

PRODUCT NAME

Gem-Crete® HDO

(Heavy Duty Overlay)
Heavy Duty, Waterproof Traffic Topping

MANUFACTURER

Gemite® Products Inc.

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FEATURES

- Waterproof (negative & positive)
- Stops chlorides
- Highly abrasion resistant
- Superior freeze thaw durability
- Bridges substrate cracks
- High strength
- Exhibits high bond to wet and dry concrete
- Breathable
- Non-flammable & Non-toxic

PRODUCT DESCRIPTION

Basic Use

Heavy duty, waterproofing traffic topping for parking garages, bridge decks and airport runways. *Gem-Crete HDO* is used in restoration and waterproofing (negative or positive) of water storage treatment and marine structures, industrial & chemical plants, dams, tunnels and sewers. *Gem-Crete HDO* can be applied over damp and rough surfaces to provide a continuous (crack and joint free), waterproof and skid resistant surface. Unlike epoxies, acrylics and polymer concrete, *Gem-Crete HDO's* thermal movement and Modulus of Elasticity is fully compatible with concrete.

Composition and Materials

Gem-Crete HDO is a Portland cement based, fibre-reinforced micro-silica modified material, especially formulated for protection and waterproofing of concrete. The combination of micro-silica and chemical admixtures provide excellent resistance to water, salt and weak acids and high abrasion resistance. The fibre reinforcement allows for high impact and crack resistance and bridging of substrate cracks.

Limitations

Do not apply *Gem-Crete HDO* when the temperature is expected to be below 4°C (40°F) within 48 hours or when rain is imminent. Follow Hot Weather concreting precautions at temperatures exceeding 25°C (77°F) or under sunny and windy conditions.

Health and Safety

Gem-Crete HDO is non-toxic and non-flammable. Your skin might be sensitive to cement. We recommend use of rubber gloves. Avoid contact with eyes and prolonged contact with skin. If contact occurs, flush immediately with water. Seek medical advice if irritation occurs. Harmful if digested. Keep product out of reach of children. FOR INDUSTRIAL USE ONLY. Consult MSDS for additional information.

Colors

Dark Grey.

Packaging

Gem-Crete HDO Concentrate is packaged in 16 kg (35.3 lb) bags. *Gem-Crete HDO Vertical Concentrate* in 16 kg (35.3 lb) bags. *Gem-Crete HDO Slurry Concentrate* in 6.3 kg (13.9 lb) bags.

Yield

When mixed with the specified amounts of cement, sand and water:

Gem-Crete HDO Concentrate & Vertical Concentrate yields 113.2 L (4.3 ft³) and covers approximately 9.4 m² @ 12 mm (102.5 ft² @ ½") thickness per unit mix.

Gem-Crete HDO Slurry Concentrate yields 58.2 L (2.2 ft³) and covers approximately 36.4 m² @ 1.6 mm (439 ft² @ 60 mils) thickness per unit mix.

Storage and Transportation

Gem-Crete HDO, when stored on pallets in a dry area, has a shelf-life of 12 months. Packaged 40 bags (*Concentrate* and *Vertical Concentrate*), or 60 bags (*Slurry Concentrate*) per pallet.

TECHNICAL DATA

Tested and approved by US Army Corps of Engineers, MTO (Ontario), other DOT's and agencies. Approved for contact with potable water and for use in food processing facilities.

Modulus of Rupture (ASTM C348)	6.9 - 9.0 MPa (1,000 - 1,300 psi)
Ultimate Tensile Stress	3.4 - 4.8 MPa (500 - 700 psi)
Modulus of Elasticity	14 - 20 GPa (2.0 - 2.9 x 10 ⁶ psi)
Compressive Strength (ASTM C109)	34..5 - 48.3 MPa (5,000 -7,000 psi)
Izod Impact Strength	6.3 - 9.2 G ^J /m ² (31.5 - 45.0 in-lb/in ²)
Freeze-Thaw Resistance (ASTM C666, Procedure A)	0% weight loss after 300 cycles
Water Vapor Permeability (ASTM E96)	0.28-0.50 metric perm cm (0.17 to 0.30 perm-in)

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03550 Concrete Topping
07570 Traffic Topping

Thermal Expansion & Contraction	10 x 10 ⁻⁶ / °C (6 x 10 ⁻⁶ / °F)
Direct Tension Bond	1.0 - 3.5 MPa (150 - 500 psi) Failure in concrete substrate
Slant-Shear Bond Strength (ASTM C882, CRD-C 596)	15.8-20.7 MPa (2,300-3,000 psi) 14.5-15.8 MPa (2,100-2,300 psi)
Bond in Flexure (ASTM C293, CRD-C 17)	8.9-10.3 MPa (1,300-1,500 psi)
Resistance to Chloride Penetration (AAHSTO T259)	no chloride penetration
Resistance to Chloride Penetration (AASHTO T277)	430-530 Coulombs
Salt Scaling Resistance (MTO Ontario, Form 1351)	accumulative weight loss, 50 cycles, 0.005g/cm ²
Water Absorption (MTO Report , MI-67)	2.3 -4.3 %
Abrasion Resistance (BS 812)	AAV = 2.75; resistance is similar to trap rock aggregate
Fire Resistance Testing (ULC 114)	non-combustible
Toxicity	non-Toxic in both wet or dry
Chemical Resistance	resistant to solvent, fuels, strong alkalis and salt solutions
Wet Density	2.21 g/cm ³ (138 lbs/ft ³)

INSTALLATION

Current Guide Specification and Application Instructions contain additional information specific to each application and must be followed. Consult Gemite's Technical Service to ensure that the correct surface preparation and application procedures are followed.

Surface Preparation

Remove all loose, delaminated and oil & grease contaminated concrete. In the majority of applications, the removal of 3 - 12 mm (1/8 - 1/2") of existing concrete is necessary, depending on deterioration, depth of contamination and specific application. Contact Gemite's Technical Service for instructions.

Clean off all grease, laitance, dirt and efflorescence using shot-blasting, sandblasting, high pressure waterblasting (min. 10,000 psi), or other approved methods. Acid cleaning must not be used. *The perimeter of horizontal installations requires "keys" (see Specification).*

Crack Treatment

Gem-Crete HDO, with galvanized welded wire fabric mechanically fastened to the deck, spans moving cracks up to 2.4 mm (3/32 in). For details, see Guide Specification. Mix Designs:

	HDO Conc.	HDO Vertical	HDO Slurry
Concentrate	16 kg (35.3 lb)	16 kg (35.3 lb)	6.3 kg (13.9 lb)
Cement	80 kg (188 lb)	80 kg (188 lb)	40 kg (94 lb)
Sand	135 kg (325 lb)	135 kg (325 lb)	60 kg (141 lb)
Water	38 L (10.2 USG)	38 L (10.2 USG)	19 L (5.4 USG)

Mixing

Use a paddle or helix mortar mixer large enough for a batch. Place most of the water into the mixer. Remove the separately packaged bag of fibres. Add powder into the water while mixing and mix for one (1) minute. Add sand and cement and mix until free of lumps. Add reinforcing fibres gradually and mix for not more than one (1) minute. Adjust the water for suitable workability. Do not overmix. Convey mixed material to the point of placement in clean containers.

Water Saturation and Slurry Coat

Thoroughly wet the slab overnight. Remove all standing water to obtain a saturated surface damp condition. For horizontal applications, broom in *Gem-Crete HDO Slurry* as a wet edge primer.

Application

Apply *Gem-Crete HDO* into wet slurry to a uniform specified thickness. Keep wet edge. Use hand or mechanical screed to spread the material. Use trowel to mix the product after removal of screed bars to ensure that fibres are distributed across any joint. Use a wood or magnesium float (bull float) for compaction and finishing. **Do not use steel trowel or float.** A surface water evaporation retarder may be applied during finishing (see Specification).

When the thickness exceeds 38 mm (1.5"), or where large variations in thickness exist, contact Gemite's Technical Service.

Curing

Protect the surface of *Gem-Crete HDO* against fast surface evaporation to prevent surface crazing. Moist cure *Gem-Crete HDO* for 72 hours using a wet burlap covered with polyethylene, or other suitable methods. When working under tarps at freezing temperatures, use electrical heaters. Avoid using propane heaters to prevent "carbonation" of the material.

Clean Up

All tools must be cleaned with water immediately after use. Cured material can only be removed mechanically.

AVAILABILITY AND COST

Gem-Crete HDO is available worldwide. Contact the manufacturer for the name of the nearest Representative/Distributor and pricing information.

MAINTENANCE

None required.

WARRANTY

A limited twelve (12) month Material Replacement Warranty is available. For complete details contact Gemite's Head Office.

TECHNICAL SERVICE

For advice on suitability of *Gem-Crete HDO* for a specific application, specification assistance and application instructions, contact Technical Service: USA 888-443-6483 or Canada 905-672-2020.

Short Specification

The [waterproofing] [traffic topping] [concrete surfacing] will be *Gem-Crete HDO*, fibre reinforced, waterproofing mortar manufactured by Gemite Products Inc., [USA 888-443-6483] [Canada 905-672-2020]. It will meet all the Technical Data specified in the current *Gem-Crete HDO* Product Data Sheet.