

TECHNICAL DATA SHEET

Integral Hardening Admixture



SMART CONCRETE®

Hard-Cem®

DESCRIPTION

Hard-Cem® is an innovative Integral Hardening Admixture (IHA) that gives designers a better option for achieving abrasion and erosion resistance in their floors and other structures. The technology of Hard-Cem employs a unique mineral-metal microstructure that makes concrete extremely durable and long lasting without the need to use more cement or apply surface treatments. Hard-Cem is added to the concrete during batching and becomes an integral part of the concrete's cement paste. Hard-Cem fortifies the cement paste and overcomes its intrinsic weakness to physical wear, providing permanent protection against damage from abrasive and erosive forces.



PERFORMANCE

- Unmatched protection against abrasion and erosion
- Maximizes durability and service life
- Doubles concrete wear life
- Superior dustproofing
- Maintains original finish and appearance over time
- Enhances resistance to harmful chemicals
- Compatible with air entrained concrete and suitable for exposure to freezing weather and de-icing salts
- Suitable for wet environments (no surface rusting or staining like iron-based hardeners)

COST SAVINGS

- Replaces surface applied hardeners
- Eliminates application labor costs
- Add directly to the concrete – no specialized equipment needed
- Shortens construction schedules
- Eliminates high repair and replacement costs

HEALTH AND ENVIRONMENTAL BENEFITS

- Contributes to LEED points - Zero VOC - reduces jobsite waste – recyclable
- Mixer-ready bags allow dust free use - OSHA compliant
- Reduces total lifecycle carbon footprint and environmental impact

RECOMMENDED USES

- Distribution Centers and Warehouses
- Manufacturing Facilities
- Big Box Retail Stores
- Superflat Floors
- Storage Facilities
- Public Transportation Stations
- Roads, Bridges, and Overpasses
- Truck Terminals
- Water & Wastewater Infrastructure
- Dams, Spillways and Power Plants
- Airport Runways and Aprons
- Marine Infrastructure
- Mining Infrastructure
- Waste and Recycling Facilities
- Agricultural, Dairy and Seafood Facilities

PROPERTIES

PHYSICAL PROPERTIES	
Appearance	Black powder
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
Entrained Air Content and Stability, ASTM C231	No change

EFFECTS ON HARDENED PROPERTIES	
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, mass loss)	2.9 times better wear resistance than control.
Abrasion Resistance ASTM C779-C (ball bearings, wear depth)	2.0 times better wear resistance than control.
Surface Chipping, Impact Resistance ASTM 535 (Los Angeles Machine, mass loss)	1.6 times better chipping/impact resistance than control.

*Tested in Air Entrained Concrete

STANDARDS

- Compatible with all floor classifications in ACI 302.1R – Guide to Floor and Slab Construction
- Compatible with all Flatness and Levelness classes in ACI 117 - Specification for Tolerances for Concrete Construction and Materials
- Wear Classification: EN 13892-4 – Class AR0.5 (Severe Duty)
- Wear Resistance: BLY 7/by45, Bohme Abrasion – Class 1

APPLICATION

See Application Instruction 8.11 for detailed instructions.

Dose Hard-Cem at 40 kg/m³ (66 lb./yd³) and remove an equal weight of sand to maintain proper mix proportions and water demand. Higher or lower doses may be appropriate for certain applications – consult your authorized Kryton Representative for guidance. For specialized applications such as screed or topping mixes, consult Kryton's Technical Services for a dosage recommendation. Hard-Cem is compatible with all cement types, supplementary cementitious materials (SCM's), admixtures and fibers. Bags can be added directly to the concrete mix without opening or may be opened and emptied into the concrete. Use a suitable dust mask, eye protection, gloves and coveralls when manually dispensing bagged product. When used in bulk, pneumatic conveying and dispensing is similar to Portland cement.

PACKAGING

- 13.4 kg pulpable mixer ready bags; 3 bags per cubic meter of concrete
- 33 lb. pulpable mixer ready bags; 2 bags per cubic yard of concrete (Available in USA only)
- 1,600 kg (3,527 lb.) super sacks
- Bulk pneumatic truckloads

SPECIFICATIONS

Specification language for this product is available at www.kryton.com/technical-info/ or from your authorized Kryton representative.

TECHNICAL SERVICES

Product advice, training and technical support are available from your Authorized Kryton Representative.

LIMITATIONS

The addition of Hard-Cem will not replace good concreting practices – acceptable results still require adherence to proper mix proportioning, placing, finishing, and curing practices.

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.

SHELF LIFE

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

WARRANTY

Kryton International Inc. (Kryton) 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.