

DURO-CRETE

High performance, pre-packaged, concrete repair mortar for partial depth repairs. Duro-Crete is a rapid setting, cementitious, repair mortar containing hydraulic cements, well graded, natural, fine aggregate and other carefully selected components.

FEATURES & BENEFITS

- Improved workability and finishability.
- Rapid setting.
- Improved early age strength development.
- Excellent resistance to freeze-thaw cycling.
- All KING products are manufactured using ISO 9001:2008 Certified Processes.

USES

Partial depth rehabilitation of concrete beams, columns, and/or soffits in bridges, parking garages, balconies or other concrete structures.

PROCEDURES

Surface Preparation:

All surfaces to be in contact with Duro-Crete 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. The perimeter of the repair area should be sawcut a minimum of 6 mm (¼ inch). Clean the area to be repaired with potable water, leaving the concrete saturated but free of standing water (SSD). For maximum bond strength, use KING Concrete Adhesive. Place Duro-Crete at a minimum thickness of 6 mm (¼ inch) and a maximum thickness of 38 mm (1½ inches).

Mixing:

Place 75% of required potable water into mixer and slowly introduce entire bag of Duro-Crete. Add balance of required water slowly while mixer is running, not exceeding maximum recommended volume of water. **Maximum recommended volume of water is 3.2 litres (0.85 US gallon) per 25 kg (55 lb.) bag.** Continue mixing until material has obtained a consistent homogeneous mix to a maximum of 1 minute.

Placing:

Mix and substrate temperatures should be maintained between 5 and 30°C (40 and 86°F). For temperatures below 5°C (40°F) refer to Duro-Crete CT. In warm weather, ice water may be used as mix water to cool mix temperature and avoid short working times. When ambient temperature is above 30°C (86°F), refer to ACI 305, "Hot Weather Concreting".

Placing (for slab repairs):

Place material uniformly and consolidate by forcing against the edge of the repair area and continue placing material towards the centre.

Curing:

Curing is essential to optimize the physical properties of Duro-Crete and minimize plastic shrinkage. Duro-Crete 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 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.

FLOW TABLE

ASTM C 1437 > 100%

WORKING TIME*

10 minutes

SET TIME

ASTM C 191
METHOD A

Initial 25 minutes

Final 45 minutes

WET DENSITY

ASTM C 138 2215 kg/m³ (138 lb./ft³)

COMPRESSIVE STRENGTH

ASTM C 109

4 Hours 5 MPa (725 psi)

8 Hours 7 MPa (1000 psi)

1 Day 15 MPa (2175 psi)

3 Day 25 MPa (3625 psi)

7 Day 30 MPa (3750 psi)

28 Day 35 MPa (5075 psi)

BOND STRENGTH BY SLANT SHEAR

ASTM C 882

28 Day 7.8 MPa (1130 psi)

FLEXURAL STRENGTH

ASTM C 348

28 Day 8 MPa (1150 psi)

MODULUS OF ELASTICITY

ASTM C 469

27.5 GPa (4.0 x 10⁶ psi)

HARDENED HEIGHT CHANGE

ASTM C 1090

28 Day 0.03%

SPLITTING TENSILE STRENGTH

ASTM C 496

4.5 MPa (650 psi)

ABSORPTION

ASTM C 642

10%

FREEZE-THAW RESISTANCE

ASTM C 666

104%
(Excellent durability factor)

DURO-CRETE

OPTIMUM PERFORMANCE

• For repair applications exceeding 38 mm (1½ inches) use FA-S6 Concrete, FA-S10 Concrete, MS-S6 Concrete, MS-S10 Concrete, MS-S6 Self-Consolidating Concrete or MS-S10 Self-Consolidating Concrete depending on application.

YIELD

25 kg (55 lb.) bag contains approximately 0.012 m³ (0.42 ft³).

PACKAGING

Duro-Crete is normally packaged in 25 kg (55 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

Duro-Crete contains hydraulic cements. 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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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.
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