MONOKOTE® Z-146PC

Lightweight, high density, ceramic type inorganic fireproofing, formulated with corrosion inhibitor

Product Description

MONOKOTE® Z-146PC has been developed by GCP Applied Technologies as a superior product to protect steel and concrete meeting the harshest conditions found in petrochemical processing, refining facilities, LNG facilities, nuclear and conventional power plants, etc.

MONOKOTE® Z-146PC is a bauxite ceramic fireproofing based on hydraulic binders formulated with a strong patented corrosion inhibitor (DCI®) requiring only the addition of water to form a consistent slurry easy to apply. Weighing about 65%-75% less than standard concrete, it can be applied in one or multiple layers up to the desired fire rating.

MONOKOTE® Z-146PC is supported by GCP with over 60 years experience in the fireproofing business and with many worldwide references available upon request.

Features & Benefits

- Corrosion inhibition
- Tested in accordance with:
- Hydrocarbon pool fire up to 4 hours as per:
- UL 1709 / ASTM E-1529
- Lloyd's Register of shipping for offshore structures
- BS 476 Part 20 Appendix D
- Norwegian Petroleum Directorate
- EN 1993-1-2: 2005
- UL investigated for exterior exposure under freeze/thaw cycles, salt spray, accelerated aging, high humidity and polluted industrial atmosphere
- HSE OTI 95634 jet fire up to 2 hours
- Baker blast explosion test
- NFPA 58 fire and hose stream for LPG tanks
- LNG immersion test for cryogenic spillage
- Durability - MONOKOTE® Z-146PC sets and dries to a hard ceramic type coating offering very good resistance against physical impacts occurring during routine operations and maintenance at the facility. MONOKOTE® Z-146PC has been tested for bond strength, compressive strength, hardness and other properties in accordance with API RP 2218 and ASTM in-place performance standards.
- Application versatility - MONOKOTE® Z-146PC can be mixed in standard plaster mixers. After mixing it may be spray-applied with commonly available pumping and spraying equipment for high speed efficient application. MONOKOTE® Z-146 PC can also be applied with trowels or poured into wood formworks.
- Economical - MONOKOTE® Z-146PC offers the most economical fire resistance by reducing labor time both in interior as well as in exterior corrosive environments, such as those defined by ISO 12944-2.
- Other key advantages - Application by qualified companies, extensive track records, superior bond and mechanical properties, very low thermal conductivity, up to 1 in. (25 mm) per coat, high yield rates, worldwide technical assistance and product availability, non flammable and non combustible, asbestos free, chloride and sulfide free, no contribution to smoke generation during a fire.

Conditions not Recommended

- Operating temperatures in excess of 93°C
- Use over aluminum or other non-ferrous substrates
- Use as a refractory material

Coatings Requirement

- Primers - MONOKOTE® Z-146PC has been formulated with a patented corrosion inhibitor (DCI) that has shown to retard the rate of corrosion due to chlorides and other aggressive environmental conditions. However MONOKOTE® Z-146PC shall not be used as an anticorrosive material, thus we always recommend the use of an alkaline resistant, immersion grade, epoxy anticorrosive paint (or system) compatible with Portland cement.
- Topcoats - Generally not required, however in corrosive environments a compatible topcoat should be used to extend the life expectancy of the entire system. Contact GCP Technical Service for further recommendations.

Inspection

Prior to the application of MONOKOTE® Z-146PC, an inspection shall be made to determine that all substrates are acceptable to receive fireproofing. Substrates shall be free from any substance that would impair the adhesion of the fireproofing and shall be compatible with Portland cement materials.

It is recommended that all substrates protected by fireproofing be routinely inspected as part of an ongoing facilities maintenance program. GCP should be consulted for proper patching procedures.

Mixing

MONOKOTE® Z-146PC shall be mixed by machine in a conventional paddle type mixer. The mixer shall be kept clean and free of all previously mixed material. The mixer speed shall be adjusted to the lowest speed which gives adequate blending of the material and a mixer density of 835 - 945 kg/m^3.

Using a suitable metering device and mixer, approximately 15 liters of potable water per bag shall be first added to the mixer as the blades turn. Add MONOKOTE® Z-146PC and mix about 90-120 seconds until the mix is lump-free with a creamy texture. Over-mixing will reduce pumping rate and density.

For more details consult our Petrochemical Application Guidelines.

Application

- MONOKOTE® Z-146PC material shall not be used if it contains partially set, frozen or caked material.
- MONOKOTE® Z-146PC shall have a minimum average dry in-place density of 640 kg/m^3.
- MONOKOTE® Z-146PC can be sprayed directly to lathed steel substrates in one or more passes. A spray gun with a properly sized orifice with spray shield, and air pressure at the nozzle of approximately 20 psi (1,4 bar) will provide the correct adhesion, density and appearance.Temperature
- The substrate temperature shall be a minimum of 40°F (4.5°C) for at least 1-hour prior to the application of the MONOKOTE®. Additionally, the air and substrate temperature during application and for a minimum or 72 hours after application shall be no less than 40°F (4.5°C).

Delivery & Storage

All material to be used for fireproofing shall be delivered in original unopened packages bearing the name of the manufacturer, the brand and proper UL labels for fire resistance classifications. The material shall be kept dry until ready for use. Packages of material shall be kept off the ground, under cover and away from sweating walls and damp surfaces. All material that has been exposed to water before use shall be discarded. Stock of material is to be rotated and used before its expiration date.

Safety

MONOKOTE® Z-146PC is slippery when wet. Signs reading “SLIPPERY WHEN WET” should be posted in all areas in contact with wet fireproofing material. Anti-slip surfaces should be used on all working surfaces. A Safety Data Sheet (SDS) for MONOKOTE® Z-146PC is available on our web site at www.gcpat.com or call toll free at 866-333-3SBM.

Performance Characteristics

PHYSICAL PROPERTIES	RECOMMENDED SPECIFICATION	LABORATORY TESTED* VALUES	TEST METHOD **
Dry density, minimum average	Min. 40 pcf (640 kg/m^3)	See note below***	ASTM E605
Bond strength	Min. 10,000 psf (478 kN/m^2)	16,727 psf (800 kPa)	ASTM E736
Compression, 10% deformation	500 psi (3.45 MPa)	561 psi (3.87 MPa)	ASTM E761
Air erosion	Max 0.000 g/ft^2 (0.00 g/m^2)	0.000 g/ft^2 (0.00 g/m^2)	ASTM E859
High velocity air erosion	No continued erosion after 4 hours	No continued erosion after 4 hours	ASTM E859
Hardness	40	49	ASTM D2240
Bond impact	No cracking, spalling or delamination	No cracking, spalling or delamination	ASTM E760
Deflection	No cracking, spalling or delamination	No cracking, spalling or delamination	ASTM E759
Resistance to mold growth	No growth after 28 days	No growth after 28 days	ASTM G21
Surface burning characteristics	Flame spread = 0 Smoke developed = 0	Flame spread = 0 Smoke developed = 0	ASTM E84
Combustibility	Less than 5 MJ/m^2 total, 20 kw/m^2 peak heat release	Less than 5 MJ/m^2 total, 20 kw/m^2 peak heat release	ASTM E1354

* Independent laboratory tested value. Report available upon request.

** ASTM International test methods modified for Bond Strength and Compressive Strength, where required, for high density, high performance products.

*** All in-place performance tests should be conducted at or below the minimum recommended specification density.

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