

FA-S10 is a high performance, multi-purpose, pre-packaged, concrete repair material. It is a pre-blended, synthetic fibre-reinforced, pre-packaged, high performance, cementitious, concrete repair material containing Portland cement, fly ash, air-entraining admixture, 10 mm (3/8 inch) stone and other carefully selected components.

FEATURES & BENEFITS

- Air-entrainment provides superior resistance to freeze-thaw cycling and salt-scaling in the presence of de-icing salts
- Designed with natural normal-density non-reactive fine and coarse aggregates to eliminate potential alkali-aggregate reactivity (AAR)
- Properties similar to conventional concrete, thus offering excellent compatibility to parent concrete
- Excellent workability and finishability
- Excellent pumpability
- Reduced bleeding
- Improved resistance to sulphate attack
- Low permeability
- Low shrinkage
- Enhances performance of cathodic protection system
- Compatible with integral, pre-applied and/or post-applied corrosion inhibitors*
- All KING products are manufactured using ISO 9001:2015 Certified Processes

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

OPTIONAL FEATURES & BENEFITS

CORROSION INHIBITOR

FA-S10 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 and full depth rehabilitation of concrete beams, columns, and/or soffits in bridges, parking garages, balconies or other concrete structures
- Induced current applications including new construction and rehabilitation
- Galvanic anode applications including new construction and rehabilitation
- Minimum application thickness of FA-S10 is 38 mm (1½ inches)

PROCEDURES

Surface Preparation: All surfaces to be in contact with FA-S10 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 FA-S10. Do not mix FA-S10 manually. **Place 2.5 L (0.66 US gallon) of water into mixer** and slowly introduce entire bag of FA-S10. If additional water is required to meet the target slump slowly add additional water while mixer is running, not exceeding the **maximum recommended water content of 3.0 L (0.80 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: Mix and substrate temperatures should be maintained between 5 °C (40 °F) and 30 °C (86 °F), until the material has reached final set. Do not place FA-S10 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".

Place material uniformly and consolidate by forcing it down to the surface of the parent concrete and around the underside of the rebar using a concrete vibrator, a steel trowel, a wood float or by rodding the material following ACI 309 R "Guide to Consolidating Concrete", without causing segregation. Ensure material has filled all voids and completely encapsulated any exposed rebar in the area to be repaired. For slab finishing, the use of a wood or magnesium float is recommended.

CURING

Curing is essential to optimize physical properties of the concrete and minimize plastic shrinkage. Cure 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 apply 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.

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 2369 kg/m³ (148 lb/ft³)

COMPRESSIVE STRENGTH*

ASTM C 39

1 Day 15 MPa (2175 psi)
3 Day 30 MPa (4350 psi)
7 Day 35 MPa (5075 psi)
28 Day 45 MPa (6500 psi)

FLEXURAL STRENGTH

ASTM C 78

7 Day 5.1 MPa (740 psi)
28 Day 6.0 MPa (870 psi)

AIR CONTENT

ASTM C 457 4.0-9.0%

MODULUS OF ELASTICITY

ASTM C 469

28 Day 28.4 GPa (4.12 x 10⁶ psi)

POISSON'S RATIO

ASTM C 469
28 Day 0.23

BOND STRENGTH

CSA A 23.2-6B (MODIFIED)
28 Day 1.75 MPa (250 psi)

BOND STRENGTH BY SLANT SHEAR

ASTM C 882
1 Day 7.5 MPa (1085 psi)
7 Day 18.1 MPa (2625 psi)

UNIAXIAL DRYING SHRINKAGE

ASTM C 157
3 Day 120 $\mu\text{m/m}$
28 Day 440 $\mu\text{m/m}$
60 Day 560 $\mu\text{m/m}$

BOILED ABSORPTION

ASTM C 642 6.8%

MAXIMUM VOLUME OF PERMEABLE VOIDS

ASTM C 642 14.8%

FREEZE-THAW RESISTANCE

ASTM C 666 97.1% (Excellent durability factor)

SALT-SCALING RESISTANCE

ASTM C 672
50 Cycles 0.31 kg/m^2 (0.06 lb/ft^2)

CHLORIDE ION PENETRABILITY

ASTM C 1202 2000 Coulombs

ELECTRICAL RESISTIVITY

6500 $\Omega\cdot\text{cm}$

*Bond strength achieved from independent job-site testing. Failure occurred in parent concrete.

YIELD

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

PACKAGING

FA-S10 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

FA-S10 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.

Warranty: This product is designed to meet the performance specifications outlined in this product data sheet. If the product is used in conditions for which it was not intended, or applied in a manner contrary to the written recommendations contained in the product data sheet, the product may not reach such performance specifications. The foregoing is in lieu of any other warranties, representations or conditions, expressed or implied, including, but not limited to, implied warranties or conditions of merchantable quality or fitness for particular purposes, and those arising by statute or otherwise in law or from a course of dealing or usage of trade. [REV.0012_2459292.5]

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