RS-S10 SCC

A SIKA COMPANY

RS-S10 SCC is a high performance, very rapid hardening, polymer-modified, pre-packaged concrete material. It is a pre-blended, pre-packaged, high performance, cementitious, concrete repair and construction material powered by Rapid Set® technology, containing a redispersible polymer, 10 mm (3/8 inch) stone and other carefully selected components.

FEATURES & BENEFITS

- Very high early strength for reduced construction schedule
- Superior plastic properties provide a fluid mix with self-consolidating characteristics without bleeding or segregation
- Easily consolidated without rodding or vibrating
- Properties similar to conventional concrete, thus offering excellent compatibility to parent concrete
- Excellent bond to parent concrete without requiring a bonding agent
- 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 RS-S10 SCC, please contact your KING Technical Representative.

OPTIONAL FEATURES & BENEFITS

CORROSION INHIBITOR

RS-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

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

PROCEDURES

Surface Preparation: All surfaces to be in contact with RS-S10 SCC 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 RS-S10 SCC. Do not mix RS-S10 SCC with a planetary mixer and do not mix RS-S10 SCC manually. **Place 2.35 L (0.62 US gallon) of water into mixer** and slowly introduce entire bag of RS-S10 SCC. Only 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 2.75 L (0.73 US gallon) per 30 KG (66 lb) bag**. Continue mixing for 3 minutes and stop only when material has obtained a consistent homogeneous mix.

Placing: When the ambient temperature is between 0 °C (32 °F) and 10 °C (50 °F), the temperature of the fresh concrete must be maintained between 21 °C (70 °F) and 30 °C (86 °F) to promote early age strength gain. The substrate temperature must be maintained above 0 °C (32 °F), until the material has reached final set. When the ambient temperature is below 0 °C (32 °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 RS-S10 SCC. Gravity feed RS-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 a minimum compressive strength of 25 MPa (3625 psi). Refer to ACI 347, “Guide to Formwork for Concrete”.

CURING

Curing is essential to optimize the physical properties of RS-S10 SCC and minimize plastic shrinkage. Protect from moisture loss for only 3 hours after material has reached initial set. Alternatively, apply a water-based curing compound that complies with ASTM C 309 after material has reached initial set or after the removal of formwork. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, 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	2260 kg/m^3 (141 lb/ft^3)
WORKING TIME$^\Delta$		
		20 minutes
SET TIME$^\Delta$		
	Initial	30 minutes-1 hour
	Final	45 minutes-1 hour 15 minutes
SLUMP FLOW		
	ASTM C 1611	625 mm ± 50 mm (25 inches ± 2 inches)
COMPRESSIVE STRENGTH$^\Delta$		
	ASTM C 39	**50% HUMIDITY CURE**
	3 Hour	25 MPa (3625 psi)
	1 Day	35 MPa (5075 psi)
	3 Day	37 MPa (5360 psi)
	7 Day	40 MPa (5800 psi)
	28 Day	45 MPa (6500 psi)

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FLEXURAL STRENGTH

ASTM C 78	
1 Day	6.2 MPa (900 psi)
28 Day	6.7 MPa (970 psi)

MODULUS OF ELASTICITY

ASTM C 469	
28 Day	24.0 GPa (3.5 x 10^6 psi)

POISSON'S RATIO

ASTM C 469	
28 Day	0.25

BOND STRENGTH BY SLANT SHEAR

ASTM C 882	
1 Day	10.6 MPa (1535 psi)
7 Day	16.2 MPa (2350 psi)

UNIAXIAL DRYING SHRINKAGE

ASTM C 157	
1 Day	190 µm/m
14 Day	250 µm/m
56 Day	450 µm/m

RESTRAINED SHRINKAGE (RING)

ASTM C 1581	
Age at Cracking	No cracks after 28 days
Initial Strain	0.2 µm/m
Maximum Strain	-32.9 µm/m
Stress Rate	0.05 MPa/Day (Low cracking potential)

BOILED ABSORPTION

ASTM C 642	5.8%

FREEZE-THAW RESISTANCE

ASTM C 666	96.9% (Excellent durability factor)

SALT-SCALING RESISTANCE

ASTM C 672	
50 Cycles	0.18 kg/m^2 (0.037 lb/ft^2)

CHLORIDE ION PENETRABILITY

ASTM C 1202	499 Coulombs

[Δ]The following data was obtained under laboratory conditions with a material temperature of 21 °C (70 °F). Higher or lower temperatures can respectively accelerate or delay setting time and early-age compressive strength gain.

YIELD

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

PACKAGING

RS-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

RS-S10 SCC contains rapid setting 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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