MONOKOTE® Z-146 PC
High Density Petrochemical Grade Cementitious Fireproofing
Product data and application instructions

Product Information
Monokote Z-146PC petrochemical grade cementitious fireproofing has been developed by GCP Applied Technologies to meet the harsh conditions found in petrochemical processing and refinery facilities.

- **Z-146PC** is a Portland cement-based fireproofing requiring only the addition of water at the job site to form a consistent pumpable and trowelable slurry.
- **Z-146PC** is supported by GCP fireproofing representatives worldwide trained in the specification and application of fireproofing products in commercial, industrial and petrochemical environments. GCP has over 40 years experience in the fireproofing business.

Features & Benefits
- **Fire tested**—Z-146PC has been tested in accordance with Underwriters Laboratories Inc. UL 1709 and UL 263 (ASTM E119), investigated by UL for exterior use, jet fire tested in accordance with HSE standard OTI 95 634, and blast performance tested to a charge corresponding to 500 lbs of TNT at a standoff of 62 ft.
- **Durability**—Z-146PC sets and dries to a hard, damage resistant coating offering resistance against physical contact and impact occurring during routine operations and maintenance at the facility. Z-146PC has been tested for bond, compressive strength, hard-ness and other properties in accordance with API Guidelines (Publication 2218) and ASTM in-place performance standards.
- **Application versatility**—Z-146PC can be mixed in standard plaster mixers. After mixing, Z-146PC may be spray-applied with commonly available pumping and spraying equipment for high-speed efficient application. For hand application it is recommended that Z-146PC be sprayed into a suitable container and troweled into place as required.
- **Economical**—Z-146PC offers cost-effective fire resistance in interior environments such as control rooms and storage facilities as well as in exterior environments such as vessel skirts, pipe racks and other structural supports. Simple mixing and high-speed efficient application reduces both time on site and labor costs.

Conditions not Recommended
- Use on aluminum or other non-ferrous surfaces.
- Use as a refractory cement.

Coatings Requirement
- **Steel coatings**—Z-146PC neither prevents nor promotes the corrosion of steel. However, the inclusion of calcium nitrite as a corrosion inhibitor has been shown to retard the rate of corrosion due to salt and other aggressive environmental conditions.
- **Surface coatings**—Breathable coatings, such as latex paints, may be applied over Z-146PC to achieve various desired aesthetic finishes. However, coatings tend to trap moisture and may require significant maintenance.

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 hazard and fire resistance classifications.
Performance Characteristics

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Recommended Specification</th>
<th>Laboratory Tested* Values</th>
<th>Test Method **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry density, minimum average</td>
<td>Min. 40 pcf (640 kg/m³)</td>
<td>See note below***</td>
<td>ASTM E605</td>
</tr>
<tr>
<td>Bond strength</td>
<td>Min. 10,000 psf (478 kN/m²)</td>
<td>16,727 psf (800 kPa)</td>
<td>ASTM E736</td>
</tr>
<tr>
<td>Compression, 10% deformation</td>
<td>500 psi (3.45 MPa)</td>
<td>561 psi (3.87 MPa)</td>
<td>ASTM E761</td>
</tr>
<tr>
<td>Air erosion</td>
<td>Max 0.000 g/ft² (0.00 g/m²)</td>
<td>0.000 g/ft² (0.00 g/m²)</td>
<td>ASTM E859</td>
</tr>
<tr>
<td>High velocity air erosion</td>
<td>No continued erosion after 4 hours</td>
<td>No continued erosion after 4 hours</td>
<td>ASTM E859</td>
</tr>
<tr>
<td>Hardness</td>
<td>40</td>
<td>49</td>
<td>ASTM D2240</td>
</tr>
<tr>
<td>Bond impact</td>
<td>No cracking, spalling or delamination</td>
<td>No cracking, spalling or delamination</td>
<td>ASTM E760</td>
</tr>
<tr>
<td>Deflection</td>
<td>No cracking, spalling or delamination</td>
<td>No cracking, spalling or delamination</td>
<td>ASTM E759</td>
</tr>
<tr>
<td>Resistance to mold growth</td>
<td>No growth after 28 days</td>
<td>No growth after 28 days</td>
<td>ASTM G21</td>
</tr>
<tr>
<td>Surface burning characteristics</td>
<td>Flame spread = 0</td>
<td>Flame spread = 0</td>
<td>ASTM E84</td>
</tr>
<tr>
<td></td>
<td>Smoke developed = 0</td>
<td>Smoke developed = 0</td>
<td></td>
</tr>
<tr>
<td>Combustibility</td>
<td>Less than 5 MJ/m² total, 20 kw/m² peak heat release</td>
<td>Less than 5 MJ/m² total, 20 kw/m² peak heat release</td>
<td>ASTM E1354</td>
</tr>
</tbody>
</table>

* 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.

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 other 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.

Inspection

Prior to the application of Z-146PC, an inspection shall be made to determine that all substrates are acceptable to receive fireproofing. Substrates must be free of any substances that would impair the adhesion of the fireproofing. All substrates shall be compatible with Portland cement-based fireproofing.

It is recommended that all substrates covered by fire-proofing be routinely inspected as part of an ongoing facilities maintenance program. Where materials have been removed for inspection, GCP should be consulted for proper patching procedures.

Mixing

Z-146PC shall be mixed by machine in a conventional paddle type or continuous mixer designed for cementitious fireproofing. 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 52–59 pcf (835–945 kg/m³).

Using a suitable metering device and mixer, approximately 4 gal (15 L) per bag shall be first added to the mixer as the blades turn. Add Z-146PC and mix until the mix is lump-free with a creamy texture. Overmixing Z-146PC will reduce pumping rate and density.

Application

- Z-146PC material shall not be used if it contains partially set, frozen or caked material.
- Z-146PC shall have a minimum average dry, in-place density of 40 pcf (640 kg/m³).
- 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 (140 kN/m²) will provide the correct hangability, density and appearance.
- Z-146PC may also be first sprayed into a suitable container and then trowel applied.

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 of 72 hours after application shall be no less than 40°F dry naturally.

Safety

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 Material Safety Data Sheet for Monokote Z-146PC is available on our web site at www.gcpat.com or call toll free at 866-333-3SBM.