

PRODUCT DATA SHEET

King[®] MS-D1 MTQ

SHOTCRETE MATERIAL FOR DRY-MIX PROCESS APPLICATIONS

PRODUCT DESCRIPTION

King[®] MS-D1 MTQ is a pre-blended, pre-packaged, shotcrete mix reinforced with synthetic fibres designed for dry process application. It is formulated with Portland cement, silica fume, air-entraining admixture, synthetic fibres, sand and stone as well as than other carefully chosen additives. It presents excellent shooting characteristics as well as superior physical properties.

WHERE TO USE

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

CHARACTERISTICS / ADVANTAGES

- Grade FR Class I shotcrete in accordance with ASTM C1480
- Micro-synthetic fibres reduce cracking caused by intrinsic stresses
- 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
- Low shrinkage
- Very low permeability
- Improved resistance to sulphate attack
- Mix approved by the Ministère des transports du Québec for dry mix shotcrete application

PRODUCT INFORMATION

Packaging	<ul style="list-style-type: none"> ▪ 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	10 MPa (1450 psi)	ASTM C1604
	3 days	15 MPa (2175 psi)	
	7 days	25 MPa (3625 psi)	
	28 days	35 MPa (5076 psi)	
Tensile Strength in Flexure	28 days	6.5 MPa (940 psi)	ASTM C78
Shrinkage	UNIAXIAL DRYING SHRINKAGE		ASTM C157
	650 µm		

Chloride Ion Diffusion Resistance	CHLORIDE ION PENETRABILITY 700 Coulombs	ASTM C1202
Porosity	AIR CONTENT 6 % ± 2 % MAXIMUM AIR VOID SPACING FACTOR 300 µm BOILED ABSORPTION 6.0 % MAXIMUM VOLUME OF PERMEABLE VOIDS 15.0 %	ASTM C457 ASTM C457 ASTM C642
Freeze thaw resistance	100 % Excellent durability factor	ASTM C666
Salt Resistance	SALT SCALING RESISTANCE 0.1 kg/m ² (0.02 lb/pi ²)	ASTM C672

APPLICATION INFORMATION

Yield

- Approx. 0.014 m³ (0.5 ft³) / 30 kg (66 lb) bag
 - Approx. 0.45 m³ (16.5 ft³) / 1000 kg (2205 lb) FIBC
- Yield in service may slightly vary according to project conditions

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.

LIMITATIONS

- 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

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

Clean the area to be repaired with potable water, leaving the concrete substrate saturated but free of standing water(SSD).

APPLICATION

Apply in accordance with the ACI 506 “ *Guide to Shotcrete* ” publication.

PERFORMANCE OPTIMALE

- For adverse temperatures, follow ACI recommendations for Cold/Hot Weather Concreting.
- For cold temperature applications, use King® MS-D3

CURING TREATMENT

Curing is essential to optimize physical properties of the shotcrete and minimize plastic shrinkage. Product 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 seven (7) days. Alternatively, moist cure for a minimum period of 24 hours and apply a curing compound that complies with ASTM C309. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, high winds and low humidity.

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.

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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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