

# PRODUCT DATA SHEET

## King® MS-Cable

### SHRINKAGE COMPENSATED GROUT MATERIAL FOR ANCHORING APPLICATIONS

#### PRODUCT DESCRIPTION

King® MS-Cable is a neat, high performance, shrinkage-compensated, anchoring grout. It is an unsanded, Portland cement-based, expanding, shrinkage-compensated, anchoring grout containing silica fume and other carefully selected components. MS Cable resists water washout, making it ideal for anchoring cables, tendons or bolts in rock or soil media.

#### WHERE TO USE

- For most grouted anchor requirements including, cable bolting, earth tie-backs for excavation or soil stabilization, grouting anchors in tunnel support systems, re-bar grouting and grouting soil or rock tendons for anchoring piles or foundation structures
- Infill of pipe piles
- Structural grout medium for injection-bored micropiles
- Grouting conventionally bored micropiles
- Post-grouting of micropile installations
- Construction of grout columns around shafts of standard Helical Pier Foundation System Piles

#### CHARACTERISTICS / ADVANTAGES

- Superior early strength gain, allowing early tensioning of anchors
- Excellent cohesive properties
- Resistant to water wash-out and dilution by water in wet ground conditions
- Excellent pumpability
- Thixotropic properties reduce material loss in fractured ground
- Reduced bleeding
- Improved resistance to sulphate attack
- Very low permeability

#### PRODUCT INFORMATION

<b>Packaging</b>	<ul style="list-style-type: none"> <li>▪ 20 kg (44 lb) bag</li> <li>▪ 25 kg (55 lb) bag</li> </ul> <p><small>*Custom packaging is available to suit specific project requirements</small></p>
<b>Shelf Life</b>	12 months in original, unopened packaging
<b>Storage Conditions</b>	Store dry, ensuring that product is not exposed to rain, condensation or high humidity
<b>Density</b>	<p><b>MASS DENSITY</b> <span style="float: right;">ASTM C109</span></p> <p>1950 kg/m<sup>3</sup> (121 lb/ft<sup>3</sup>)</p>

# TECHNICAL INFORMATION

## Compressive Strength

GROUT TEMPERATURE: +21 °C (70 °F)

	Curing temperature	
	+5 °C (40 °F)	+21 °C (70 °F)
1 day	4.5 MPa (650 psi)	28 MPa (4060 psi)
3 days	30 MPa (4350 psi)	40 MPa (5800 psi)
7 days	40 MPa (5800 psi)	45 MPa (6500 psi)
28 days	55 MPa (8000 psi)	60 MPa (8700 psi)

ASTM C109

King® MS-Cable tested with SikaCem® accelerator

GROUT TEMPERATURE: +21 °C (70 °F)

Dosage: 1 bottle (150 mL)

	Curing temperature	
	0 °C (32 °F)	+5 °C (32 °F)
1 day	-	8 MPa (1150 psi)
2 days	-	30 MPa (4350 psi)
3 days	-	40 MPa (5800 psi)
28 days	-	60 MPa (8700 psi)
	Curing temperature	
	+10 °C (50 °F)	+21 °C (70 °F)
1 day	15 MPa (2175 psi)	30 MPa (4350 psi)
2 days	35 MPa (5075 psi)	38 MPa (5500 psi)
3 days	42 MPa (6000 psi)	45 MPa (6525 psi)
28 days	60 MPa (8700 psi)	60 MPa (8700 psi)

Dosage: 2 bottles (300 mL)

	Curing temperature	
	0 °C (32 °F)	+5 °C (32 °F)
1 day	-	15 MPa (2175 psi)
2 days	20 MPa (3625 psi)	30 MPa (4350 psi)
3 days	25 MPa (3625 psi)	40 MPa (5800 psi)
28 days	40 MPa (5800 psi)	60 MPa (8700 psi)

## Expansion

3–6 % (volume unconfined)

ASTM C940

## Bleeding

Nil

ASTM C940

## Segregation

Nil

# APPLICATION INFORMATION

## Mixing Ratio

**For a 20 kg (44 lb) bag,** the recommended volume of water is 5.0 L (1.3 US gal.) to 6.7 L (1.77 US gal.). Note that for a 20 kg (44 lb) bag, a lower water:material ratio (5.0 L / 1.3 US gal.) should be used to achieve pumpable consistencies while a higher water:material ratio (6.7 L / 1.77 US gal.) should be used for flowable consistencies.

**For a 25 kg (55 lb) bag,** the recommended volume of water is 6.25 L (1.65 US gal.) to 8.3 L (2.2 US gal.). Note that for a 25 kg (55 lb) bag, a lower water:material ratio (6.25 L / 1.65 US gal.) should be used to achieve pumpable consistencies while a higher water:material ratio (8.3 L / 2.2 US gal.) should be used for flowable consistencies.

## Yield

- Approx. 0.0133 m<sup>3</sup> (0.47 ft<sup>3</sup>) of fresh grout / 20 kg (44 lb) bag
- Approx. 0.0167 m<sup>3</sup> (0.59 ft<sup>3</sup>) of fresh grout / 25 kg (55 lb) bag

*\*Yield in service may slightly vary according to projects conditions*

## Flowability

**FLOW**

ASTM C939

20–30 seconds

## PRODUCT DATA SHEET

King® MS-Cable

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## BASIS OF PRODUCT DATA

\*All moulds and mixing tools were pre-conditioned to the curing temperature, and the grout temperature was maintained at +21 °C (70 °F). Prepared test specimens were cast and then cured at the indicated test temperatures until the time of testing. Liquid/solids ratio (water + bottle Sikacem® Accelerator/King® MS-Cable ) = 0.33; [8.3 L (2.2 US gal.) of liquid per 25 kg (55 lb) bag of King® MS-Cable ]

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 strictly to recommended water additions.
- Exceeding the recommended water:material ratio will result in reduced compressive strengths and inferior physical properties.
- Do not use mortar-style mixer to mix material.

## 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

Mix to the consistency required for placement. Note that King® MS-Cable AW and King® MS-Cable 's thixotropic properties make the grout appear thick and cohesive when it is in fact very pumpable. Introduce potable water into a high shear mixer and then add powder while operating at medium speed. Increase mixer speed and continue mixing at high speed for three (3) to five (5) minutes. Decrease mixer speed to low and continue mixing while placing the grout. The time between mixing and pumping of the batch should not exceed 15 minutes.

### 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.