BUILDING TRUST

PRODUCT DATA SHEET

SikaGrout®-9110

(formerly NaX® Q110-E Onshore)

Ultra-high performance cementitious (UHPC), flowable grout with advanced technology for onshore wind installations

DESCRIPTION

SikaGrout®-9110 is a ready-to-use, cementitious grout that, when mixed with water, creates a flowable, cohesive, and impermeable ultra-high performance cementitious (UHPC) grout. Achieving high compressive strength quickly, even in low temperatures, makes this grout perfect for onshore wind turbine installations. Offering superior flowability, low water permeability, and resistance to aggressive ions, the grout also provides excellent corrosion protection and flexible installation options.

USES

SikaGrout®-9110 has been especially formulated for large scale, pump applications.

- Grouting of wind turbine installations, that are installed using pre-stressing techniques e.g. base plate grouting of onshore wind turbines
- Installations where excellent fatigue resistance is required
- Onshore turbines where ultra-high final strengths are required
- Grouting in a wide temperature range
- Anchoring anchor bolts of wind turbine towers
- All void filling from 25mm to 700mm (under tower flange) where high strength, high modulus, high ductility is important

Contact the Technical Department of your local Sika office regarding any application or dimensions required not mentioned here.

CHARACTERISTICS / ADVANTAGES

- High early compressive strength even at low temperature
- Ultra-high modulus for exceptional stiffening properties
- Excellent fatigue resistance
- Quick return to service and removal of temporary supports due to high early strength
- Can be pumped into complex areas or areas inaccessible to conventional grouting methods
- Excellent flowability
- Shrinkage compensated

PRODUCT INFORMATION

Packaging	SikaGrout®-9110 is supplied in special 25 kg bags Other package sizes will be considered on request.
Shelf life	12 months from date of production
Storage conditions	Product must be stored in original, unopened and undamaged sealed packaging in dry conditions away from direct sunlight and heat, within 5 to 35 °C. When stored under extreme low or high temperatures, and high humidity conditions, the shelf life may be reduced.

TECHNICAL INFORMATION

Compressive Strength	**Age**	**N/mm²**	(ASTM C109/C349/ TCVN 9204)
	7 days	≥ 90	
	28 days	≥ 105	
	Age	**N/mm²**	(EN 12390-3)
	7 days	≥ 85	
	28 days	≥ 100	
	150 x 300 mm cylinders		
Modulus of Elasticity in Compression	38.000 N/mm²		(ASTM C469/ EN 12390-13)
Tensile Strength in Flexure	10 N/mm²		(ASTM C348/ EN 1015-11)
Chloride Ion Diffusion Resistance	< 200 (very low penetrability)		(ASTM C1202)

APPLICATION INFORMATION

Mixing ratio	Approximately 12.4 – 13.6 % water / powder ratio		
Consumption	Approximately 500 liters per ton material		
Layer Thickness	25 - 700 mm		
Product Temperature	0 °C min. / +40 °C max.		
Ambient Air Temperature	0 °C min. / +40 °C max.		
Substrate Temperature	0 °C min. / +40 °C max.		
Pot Life	2 hours		
Flowability	**Flow cone**		
	+ 25 °C	≥ 330 mm	ASTM C1437-no strokes

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 CONSIDERATION

- To avoid cracking of exposed surfaces, protect from direct sun and, or strong wind.
- Use only on clean, sound substrate.
- The substrate must be free of ice.
- Do not exceed water addition.
- Protect freshly applied material immediately.
- Keep exposed surfaces to a minimum. To avoid cracking in warm temperatures keep bags cool & use cold water for mixing.
- Do not use vibrating pokers.
- Pour or pump from one side only. Avoid exposing surfaces during rainfall and prior to final set.

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

- SikaGrout®-9110 has been especially formulated for use in specific applications. As such SikaGrout®-9110 should be installed by experienced fully trained contractors.
- The temperature of spaces where the grout is to be pumped should be between 5ºC and 35ºC for optimum results.
- Sands or other products that could affect the products properties must not be added.
- SikaGrout®-9110 which will be exposed to strong drying conditions, e.g. mortar which is directly exposed to heavy wind and/or direct sunlight, should be protected using appropriate curing agents.

EQUIPMENT

Mixer type	Paddle mixer
Mixing time	Approximately 6 minutes
Application method	One continuous pour

SUBSTRATE QUALITY

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 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.

MIXING

SikaGrout®-9110 must be mixed using suitable grout mixing equipment combined with agitator for continuous large volume mixing. Volume capacity of 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 satisfactory before full project application. Put most of the water required in the mixer and add slowly the grout material. Mix until a homogeneous mortar (3 to 4 minutes), add the remaining water and continue mixing for at least another 2 minutes until the required fluid or flowable consistency is obtained. Mix with potable water only. Do not add more water than the maximum specified.

APPLICATION

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 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: 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
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 discoloration and cracking. 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 (immediately after levelling) from premature drying and cracking by curing under water for at least 72 hours (best 7 days). In cold weather apply insulated blankets to maintain a constant temperature to prevent surface damage from freezing and frost.

CLEANING OF TOOLS

Tools and spillages can be cleaned with water while SikaGrout®-9110 is still uncured. Once hardened, the material can only be removed mechanically.

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

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 can always refer to the most recent version of the local Product Data Sheet for the relevant product, available on our website. The information in any downloaded version is valid as of the time of download.

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