

PRODUCT DATA SHEET

SikaGrout®-9550

(formerly NaX® Q140-E)

Ultra-high performance cementitious (UHPC) grout with advanced nanotechnology for offshore wind turbine installations

DESCRIPTION

SikaGrout®-9550 is a ready-to-use, cement-based dry powder that forms a flowable, cohesive, and impermeable ultra-high performance cementitious (UHPC) grout when mixed with water. With advanced nano-engineered binder technology with blends of Portland, pozzolan, and special cements, achieves high compressive strength quickly. Offering excellent flowability and anti-washout properties, SikaGrout®-9550 is ideal for offshore wind turbine installations. Additionally, SikaGrout®-9550 is chloride-free, shrinkage-compensated, and highly resistant to water and aggressive ion penetration.

USES

SikaGrout®-9550 has been especially formulated for large scale, pump applications.

- Grouting of wind turbine installations, e.g. foundations, monopiles, transition pieces of wind towers, tripods and jacket structures where very good fatigue resistance is required.
- Grouting under very harsh conditions, e.g. offshore applications or below water grouting, at temperatures as low as 0 °C.
- All void filling from 25 mm to 600 mm thickness where high strength, high modulus is important. Contact the Technical Department of your local Sika office regarding any application required not mentioned here.

CHARACTERISTICS / ADVANTAGES

- Certified by Det Norske Veritas (DNV)
 - Ultra-high mean compressive strength ≥ 135 MPa.
 - Ultra-high modulus for exceptional stiffening properties.
 - Quick return to service and removal of temporary supports due to high early strength build-up. ≥ 70 MPa @ 24 hrs at 20 °C
 - Excellent fatigue resistance.
 - Excellent strength gain at low temperatures @ 0 °C at 24hrs
 - No wash-out during below water grouting
 - Pump able over long distances and large heights.
 - Good flowability
 - High early strength
 - Shrinkage compensated
 - No segregation or bleeding
 - Extended pot life
 - Widest range of application between 0 °C to 35 °C without special precautions
- Contact Sika Technical Department regarding any application at temperatures 35 °C to 45 °C.

APPROVALS / STANDARDS

- DNV Type Approval Certificate no. TAK00001BC

TECHNICAL INFORMATION

Compressive Strength	1 day	> 70 N/mm ²	(ASTM C109/C109M; EN 12390-3)	
	3 days	> 100 N/mm ²		
	7 days	> 115 N/mm ²		
	28 days	> 140 N/mm ²		
	91 days	> 145 N/mm ²		
	75 mm and 50 mm cubes			(EN 12390-3)
	1 day	> 70 N/mm ²		
	3 days	> 95 N/mm ²		
	7 days	> 105 N/mm ²		
	28 days	> 130 N/mm ²		
	91 days	> 135 N/mm ²		
	150 – 300 mm cylinder			
	Exposure classes			
XC4, XD3, XS3, XF3, XA2, WF			(DIN 1045-2; EN 206)	
Early compressive strength class		A		
Compressive strength class		> C100/115		
Classification according to DAfStb Richtlinie				
Modulus of Elasticity in Compression	53.000 N/mm ²		(EN 12390-13)	
	Poisson's ratio:			
	0.19		(ASTM C469)	
Tensile Strength in Flexure	20.0 N/mm ²		(EN 1015-11)	
Tensile Strength	8.0 N/mm ²		(ASTM C307)	
Shrinkage	Shrinkage class		SKVM 0	
	Classification according to DAfStb Richtlinie			
	Autogenous shrinkage			
	1 day	+ 0.050 mm/m	(ASTM C1698)	
56 days	- 0.130 mm/m			
Expansion	> 0.1 % vol.-%		(EN 445)	
Creep	Creep coefficient at 1 year	0.7	(ASTM C512)	
Chloride Ion Diffusion Resistance	< 100 (Negligible penetrability)		(ASTM C1698)	

PRODUCT INFORMATION

Packaging	SikaGrout®-9550 is supplied in special 25 kg bags and 500, 1000, 1500 kg big bags
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, not exceeding 40 °C. When stored under high temperature and high humidity conditions, the shelf life may be reduced.
Density	2.46–2.52 ton/m ³ (EN 12390-7)

APPLICATION INFORMATION

Consumption	Approximately 440 liters per ton material		
Layer Thickness	25–600 mm		
	Minimum	25 mm (valid for anchor cage grouting) 75 mm (valid for annuluses in tubular / conical grouted connections)	
	Maximum	600 mm	
Flowability	Initial	280–325 mm	(ASTM C1437)
	1 hour	260–280 mm	
	Flow through	> 620 mm	(EN 13395-2)
	Flow cone	> 290 mm	
	Flow class	f1	
	Classification according to DAfStb Richtlinie		
Product Temperature	0 °C min. / +35 °C max.		
Ambient Air Temperature	0 °C min. / +35 °C max.		
Mixing Ratio	7.5 % to 9.2 % water / powder ratio		
Substrate Temperature	0 °C min. / +35 °C max.		
Pot Life	3 hours		
Setting Time	Initial	Final	
	6–8 hours	8–10 hours	

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 INFORMATION

Sika Method Statement: SikaGrout®-9550

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.

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APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

- SikaGrout®-9550 has been especially formulated for use in specific applications. As such SikaGrout®-9550 should be installed by experienced fully trained contractors. Full application procedures are available on request.
- Sands or other products that could affect the products properties must not be added.

EQUIPMENT

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

MIXING

SikaGrout®-9550 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.

CLEANING OF TOOLS

Tools and spillages can be cleaned with water while SikaGrout®-9550 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 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.

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