

HP-S10 CONCRETE

High performance, rapid hardening, pre-packaged concrete material. HP-S10 Concrete is a pre-blended, pre-packaged high performance cementitious concrete repair and construction material containing Portland cement, silica fume, air-entraining admixture, 10 mm (3/8 inch) stone and other carefully selected components.

FEATURES & BENEFITS

- High early strength for earlier re-opening of traffic lanes on concrete structure.
- Air-entrainment provides superior resistance to freeze-thaw cycling and salt scaling resistance.
- Properties similar to conventional concrete, thus offering excellent compatibility to parent concrete.
- Good workability.
- Improved durability.
- Improved performance in cold temperatures.
- Reduced bleeding.
- Improved resistance to sulphate attack.
- Very low permeability.
- Low shrinkage.
- All King products are manufactured using ISO 9001:2000 Certified Processes.

USES

- Rapid hardening concrete for use in pre-fabricated decks, and infill strips and shear key pockets of prefabricated bridges. Partial and full depth rehabilitation of concrete beams, columns, and/or soffits in bridges, parking garages, balconies or other concrete structures.
- New concrete construction, especially areas subject to freeze-thaw cycles and high salt (chloride) environments.

PROCEDURES

Surface Preparation:

All surfaces to be in contact with HP-S10 Concrete 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 sawcut a minimum of 20 mm (3/4 inch). Clean the area to be repaired with potable water, leaving the concrete saturated but free of standing water (SSD).

Mixing:

Place 75 % of required water into mixer and slowly introduce entire bag HP-S10 Concrete. Add balance of required water slowly while mixer is running, not exceeding maximum recommended volume of water. **Maximum recommended volume of water is 2.4 litres (0.6 US gallons) per 30 kg (66 lb.) bag***. Continue mixing for a minimum of 3 minutes and stop only when material has obtained a consistent homogeneous mix.

**Mixing procedures of when 1000 kg bulk bags are used in ready-mix trucks can be forwarded upon request.*

Placing:

Mix and substrate temperatures should be maintained between 5 to 30°C (40 to 86°F).

In cold weather, hot water may be used to increase mix temperature and avoid

lengthy set times. Do not place HP-S10 Concrete when ambient temperature is below 5°C (40°F). Refer to ACI 306, "Cold Weather Concreting". In warm weather, ice water may be used as mix water to cool mix temperature and avoid short working time. Evaporation retarder should be considered to improve finishability. When ambient temperature is above 30°C (86°F), refer to ACI 305, "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 trowel, a wood float or by rodding the material. Ensure material has completely encapsulated any exposed rebar. For slab finishing, the use of a wood float is recommended.

Curing:

Curing is essential to optimize physical properties of the concrete and minimize plastic shrinkage. HP-S10 Concrete 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 apply King Duro-Cure curing compound or 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.

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| MASS DENSITY | | |
| ASTM C 39 | 2400 kg/m ³ (144 lb./ft ³) | |
| COMPRESSIVE STRENGTH | | |
| ASTM C 39 | | |
| 12 Hour | 25 MPa (3600 psi) | |
| 1 Day | 40 MPa (5800 psi) | |
| 7 Day | 50 MPa (7250 psi) | |
| 28 Day | 60 MPa (8700 psi) | |
| FLEXURAL STRENGTH | | |
| ASTM C 78 | | |
| 7 Day | 10 MPa (1450 psi) | |
| 28 Day | 14 MPa (2050 psi) | |
| BOND STRENGTH BY SLANT SHEAR | | |
| ASTM C 882 | | |
| 7 Day | 10 MPa (1450 psi) | |
| 28 Day | 21 MPa (3050 psi) | |
| UNIAXIAL DRYING SHRINKAGE | | |
| ASTM C 157 | | |
| 35 Day | 415 µm/m | |
| SALT SCALING RESISTANCE | | |
| ASTM C 672 | | |
| 50 cycles | < 0.2 kg/m ² (0.04 lb./ft ²) | |

HP-S10 CONCRETE

FREEZE-THAW RESISTANCE
ASTM C 666 100 %
 (Excellent durability factor)

RAPID CHLORIDE PERMEABILITY
ASTM C 1202
56 Day 270 Coulombs

OPTIMUM PERFORMANCE

- Place HP-S10 Concrete at a minimum thickness of 38 mm (1 ½ inch).

YIELD

30 kg (66 lb.) or 1000 kg (2205 lb.) bag contain approximately 0.014 m³ (0.5 ft³) or 0.45 m³ (0.6 yd³) respectively.

PACKAGING

HP-S10 Concrete is normally packaged in 30 kg (66 lb.) triple lined bags and 1000 kg (2205 lb.) bulk bags and poly wrapped 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

HP-S10 Concrete 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. Material Safety Data Sheets are available upon request.

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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.

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KING PACKAGED MATERIALS COMPANY

Burlington Office
3385 Harvester Rd.
Burlington, ON
L7N 3N2
Phone: (905) 639-2993
Fax: (905) 333-3730

Blainville Office
650 Boul. Labelle
Blainville, QC
J7C 2J2
Phone: (450) 430-4104
Fax: (450) 430-6855

Brantford Office
541 Oak Park Rd.
Brantford, ON
N3T 5L8
Phone: (519) 756-6177
Fax: (519) 756-7490

Sudbury Office
644 Simmons Rd.
Dowling, ON
P0M 1R0
Phone: (705) 855-1155
Fax: (705) 855-1122