at least 72 hours. Keep exposed surfaces to a minimum.
- In cold weather, apply insulated blankets to maintain a constant temperature to prevent surface damage from freezing and frost.

CLEANING OF TOOLS

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

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

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.

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