PRODUCT DATA

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W. R. MEADOWS®
A Family Company Since 1926

DATA SHEET NO. 8138-115

CEM-KOTE FLEX CR

Flexible, Hydrogen Sulfide Resistant, Cementitious Waterproofing

FEATURES

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

PRODUCT DESCRIPTION

Basic Use

CEM-KOTE FLEX CR is primarily designed for waterproofing and protection of concrete structures exposed to sulfuric acid, generated by micro-biological oxidation of hydrogen sulfide. This includes concrete structures in waste water treatment facilities, such as digesters, sludge tanks, 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 acts as excellent protection for concrete against carbonation.

Composition and Materials

CEM-KOTE FLEX CR provides excellent waterproofing and protection for concrete exposed to sulfuric acid (generated by microbiological oxidation of hydrogen sulfide), wastewater plant digesters, sludge tanks, clarifiers, manholes, and sewer systems. Thin, highly flexible, and breathable, CEM-KOTE FLEX CR delivers superior waterproofing and protection for concrete exposed to attack by various chemicals, such as industrial floors, tanks and secondary containment structures, and protects concrete against carbonation.

The selection of the system 1, 2, or 3 depends primarily on hydrogen sulphide concentration exposure.

Refer to current technical data sheets and guide specifications for application instructions. Contact Gemite technical service for advice on the suitable system for your project.

System #1 - "Open" structures (with H2S freely escaping)
System #1 = 2 coats CEM-KOTE FLEX ST - min. 2 mm (80 mils)
Use when hydrogen sulfide can escape - channels, clarifiers, and other "open" concrete structures.

System #2 - "Closed" structures (H2S 20 - 50 PPM)
1st coat - CEM-KOTE BARRIER COTE 100 - min. 1 mm (40 mils)
2nd coat - CEM-KOTE FLEX CR - min. 1 mm (40 mils)
Use when hydrogen sulfide cannot escape + concentrations are between 20-50 PPM - closed sludge tanks, digesters, pumping/lift stations and other "closed" concrete structures.

System #3 - Heavy-Duty Chemical Protection
1st coat - CEM-KOTE BARRIER COTE 100 - min. 1 mm thick
2nd – 2 coats of GEM-COTE EP 100 - min. 0.5 mm (20 mils)
For "closed" structures, when hydrogen sulfide concentrations exceed 50 PPM, such as chemical storage tanks, secondary containment structures and industrial floors.
Note: Some new treatment technologies may result in much higher H2S concentrations than 50 PPM.

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TECHNICAL DATA

PROPERTY	TEST METHOD	TYPICAL TEST RESULTS
Ultimate Tensile Strain at 20° C Non-Reinforced: Reinforced:	ASTM D412 Modified	20 - 25% 25 - 30%
Ultimate Tensile Stress at 20° C, Non-Reinforced: reinforced:	ASTM D412 Modified	1.0 - 1.3 MPa (145 - 188 psi) 2.0 - 2.5 MPa (290 - 362 psi)
Crack Spanning at 20° C, Non-reinforced: Reinforced:	ISO TP 005	0.5 mm (20 mils) 1.6 mm 63 mils)
Water Vapor Permeance, 1.6 mm thick:	ASTM E96, wet cup	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 Sulfuric Acid 5% - ISO TP 24		No deterioration or delamination 8% weight increase after 140 days exposure
Hydraulic Impermeability, (Negative Side), 2 mm thickness:	TT-P-1411	Waterhead >39.8 m (>130')
CEM-KOTE FLEX CR exhibits high resistance to the majority of mineral acids in moderate concentrations. It is highly resistant to concentrated salt solutions and caustic environments. For more detail, contact Gemite technical service.		

Limitations
Do not apply CEM-KOTE FLEX CR when temperatures expect to be below 4° C within 48 hours or when rain is imminent. Follow hot weather concreting procedures when applying CEM-KOTE FLEX CR above 25° C.

Health and Safety
CEM-KOTE FLEX CR is non-toxic. Skin may be sensitive to hydraulic cement or the liquid additive. Rubber gloves are recommended. 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.

Colour
Dark Grey.

Packaging
CEM-KOTE FLEX CR kit = Comp. A - 22.7 kg (50 lb.) bag + Comp. B - 6.8 L (1.8 USG) plastic bottle.

Yield
CEM-KOTE FLEX CR yields 14.75 L (0.52 ft.^{3}) and covers approx. 14.7 m^2 @ 1.0 mm (156 ft.^{2} @ 40 mils) per kit - applied in 1 (one) coat.

In projects requiring two coats of CEM-KOTE BARRIER COTE 100. the coverage is approx. 9.2 m^2 @ 1.6 mm (104 ft.^{2} @ 60 mils) per kit applied in 2 (two) coats.

The actual coverage depends on surface roughness and thickness applied. The applicator must carry out a test application to determine the actual coverage for the given substrate and application thickness. Refer to CEM-KOTE BARRIER COTE 100 and GEM-COTE EP 100 data sheets for yield and coverage information.

Storage and Transportation
When stored in a dry area, the material has a shelf life of 12 months. The liquid Component B must not freeze.

INSTALLATION
Current guide specification and application instructions contain additional information specific to each application and must be followed. Consult GEMITE or W. R. MEADOWS Technical Service to ensure correct surface preparation, application procedures, and chemical compatibility for specific 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 a concrete surface profile (CSP) of CSP 3 as per the International Concrete Repair Institute (ICRI). Repair deeper areas using GEM-PLAST TC [up to 12.7 mm (½")] or FIBRE-PATCH OV [coving and repairs above 12.7 mm (½")]. The proper surface preparation is essential for a successful installation.

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 using CEM-KOTE FLEX CR or CEM-KOTE BARRIER COTE 100.

Mixing … Mixing procedures for CEM-KOTE FLEX CR and CEM-KOTE BARRIER COTE 100 are identical.

Thoroughly mix liquid Component B prior to use. Use a clean paddle, helix mortar mixer, or heavy duty drill (400 -600 RPM) with a helix screw mixer to achieve thorough mixing. Pour approximately 80% of the Component B into the mixer, gradually adding the dry material into the liquid, while mixing, and mix until a smooth lump-free mix is obtained. Add the remaining liquid (as required) for a 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, minimum 1 mm (0.04") thick, to a saturated surface damp surface.

2nd coat - apply CEM-KOTE FLEX CR minimum 1.0 mm (40 mils) thick, but not more than 3 mm (120 mils). Allow CEM-KOTE BARRIER COTE 100 to dry for 1 - 2 days and pressure wash with 3,000 - 5,000 psi before applying CEM-KOTE FLEX CR. The total minimum thickness of both coats should be approximately 2 mm (80 mils). If this is not possible. please contact Gemite Technical Services for more information.

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 the second coat of CEM-KOTE BARRIER COTE 100. Let cure for 1 - 2 days and pressure wash with 3000 - 5000 psi before applying 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 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. When applying over GEM-PLAST TC, air cure CEM-KOTE BARRIER COTE 100/CEM-KOTE FLEX CR for a minimum five days prior to filling with water.

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

MAINTENANCE
Some maintenance may be required depending upon the type of chemical environment and the length of exposure.

WARRANTY
A limited 12-month material replacement warranty is available. For details, contact GEMITE or W. R. MEADOWS technical service.

MASTERFORMAT NUMBER AND TITLE
07 16 13 – Polymer Modified Cement Waterproofing

LEED INFORMATION
May help contribute to LEED credits:
- EAp2: Minimum Energy Performance
- EAc2: Optimize Energy Performance
- MRc9: Construction and Demolition Waste Management

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