

PRODUCT DATA SHEET

King® MS-D1 X MTQ

SHOTCRETE MATERIAL FOR DRY-MIX PROCESS APPLICATIONS

PRODUCT DESCRIPTION

King® MS-D1 X MTQ is a pre-blended, pre-packaged, dry-process shotcrete material containing Portland cement, silica fume, air-entraining admixture, blended aggregates and other carefully selected components. It has greatly enhanced shooting characteristics and physical properties.

WHERE TO USE

- Rehabilitation of concrete bridges, dams, reservoirs, tunnels, marine structures and parking ramps
- Lining and rehabilitation of sewers and water mains
- New construction including slope stabilization, soil nailing, shaft and tunnel linings, pools and other concrete structures

CHARACTERISTICS / ADVANTAGES

- Air-entrainment provides superior resistance to freeze-thaw cycling and salt-scaling resistance
- Improved adhesive and cohesive plastic properties
- Significantly reduced rebound, resulting in lower material usage
- Improved ability to build greater thicknesses in a single pass in both vertical and overhead orientations
- Improved resistance to water wash-out
- Improved resistance to sulphate attack
- Very low permeability
- Low shrinkage
- Designed with natural normal-density non-reactive aggregates to eliminate potential alkali-aggregate reactivity (AAR)

PRODUCT INFORMATION

Packaging

- 30 kg (66 lb) bags
 - 1000 kg (2205 lb) FIBC
- Custom packaging is available to suit specific project requirements

Shelf Life

12 months in original, unopened packaging

Storage Conditions

Store in a dry, covered area, protected from the elements

TECHNICAL INFORMATION

Compressive Strength

1 day	15 MPa (2175 psi)	ASTM C 1604
3 days	20 MPa (2900 psi)	
7 days	25 MPa (3625 psi)	
28 days	35 MPa (5076 psi)	

4 hours	--	ASTM C 116 (modified)
8 hours	5 MPa (725 psi)	
12 hours	7 MPa (1015 psi)	

Tensile Strength in Flexure

28 days	6.5 MPa (940 psi)	ASTM C 78
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Shrinkage	UNIAXIAL DRYING SHRINKAGE 900 µm/m	ASTM C 157
Chloride Ion Diffusion Resistance	CHLORIDE ION PENETRABILITY 700 Coulombs	ASTM C 1202
Porosity	AIR CONTENT 6% ± 2%	ASTM C 457
	BOILED ABSORPTION 6.0%	ASTM C 642
	MAXIMUM AIR VOID SPACING FACTOR 300 µm/m	ASTM C 457
	MAXIMUM VOLUME OF PERMEABLE VOIDS 15.0%	ASTM C 642
Freeze thaw resistance	96% Excellent durability factor	ASTM C 666
Salt Resistance	SALT-SCALING RESISTANCE 1.2 kg/m ² (0.24 lb/ft ²)	ASTM C 672

APPLICATION INFORMATION

Yield	<ul style="list-style-type: none"> ▪ Approx. 0.014 m³ (0.5 ft³) / 30kg (66 lb) bag ▪ Approx. 0.45 m³ (16.5 ft³) / 1000 kg (2205 lb) FIBC <small>Yield in service may slightly vary according to project conditions</small>		
Setting Time	Initial	60 minutes	ASTM C 1117
	Final	70 minutes	

BASIS OF PRODUCT DATA

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

- Product should not be applied when ambient substrate and material temperatures are below 5 °C (40 °F) or above 35 °C (95 °F).
- Performance of in-place shotcrete relies heavily upon application techniques. To ensure optimum quality of in-place shotcrete, the material, equipment and key personnel should be pre-qualified prior to project start-up.

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

SURFACE PREPARATION

Repair or Rehabilitation

All surfaces to be in contact with King® MS-D1 X MTQ must be free from dust, oil, grease or any other foreign substances that may interfere with the bond of the material. Remove all loose or delaminated concrete providing a roughened surface and a minimum of 25 mm (1 inch) clearance behind any corroded reinforcing steel. The perimeter of the repair area should be saw-cut a minimum of 20 mm (¾ inch). Clean the area to be repaired with potable water, leaving the concrete saturated but free of standing water (SSD).

APPLICATION

Apply King® MS-D1 X MTQ in accordance with the ACI 506 "Guide to Shotcrete" publication

OPTIMAL PERFORMANCE

- For adverse temperatures, follow ACI recommendations for Cold/ Hot Weather Concreting.

CURING TREATMENT

Curing is essential to optimize physical properties of the shotcrete and minimize plastic shrinkage. King® MS-D1 X MTQ should be cured immediately after material has reached initial set in accordance with ACI 308 "Guide to Curing Concrete". Continuously moist cure for a minimum period of 7 days. Alternatively, moist cure for a minimum period of 24 hours and ap-

ply a curing compound that complies with ASTM C 309. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, high winds and low humidity.

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.