

A Familiar Test for an Unfamiliar Product

Geopolymer Solutions • Conroe, Texas, USA



No two projects are exactly alike. This becomes truly apparent when a project involves something completely new from both the client and UL.

Overview

The Challenge

Geopolymer Solutions (GPS) required a certification model for spray applied fireproofing that would accommodate worldwide markets for the first ever geopolymer based cementitious fireproofing. A geopolymer type fireproofing had never undergone UL design analysis in the past, making this process a learning experience for both UL and GPS.

The Solution

Being new to the UL design analysis process meant GPS needed to undergo preliminary testing to analyze oven testing behavior and other characteristics. Following preliminary testing, UL worked with GPS to analyze production operations, constituent tolerances, and the final product design to help ensure production quality to UL 263 and UL 1709 Standards. The oven test data suggested the Cold Fusion Concrete (CFC) FP250 mixture had an atypical time/temperature sample accumulation curve that was plotted using standard statistical graphing and regression analysis on a multi-linear methodology. The elevated R^2 suggested the data was of high quality and predictable between the various w/d ratio's and corresponding thicknesses. It was important to GPS that CFC FP250 be evaluated using UL's trusted processes before gaining access to the large spray-applied fire resistive material market, and UL was able to meet these needs while also providing guidance throughout the process.



This process required a great deal of trust between UL and GPS and the collaboration between both companies helped GPS produce the only geopolymer-based, spray-applied fireproofing on the earth.

A Technical Engineering Collaboration

GPS' new CFC FP250 SFRM is a sophisticated product and presented various challenges to UL and GPS. These challenges required both teams to approach the design analysis data from a non-traditional angle while maintaining the necessary conservative engineering approach to this life safety material.

Unlike Portland concrete products that contain one or two cementitious materials, the cementitious material in CFC FP250 contains about 10 materials. When typical production variances were found in the material waste products, UL helped GPS understand the cause of the variance so the recipe could be adjusted to ensure elevated quality and life safety minimum guidelines. This process required a great deal of trust between UL and GPS when discussing the proprietary recipe constituent material impact. The trust developed during this communicate' fostered immediate responses to production and administrative issues and exposed fundamental relationship contributions by UL consisting of specification adherence monitoring and dynamic and creative intellectual contributions.

An Ongoing Relationship

The elevated strength and bond characteristics of CFC FP250 provide a more conservative cementitious fire resistive material that reduces risk and increases confidence. Additionally, the introduction of UL's oversight into GPS' production operations is helping to increase product quality. GPS reported that, by installing some of UL's fundamental systems, production was streamlined, quality was elevated, and risk was reduced. Accordingly, GPS is the first geopolymer to implement UL 1709, Version 5.

UL looks forward to continuing this relationship and helping GPS find opportunities to streamline production and increasing quality and safety in future variable density mixtures.



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