

TECHNICAL DATA SHEET

Integral Hardening Admixture



Hard-Cem[®]

Product Code: K-801

DESCRIPTION

Hard-Cem[®] is an integral hardening admixture used to increase the abrasion and erosion resistance of concrete and extend the wear life. Hard-Cem is added during batching to provide durable, environmentally sustainable concrete. Since it is integral, Hard-Cem provides full depth hardening and can be used in any horizontal, vertical or inclined structure. Hard-Cem provides superior performance and replaces dry-shake hardeners and liquid hardener/densifiers used for abrasion resistance.

FEATURES & BENEFITS

- Doubles the concrete wear life under harsh conditions
- Lowers installed cost and expedites construction schedules*
- Reduces maintenance costs and improves concrete durability and sustainability
- Easy to use; add directly to the concrete – no specialized spreading equipment needed
- Mixer-ready bags and bulk silo dispensing allows dust free use - helps worksites comply with OSHA silica exposure requirements*
- Simplifies concrete placement and finishing operations - improved quality control*
- Avoids installation errors due to wind or from over/under applying surface hardeners*
- Compatible with all concrete finishing types and methods
- Avoids surface delamination after troweling that can occur with surface applied hardeners*
- Compatible with all cement types and supplementary cementitious materials (SCMs.)**
- The only hardener that can be used with air-entrained concrete*
- No negative side effects on water demand, workability, set time, strength development or shrinkage
- Contributes to LEED points - Zero VOC - reduces jobsite waste – lowers carbon footprint

**compared to surface applied (dry shake) hardeners, **compared to liquid hardener/densifiers*

RECOMMENDED USES

Hard-Cem can be used in any concrete, shotcrete or precast work to improve abrasion and erosion resistance and extend the wear life. Hard-Cem can be used to replace both conventional dry-shake hardeners and liquid hardener/densifiers used for abrasion and erosion protection.

PROPERTIES

| Physical Properties | |
|--|---|
| Appearance | Black Powder / Granular Material |
| Particle Size | 50% < 100 microns |
| Specific Gravity | ~3.55 |
| Bulk Density | 1,650 kg/m ³ (103 lb/ft ³) |
| Effects on Plastic Properties | |
| Slump, ASTM C143 | No change |
| Setting Time, ASTM C403 | No change |
| Bleed Water, ASTM C232 | Approximately 45% reduction |
| Entrained Air Content and Stability, ASTM C231 | No change |

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Effects on Hardened Properties

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|--|--|
| Compressive Strength, ASTM C39, C192, (28 Days) | No change |
| Drying Shrinkage | No change |
| Freeze / Thaw Durability, ASTM C666 (300 cycles) | Passes* |
| Deicing Chemical Resistance ASTM C 672, (50 cycles) | Passes* |
| Abrasion Resistance, ASTM C627 Robinson Floor Tester (5000 revolutions) | 66% reduction in mass loss compared to control |
| Abrasion Resistance, ASTM C779-C | 50% reduction in wear over control |

*Air Entrained Concrete

APPLICATION

Hard-Cem is fully compatible with all commonly used cements, SCMs, admixtures and sealers. Dosage is 40 kg/m³ (66 lb/yd³), displacing approximately 30 kg/m³ (50 lb/yd³) of conventional sand in the original concrete mix to maintain design yield.

Unopened bags can be added directly to the concrete only if sufficient wetting, mixing and dispersion within the concrete mix is ensured.

Observe concrete discharge to verify full bag disintegration and no visible sign of bag fragments in the concrete. Test prior to use if in doubt. A suitable dust mask, eye protection, gloves and coveralls are recommended when manually dispensing bagged product.

When used in bulk, pneumatic unloading and dispensing of Hard-Cem is similar to that of Portland cement.

LIMITATIONS

The addition of Hard-Cem will not replace good concreting practices – especially those related to mix proportioning, placing, finishing and curing. Concrete treated with Hard-Cem may be slightly darker than normal Portland cement concrete.

SAFETY

Read the Safety Data Sheet (SDS) for this product. For professional use only. Avoid contact with skin or eyes. Avoid breathing dust. Wear a dust mask, long sleeves, safety goggles and impervious gloves.

PACKAGING

Hard-Cem is available in

- 13.4 kg pulpable mixer ready bags; 3 bags/m³
- 33 lb pulpable mixer ready bags; 2 bags/yd³
- 1,600 kg (3,527 lb) super sacks
- Bulk pneumatic truckloads

SHELF LIFE

When stored in a dry enclosed area, Hard-Cem has a shelf life of at least 10 years.

WARRANTY

Kryton Buildmat Co. Pvt. Ltd. warrants that Kryton products are free from manufacturing defects and comply with the specifications given in their respective technical data sheet. Because conditions of use, such as site conditions, surface preparations, workmanship, concrete ingredients, weather, structural issues and other factors are beyond the control of Kryton, no warranty can be given as to the results of use. Purchaser agrees to seek the advice of qualified professionals and to determine for themselves the suitability of the products for their intended purpose and assumes all risks. Purchaser's sole remedy is limited to replacement of any product proven defective or at Kryton's option refund of the purchase price paid. THIS LIMITED WARRANTY CONTAINS THE ENTIRE OBLIGATION OF KRYTON. NO OTHER WARRANTIES, EXPRESS OR IMPLIED, SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. KRYTON SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. No representative of Kryton has the authority to make any representations or provision except as stated herein. Kryton reserves the right to change the properties of its products without notice.

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