MS-S10 SCC

A SIKA COMPANY

MS-S10 SCC is a high performance, pre-packaged, self-consolidating, concrete repair material. It is a pre-blended, pre-packaged, high performance, flowable, concrete material containing Portland cement, silica fume, 10 mm (3/8 inch) stone and other carefully selected components.

FEATURES & BENEFITS

- Superior plastic properties provide a fluid mix with self-consolidating characteristics without bleeding or segregation
- Easily consolidated without rodding or vibrating
- Air-entrainment provides superior resistance to freeze-thaw cycling and salt-scaling in the presence of de-icing salts
- Excellent pumpability
- Properties similar to conventional concrete, thus offering excellent compatibility with exisiting concrete
- Improved resistance to sulphate attack
- Very low permeability
- Low shrinkage
- Compatible with integral, pre-applied and/or post-applied corrosion inhibitors*
- Designed with natural normal-density non-reactive fine and coarse aggregates to eliminate potential alkali-aggregate reactivity (AAR)
- All KING products are manufactured using ISO 9001:2015 Certified Processes

*For more information regarding the use of a corrosion inhibitor in conjunction with MS-S10 SCC, please contact your KING Technical Representative.

OPTIONAL FEATURES & BENEFITS

CORROSION INHIBITOR

MS-S10 SCC CI

- Corrosion inhibitor protects steel reinforcing and other metals embedded in concrete from corrosion induced by carbonation or chlorides
- Pre-blended corrosion inhibitor provides the correct dosage to enhance corrosion protection

USES

- Formed repairs of concrete beams, columns, soffits, and/or shear walls in bridges, parking garages or other concrete structures
- Place MS-S10 SCC at a minimum thickness of 50 mm (2 inches)
- Use MS-S10 SCC for closed formed repairs only

PROCEDURES

Surface Preparation: All repair surfaces must be free from dust, oil, grease or any other foreign substances that may interfere with the bond of the material. Remove all delaminated or unsound 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).

Mixing: Mechanical mixing using a concrete drum-mixer, mortar-style mixer or drill-mixer, is required when mixing MS-S10 SCC. Do not mix MS-S10 SCC manually. **Place 2.8 L (0.74 US gallon) of water into mixer** and slowly introduce entire bag of MS-S10 SCC. If additional water is required to meet the target slump flow slowly add additional water while mixer is running, not exceeding the **maximum recommended water content of 3.15 L (0.83 US gallon) per 30 KG (66 lb) bag.** Continue mixing for 3 minutes and stop only when material has obtained a consistent homogeneous mix. Restrict mixing time to 2 minutes when using a drill/paddle style mixer.

Placing: Mix and substrate temperatures should be maintained between 5 °C (40 °F) and 30 °C (86 °F). Do not place MS-S10 SCC when ambient temperature is below 5 °C (40 °F). Refer to ACI 306, “Guide to Cold Weather Concreting”. In warm weather, ice water may be used to cool mix temperature and avoid short working time. When ambient temperature is above 30 °C (86 °F), refer to ACI 305, “Guide to Hot Weather Concreting”.

Fill the formwork with water in order to fully saturate the substrate and formwork. Repair any leaks in the formwork, as the formwork should be watertight. Drain water before introducing the MS-S10 SCC. Gravity feed or pump MS-S10 SCC into forms and allow mix to fully encapsulate any existing rebar. Rodding and vibrating of mix is not required. Forms should not be removed until mix has attained 75% of its 28 day strength. Refer to ACI 347, “Guide to Formwork for Concrete”.

Placing (for overhead or vertical pumping applications): Follow pump manufacturers recommendations for pumping. Formwork should contain drainage outlets for pre-wetting substrate. Fill the formwork with water in order to fully saturate the substrate and formwork. Repair any leaks in the formwork, as the formwork should be watertight. Drain water before introducing the MS-S10 SCC. For soffit repairs, vent holes should be included for air venting. Entry points for MS-S10 SCC should not be spaced more than 600 mm (24 inches) apart. An acceptable form release agent should be used for easy removal of forms. Pump mix into forms ensuring that no voids are left in any locations. Forms should not be removed until mix has attained 75% of its 28 day strength. Refer to ACI 347 “Guide to Formwork for Concrete”.

CURING

Curing is essential to optimize physical properties of the concrete and minimize plastic shrinkage. Curing should begin immediately after forms are removed in accordance with ACI 308 “Guide to Curing Concrete”. Moist curing should be conducted for a minimum period of 7 days after placement. Alternatively, moist cure for a minimum period of 24 hours and apply a curing compound that complies with ASTM C 309. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, direct sun, high winds and low humidity.

TECHNICAL DATA

The following data is representative of typical values achievable under laboratory conditions. Results in the field may vary.

MASS DENSITY		
	ASTM C 39	2300 kg/m^3 (143 lb/ft^3)
SLUMP FLOW		
	ASTM C 1611	650 mm ± 50 mm (26 inches ± 2 inches)
J-RING PASSING ABILITY		
	ASTM C 1621	0 to 25 mm (0 to 1 inch) (No visible blocking)

KING PACKAGED MATERIALS COMPANY
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COMPRESSIVE STRENGTH

ASTM C 39	
1 Day	10 MPa (1500 psi)
3 Day	25 MPa (3625 psi)
7 Day	30 MPa (4350 psi)
28 Day	40 MPa (5800 psi)

FLEXURAL STRENGTH

ASTM C 78	
7 Day	7.5 MPa (1075 psi)
28 Day	10.5 MPa (1525 psi)

MODULUS OF ELASTICITY

ASTM C 469	
28 Day	26.4 GPa (3.8 x 10^6 psi)

AIR CONTENT

ASTM C 457	4.0-9.0%

BOND STRENGTH

CSA A 23.2-6B (MODIFIED)	
28 Day	1.5 MPa (215 psi)

BOND STRENGTH BY SLANT SHEAR

ASTM C 882	
28 Day	21 MPa (3000 psi)

UNIAXIAL DRYING SHRINKAGE

ASTM C 157	
30 Day	400 µm/m

FREEZE-THAW RESISTANCE

ASTM C 666	99% (Excellent durability factor)

SALT-SCALING RESISTANCE

ASTM C 672	
50 Cycles	< 0.03 kg/m^2 (0.006 lb/ft^2)

CHLORIDE ION PENETRABILITY

ASTM C 1202	750 Coulombs

YIELD
30 KG (66 lb) bag contains approximately 0.014 m^3 (0.5 ft^3).

PACKAGING
MS-S10 SCC is normally packaged in 30 KG (66 lb) triple-lined bags and polywrapped on wooden pallets. All KING products can be custom packaged to suit specific job requirements.

STORAGE AND SHELF LIFE
Material should be stored in a dry, covered area, protected from the elements. Unopened bags have a shelf life of 12 months.

SAFETY PROCEDURES
MS-S10 SCC contains Portland cement. Normal safety-wear such as rubber gloves, dust mask and safety glasses used to handle conventional cement based products should be worn. Safety Data Sheets are available upon request.

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