



FP250 Cold Fusion Concrete®

GEOPOLYMER CONCRETE SPRAY or TROWEL APPLIED FIREPROOFING



Technical Data Sheet

GEOPOLYMER SOLUTIONS, LLC



FEATURES AND BENEFITS

Geopolymer Solutions, LLC (GPS) has developed Cold Fusion Concrete® (CFC) FP250. FP250 is designed for use where excellent durability and chemical resistance is desired. This UL263 Listed (Design X860) and UL1709 Listed (Design XR746), 42 to 50 pounds per cubic foot (pcf) density material contains fire resistant microfiber to resist cracking during seismic events or shipping and handling of coated members. This fiber, combined with an early and final compressive strength greater than that in any other cementitious fireproofing material, makes FP250 the material of choice. FP250 contains no Portland cement and consequently has none of the weaknesses of conventional cementitious fireproofing materials, including resistance to extreme heat and cold and salt water spray. FP250 has an elevated resistance to acids, solvents, chlorides and sulfates. Cold Fusion Concrete® FP250 contains 50–60% recycled content and can be helpful in obtaining LEED certifications.

Right: FP250 on a sports complex, Seattle, WA. Replaced failed WB intumescent (with exterior rated topcoat) which was less than 10 years old

MIXING & APPLICATION

Mixing FP250 may occur in a mechanical paddle type mixer if a continuous mixing apparatus is not used. Water should be added to the mixer first at a rate of approximately 4.0 to 5.0 gallons per 50 lb. bag, the water can then be adjusted to achieve a sprayed wet density of between 60 and 70 pcf. Mixing should continue for a minimum of 60 seconds. FP250 contains no Portland cement and the strength is produced from sodium silicate, calcium hydroxide, pozzolans, and other materials. Accordingly, variable water chemistry may increase or decrease the water demand of FP250 and after adjusting to the necessary wet density, the calibrated water amount should be recorded and maintained. Coverage rate is 15.4 bd/ft/bag at UL minimum density, 14.3 bd/ft/bag at UL average density.

FP250 may be pumped in any suitable rotor stator, squeeze, or piston type pump. Application delays of greater than 30 minutes should not occur without emptying the pump and pump lines or elevating the water content for pumping delays. The water content of FP250 should be calibrated for extended pump lines or substantial elevation increases but the sprayed wet density should be maintained as described above.

FP250 can be applied in one coat, even at our 4-hour rating (our highest thickness), for overhead or vertical, without reinforcement or prime coats. If FP250 is trowel applied, it should first be sprayed through a pump into a receptacle.



PHYSICAL PERFORMANCE

PHYSICAL PROPERTY	TEST METHOD	RECOMMENDED SPECIFICATION	TESTED VALUE (AFTER 21 DAYS)
DRY DENSITY	ASTM E605	MIN 42 PCF	43.5 PCF
COMPRESSIVE STRENGTH @ 10% DEFORMATION	ASTM E761	MIN 2,000 PSI	> 2,500 PSI ¹
BOND STRENGTH	ASTM E736	MIN 10,000 PSF	> 24,770 PSF ²
HARDNESS (SHORE DO)	ASTM D2240	MIN 50	> 75
DEFLECTION	ASTM E759	PASS	PASS
BOND IMPACT	ASTM E760	PASS	PASS
FLAME SPREAD	ASTM E84	0	0
SMOKE DEVELOPMENT	ASTM E84	0	0

1. > 2,000 PSI WITHIN 5 DAYS 2. > 6,000 PSF WITHIN 5 DAYS

TESTING

Testing for thickness and density may occur immediately, but due to the elevated compressive and bond strength should occur within 24 hours. Testing after 24 hours is possible but may be difficult. FP250 has been tested in accordance with Underwriters Laboratories Inc. (UL) standards using UL263 and UL1709 time-temperature burn curves. UL observed GPS facilities and has provided a Manufacturers Classification for GPS. GPS is unaware of any other commercially available high-density fireproofing material which is Portland cement free. Our geopolymer concrete technology was patented in June 2017. Tetraborate and Metasilicate are 2 components of our Cold Fusion Concrete that act as corrosion inhibitors. The ability to apply FP250 to any size steel up to a 4-hour rating in a single one-pass layer means the economics of CFC FP250 is second to none. FP250 should be specified where long lasting fireproofing with high abrasion, impact and chemical resistance is required. FP250 is ideal for use in a wide variety of commercial, institutional and industrial environments where sufficiently rugged fireproofing is needed. FP250 withstands weathering and chemical exposure and is highly recommended for use on offshore drilling platforms, petrochemical plants, power plants, military and dock facilities, since the estimated life-span of this CFC, geopolymer concrete, material is 10 times that of traditional Portland cement concrete.

SURFACE PREPARATION

Prepare the surface according to SSPC, SP-2 and/or SP-3 guidelines. Remove any existing prime coat materials which are not alkali resistant. FP250 should be placed when the surface and ambient temperature is above 40°F, and when the surface temperature is below 300°F, once cured the constant operating temperature of the steel substrate should not exceed 1200°F. FP250 should be protected from freezing for 4 days.

FINISHING

Finishing may occur at any convenient time up to about 2–3 hours after application at ambient temperatures less than 85°F. Finishing after ½ hour may occur, however will become more difficult to level the surface. Ambient temperatures exceeding 85°F, and direct sunlight, will expedite the set time of FP250. Steel troweled smooth finishing may be improved with the addition of a small amount of GPS's Fusion Finish, especially if finishing is slightly delayed.

SHELF-LIFE & STORAGE

The shelf-life of stored FP250 is approximately 6 months for paper bags and super sacks stored in a humidity and temperature controlled environment, and approximately 3 years for lined paper and plastic bags.