



Master Format: 07 16 13

JANUARY 2021
 (Supersedes January 2019)

CEM-KOTE™ FLEX CR

Flexible, Hydrogen-Sulfide-Resistant, Cementitious Waterproofing

DESCRIPTION

CEM-KOTE FLEX CR is a highly flexible, fiber-reinforced, hydraulic cement-based material. It is a two-component system consisting of dry Component A and liquid Component B. For additional tensile strength, it may be reinforced with REINFORCING FABRIC HD™.

USES

The primary use of CEM-KOTE FLEX CR is in waterproofing and protection of concrete structures exposed to sulfuric acid (generated by micro-biological oxidation of hydrogen sulfide). This includes concrete structures in wastewater treatment facilities (digesters, sludge tanks and clarifiers), manholes, and sewer systems. It is also used in waterproofing and restoration of concrete structures in thin sections, where superior flexibility, chemical resistance, and breathability are required. It protects and waterproofs structures subjected to various chemicals, such as concrete floors, tanks and secondary containment structures. It also provides excellent protection for concrete against carbonation.

For wastewater treatment facilities, three systems are available:

System #1 CEM-KOTE FLEX ST

Used in all open concrete structures (hydrogen sulfide is escaping directly to air), such as channels, clarifiers, and other open concrete structures.

Two coats of CEM-KOTE FLEX ST.
 Total minimum thickness: .08" (2 mm)

System #2: CEM-KOTE FLEX CR

Used in closed structures (hydrogen sulfide can't escape to air) and when the hydrogen sulfide concentration is between 20 - 50 PPM. Application include closed sludge tanks, digesters, pumping/lift stations and other "closed" concrete structures.

Two coats

First coat: CEM-KOTE BARRIER COTE 100 - min. .04", 40 mils(1 mm) thick

Second coat: CEM-KOTE FLEX CR - min. .04", 40 mils (1 mm) thick.

System #3

Used in closed structures; when hydrogen sulfide concentration is higher than 50 PPM. It is also used in protection of concrete in chemical storage tanks, secondary containment structures and floors.

Note: Some new treatment technologies may result in much higher H2S concentrations than 50 PPM.

Three coats

First coat: CEM-KOTE BARRIER COTE 100 - min. .04", 40 mils (1 mm) thick

Two coats of GEM-COTE EP 100 (100% solids epoxy) minimum total thickness - .02" (0.5 mm)

FEATURES/BENEFITS

- Excellent resistance to sulfuric acid (MIC generated).
- Good chemical resistance.
- Long term crack resistance.
- Superior freeze/thaw resistance.
- Excellent bond to clean substrate.
- Self-curing.
- Breathable.
- Very low shrinkage.
- Vermin proof.
- Easy application.

PACKAGING

CEM-KOTE FLEX CR dry Component A is packaged in 50 lb. (22.7 kg) bags and liquid Component B is packaged in 1.8 gal. (6.8 L) plastic jugs.

COVERAGE

CEM-KOTE FLEX CR yields 0.52 ft.³ (14.75 L) and covers approx. 156 ft.² at 40 mils (14.7 m² at 1 mm) thickness per kit, when applied in one coat. The actual coverage will depend on surface roughness and the thickness applied. The applicator must carry out a test application to determine the actual coverage for the given substrate and application thickness.

CONTINUED ON REVERSE SIDE ...

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SHELF LIFE

When stored in a dry area, the material has a shelf life of one year. The liquid Component B must not freeze.

TECHNICAL DATA

Ultimate Tensile Stain (ASTM D412 Mod.) at 68° F (20° C)	
Non-Reinforced	20-25%
Reinforced	25-30%
Ultimate Tensile Stress (ASTM D412 Mod.) at 68° F (20° C)	
Non-Reinforced	145 - 188 psi (1.0 - 1.3 MPa)
Reinforced	290 - 362 psi (2.0 - 2.5 MPa)
Crack Spanning (Gemite ISO TP 005) at 68° F (20° C)	
Non-Reinforced	0.5 mm (20 mils)
Reinforced	1.6 mm (63 mils)
Water Vapor Permeance (ASTM E96), wet cup, 1.6 Mm Thick	350 ng/Pa.s.m ² (6.42 perms)
Salt Scaling Resistance ASTM 672	Excellent
Chemical Resistance	
Sulfuric acid, pH 1 – sewer test chamber, 1 year exposure	No deterioration or delamination
Sulfuric acid 5% - Gemite ISO TP 24	8% weight increase after 140 day exposure
Hydraulic Impermeability TTP 1411 (negative side), 2 mm thickness	Water head >130' (>39.8 m)
Color	Dark Gray
VOC Content	0 g/L
A high porosity concrete block coated with a CEM-KOTE FLEX CR "burst" at 130' (39.8 m) water head pressure with CEM-KOTE FLEX CR shows no signs of wetness.	

CEM-KOTE FLEX CR exhibits a high resistance to majority of mineral acids in moderate concentrations for shorter periods of time. It is highly resistant to concentrated salt solutions and caustic environments.

APPLICATION

Surface Preparation ... Remove all deteriorated and loose concrete, form release agents, oil, grease, laitance, dust, dirt and efflorescence by dry or wet sandblast or shotblast to achieve surface CSP #3 as per the ICRI (International Concrete Repair Institute). Repair deeper areas using GEM-PLAST TC or FIBRE-PATCH OV. The proper surface preparation is essential for a successful waterproofing using CEM-KOTE FLEX CR/CEM-KOTE BARRIER COTE 100.

Reinforcing Steel ... Remove all loose rust from any exposed reinforcing steel and apply two coats of FIBRE-PRIME rustproofing.

Crack Treatment ... All cracks must be treated before application of CEM-KOTE FLEX CR or CEM-KOTE BARRIER COTE 100. Contact Gemite Technical Service for advice specific to the application.

Mixing ... Mixing of CEM-KOTE FLEX CR and CEM-KOTE BARRIER COTE 100 is identical. Thoroughly mix liquid component B prior to its use. Use a clean paddle, helix mortar mixer, or heavy duty drill (400 - 600 rpm) with a mixing paddle. Pour approximately 80% of the component B into the mixer, gradually adding the dry material into the liquid and mix until a smooth and lump-free mix is obtained. Add the remaining liquid (as required) for given application consistency. A small amount of water can be added at higher ambient temperatures, if required.

Application Method ... 1st coat - apply CEM-KOTE BARRIER COTE 100 a minimum of 40 mils (1 mm) thick to a saturated surface damp surface. 2nd coat - apply CEM-KOTE FLEX CR minimum 40 mils (1 mm) thick into a "green" 1st coat. Both materials can be spray applied using a hopper gun or positive displacement (moyno or carousel) pump with a suitable plastering spray nozzle. When spraying, each coat must be brushed to prevent pinholing. Time the application of the 2nd coat to assure that 1st coat is not disturbed, approx. 10-15 minutes, depending on temperature &RH. If wet-to-wet application is not practical (sewers), allow CEM-KOTE BARRIER COTE 100 to dry for 1-2 days, and pressure wash, before applying CEM-KOTE FLEX CR.

Reinforcing Fabric ... When using REINFORCING FABRIC HD throughout the entire area, first apply a thin layer of CEM-KOTE BARRIER COTE 100 by brushing or spraying. When spraying, brush each coat to eliminate all pinholes. Embed REINFORCING FABRIC HD into the first coat and follow with a second coat of CEM-KOTE FLEX CR. REINFORCING FABRIC HD must be fully covered. The total minimum applied thickness of CEM-KOTE BARRIER COTE 100 and CEM-KOTE FLEX CR, including REINFORCING FABRIC HD, must be 80 mils 0.08" (2 mm) (80 mils).

Curing ... Cure CEM-KOTE FLEX CR by air drying for a minimum of three days prior to continuous exposure to water. Protect fresh applications from rain, strong wind, and intense sunlight for 12 hours. When working under tarps at freezing temperatures, use electrical heaters to prevent carbonation of the material.

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

PRECAUTIONS

Some maintenance may be required depending upon the type of chemical environment and the length of exposure. Do not apply CEM-KOTE FLEX CR when the temperature is expected to be below 40° F (4° C) within 48 hours or when rain is imminent. Follow hot weather concreting procedures when applying CEM-KOTE FLEX CR at temperatures above 77° F (25° C). Not designed for heavy traffic areas. Skin might be sensitive to hydraulic cement or the liquid additive. Recommended 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 SDS for additional information.

CEM-KOTE FLEX CR is manufactured by:
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For most recent data sheet, current LEED information, and SDS, visit www.wrmeadows.com.

**LIMITED WARRANTY**

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

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