

PRODUCT DATA SHEET

King® Nordic

HIGH PERFORMANCE SANDED GROUT FOR COLD WEATHER APPLICATIONS

PRODUCT DESCRIPTION

King® Nordic is a high performance, easily pumpable anchoring grout specifically designed for cold weather applications with temperatures ranging from -10 °C (14 °F) to 5 °C (40 °F). This product is a preblended and pre-packaged material that contains very fine natural aggregate and other carefully selected components. Nordic resists water wash-out making it ideal for cold weather applications such as the grouting of bored piles in permafrost and the anchoring of cables, tendons or bolts of various dimensions in different substrates subject to frost.

WHERE TO USE

- Structural grout medium for the installation and grouting of bored piles and micro piles used for structures erected on permafrost or other substrates subject to frost
- Structural grout for the construction of grout columns around shafts and standard helical pier foundation system piles
- Grouting of most types of anchors used in permafrost or other substrates subject to frost such as tendons, cables, dowels or bolts
- For applications where ambient temperature is above 5 °C (40 °F), refer to MS Cable or In-Pakt Precision
- Contact your Sika Technical Representative for recommendations or information on uses or conditions not listed

CHARACTERISTICS / ADVANTAGES

- Excellent compressive strength development in cold weather and permafrost
- Excellent pumpability
- Excellent cohesion and plastic stability
- Excellent resistance to wash-out
- Thixotropic properties reduce material loss in fractured ground
- Improved resistance to sulphate attack
- Very low permeability
- Non-corrosive, non-chloride, non-metallic
- Designed with natural normal-density non-reactive fine aggregate to eliminate potential alkali-aggregate reactivity (AAR)

PRODUCT INFORMATION

Packaging	▪ 25 KG (55 lb) bags <i>*Custom packaging is available to suit specific job requirements.</i>
Shelf Life	12 months in original, unopened packaging
Storage Conditions	Material should be stored in a dry, covered area, protected from the elements

Density**Mass density**2150 kg/m³ (134 lb/ft³)

ASTM C 109

TECHNICAL INFORMATION**Compressive Strength****CYLINDER 100 MM (4") DIAMETER x 200 MM (8") HIGH**

Grout temperature of 23 °C (73 °F) Curing Temperature of -10 °C (14°F) at 50% R.H.

1 Day	30 MPa (4350 psi)
7 Days	35 MPa (5075 psi)
28 Days	42 MPa (6000 psi)

ASTM C 39

Bleeding

Nil

ASTM C 940

SEGREGATION: Nil**APPLICATION INFORMATION****Yield**Approx. 14.0 L (0.49 ft³) of fluid grout per 25 KG (55 lb) bag

* Yield in service may slightly vary according to projects conditions

Flowability

Grout temperature of 23°C (73 °F)

Initial: 25 seconds ± 5 seconds

ASTM C 939

Setting Time

Ambient temperature of 21°C (70°F)

Initial

1-2 hours

ASTM C 191

Application Time**WORKING/PLACEMENT TIME**

20 minutes maximum

BASIS OF PRODUCT DATA

The following data was obtained under laboratory conditions with the pre-packaged bags of Nordic, batching water and mixing equipment conditioned to a temperature ranging from 21 °C (70 °F) to 25 °C (77 °F) as recommended in the Procedures section.

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

WHERE TO USE

- Not recommended for areas subjected to extremely high vibrations.
- Adhere to recommended water additions. Exceeding water:material ratio will result in reduced compressive strengths and inferior physical properties.
- Not recommended when ambient temperature is greater than or equal to 5 °C (40 °F). Refer to In-Pakt Precision or MS Cable when ambient temperature is greater than or equal to 5 °C (40 °F).

OTHER DOCUMENTS

Other means of identifications: King® Nordic NT

ENVIRONMENT, HEALTH & 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**MIXING**

In order to achieve the mechanical and plastic properties listed in the Technical Data section, the plastic temperature of King® Nordic after mixing must be between 21 °C (70 °F) and 25 °C (77 °F). The pre-packaged bags of King® Nordic and the batching water used to mix the grout must be maintained in a dry, closed container/environment that is protected from the elements and conditioned to a temperature ranging from 21 °C (70 °F) to 25 °C (77 °F). The temperature of the prepackaged bags of King® Nordic and the batching water must be between 21 °C (70 °F) and 25 °C (77 °F) prior to mixing. It is recommended to store and to operate the mixer in a dry and closed container/environment protected from the elements and conditioned to a temperature ranging from 21 °C (70 °F) to 25 °C (77 °F).

For a 25 KG (55 lb) bag, the recommended volume of water is 5.50 L (1.45 US gallons). Use potable water only. Introduce the required volume of water into the paddle mixer and gradually add King® Nordic while operating at medium speed. Increase mixer speed and continue mixing for 2 minutes. Mortar style mixers are not recommended for this purpose. Decrease mixer

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October 2023, Version 05.01

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speed to low and continue mixing while placing the grout. The time between the mixing and pumping of a batch should not exceed 20 minutes.

When mixing 2 x 25 KG (55 lb) bags of King® Nordic or less, it is possible to use a hand-held electrical drill mixer with an appropriate mixing paddle designed to mix a sanded grout.

APPLICATION

OPTIMUM PERFORMANCE

- It is recommended to use a piston grout pump with a minimum interior hose diameter of 25 mm (1") when pumping Nordic.
- Freshly mixed grout temperature must be between 21 °C (70 °F) and 25 °C (77 °F).

CLEAN UP

Clean all tools and equipment after use with water. Once hardened, the product can only be removed mechanically.

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.