

PRODUCT DATA SHEET

SikaGrout[®]-3170 R

High early strength onshore wind turbine engineered grout

DESCRIPTION

SikaGrout[®]-3170 R is a 1-part, cementitious grout which achieves high early and final strengths. Specifically designed for onshore concrete wind turbine joint connections between concrete precast elements.

USES

SikaGrout[®]-3170 R may only be used by experienced professionals.

- Filling horizontal joints between tower base and foundation
- Vertical and horizontal joints between precast concrete elements

FEATURES

- Ready to use, just add water
- Good flowability in vertical and horizontal orientation
- Suitable for pumping
- Self-compacting properties
- Low shrinkage
- Expansion compensated
- Resistant to freeze-thaw according to CDF
- Fast early strength development even at low temperatures
- High final strength

CERTIFICATES AND TEST REPORTS

- Flow dimension, Sedimentation, Shrinkage and Compressive Strength tests DafStb-Richtlinie Guideline, SikaGrout[®]-3170 R, Classification
- CE Marking and Declaration of Performance to EN 1504-3 - Concrete repair product for structural repair.

PRODUCT INFORMATION

Composition	Cement, selected aggregates and special additives
Packaging	25 kg bag
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.
Appearance and colour	Grey powder
Maximum grain size	D _{max} : 5 mm

TECHNICAL INFORMATION

Compressive strength	Compressive Strength class: C70/85		(EN 206-1)	
	Early strength: ≥ 40 N/mm ² after 24 hours (class A) in 100 mm cube		(DafStb Guideline)	
	Temperature¹	Time	Compressive Strength	(EN 12390-3)
	+5 °C	8 hours	>15 N/mm ²	
	+5 °C	24 hours	>30 N/mm ²	
	+5 °C	7 days	>60 N/mm ²	
	Temperature¹	Time	Compressive Strength	(EN 12390-3)
	+20 °C	5 hours	>15 N/mm ²	
	+20 °C	25 hours	> 40 N/mm ²	
	+20 °C	7 days	> 70 N/mm ²	

¹ Air and Concrete Temperature
For exposure classes: X0, XC 1-4, XD 1-3, XS 1-3, XF 1-3, XA 1-2/ WA according to the EN 206-1

Modulus of elasticity in compression	$> 30\,000$ N/mm ²	(EN 13412)
Shrinkage	Shrinkage class SVKM 0 according to DafStb Guideline	
Expansion	$> 0,1$ % volume after 24 hours	

APPLICATION INFORMATION

Mixing ratio	~3,1–3,25 litres of water for 25 kg of powder at temperatures between +5 °C and +30 °C.	
Fresh mortar density	~2,5 kg/l	
Yield	25 kg of powder yields approximately 11,0 litres of mortar	
Layer thickness	min. 20 mm / max. 200 mm	
Flowability	a3 (≥ 700 mm diameter)	(DafStb 2011)
Ambient air temperature	0 °C min.	
Substrate temperature	0 °C min.	
Pot Life	~30–60 minutes (depending on the ambient and concrete substrate temperature) at temperatures of the concrete between +5 °C to +30 °C	

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.

IMPORTANT CONSIDERATIONS

- Not suitable for hand mixing.
- Protect applied material from frost and freezing.
- Protect freshly applied material immediately.
- Keep exposed surfaces to a minimum.
- Avoid application in direct sun and, or strong wind.
- Use only on clean, sound substrate.
- The substrate must be free of ice.
- Do not exceed water addition.
- Not to be used for concrete repair works.
- Do not use vibrating pokers.

- Pour or pump from one side only.
- Do not add additional water during the surface finishing as this will cause discoloration and cracking.
- To avoid cracking in warm temperatures keep bags cool & use cold water for mixing.
- Avoid exposure during rainfall and prior to final set.

ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

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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 sound concrete must be removed by suitable mechanical preparation as directed by the engineer or supervising officer. Any pockets or holes for structural fixings should also be cleaned of all debris.

Shutter Formwork

Where formwork is to be used, all formwork should 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. As a guide leave a gap of approximately 15 cm on one side and 5 cm on the opposite side.

A header box or 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

Forced action pan mixer

Pour the correct amount of water into a suitable clean mixing container. While stirring slowly add the complete bag of powder into the water. Mix continuously for 3 minutes to achieve a uniform and lump free smooth consistency. Do not add more water than the maximum specified.

Grout mixer

SikaGrout®-3170 R must be mixed using suitable grout mixing equipment combined with agitator for continuous large volume mixing. Volume capacity of equipment should be applicable to the volume of material being mixed for a continuous operation. Equipment trials should be considered to ensure product can be mixed satisfactory.

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 up to the maximum allowed until the desired consistency is achieved.

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 consistency. Do not add more water than the maximum specified.

APPLICATION

Pre-wetting

The prepared concrete substrate must be thoroughly

saturated with clean water for a recommended 4–8 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

Apply the material shortly after mixing to take advantage of the expansion properties. Immediately after mixing pour or pump the mixed grout into the header box or hopper ensuring continuous grout flow during the complete grouting operation to avoid trapping air. For large volume placement, grout pumps are recommended. Equipment trials should be considered to ensure product can be pumped satisfactory.

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 over work surface as this may cause surface discolouration and cracking. After the grout has initially hardened, remove formwork and trim edges while concrete is 'green'.

Cold weather working

Consider using warm water to assist with achieving strength gain and maintaining physical properties.

CURING TREATMENT

Protect the fresh material from premature drying and cracking using an appropriate curing method e.g. curing compound, moist geo-textile membrane, hessian, polythene sheet etc. In cold weather apply insulated blankets to maintain a constant temperature to prevent surface damage from freezing and frost.

CLEANING OF EQUIPMENT

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

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LOCAL RESTRICTIONS

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

LEGAL NOTES

Any information or suggestions for use concerning Sika's products, which we either in writing or orally have given buyers or end-users of the product, have been given in good faith based on our own experiences and based on approved praxis and the technological and scientific knowledge on the time of giving such suggestions and information, which are given without any type of guarantees, and which do not lead to any further responsibility from Sika Danmark A/S, besides what is stated in the sales agreement in question. The buyer or end-user should themselves investigate or otherwise make sure, that our products are suitable for the use in question and further make sure that the products are kept and used correct and in agreement with the published rules and considering the actual conditions in order to avoid damages or less satisfactory results. Any order is accepted and any deliverance is affected according to the general terms of sales and delivery from Sika Danmark A/S, which are considered known and accepted, and which could be handed out when asked for. Our catalogues are not up-dated automatically. The present product data sheet is only for use in Denmark. Values stated in the present product data sheet should be seen as recommended, unless stated otherwise.

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