



KEMROK™ *Case Study*

Sulfur Distribution Terminal, Texas Molten Sulfur Trenches - February 2010

Overview

A chemical processing facility utilized **KEMROK®** a chemically resistant, high early, non-Portland bulk cement for construction of a 705 foot long trench designed to carry molten sulfur for processing. Normally, these trenches would be constructed with high silica fume (micro silica) portland cement in order to resist the corrosive effects of molten sulfur and sulfuric acid. (Sulfur temperatures reach 300°F.)

CERATECH's **KEMROK®** cement was chosen for its chemical resistance characteristics, high strengths and rapid curing enabling faster return to service.

Project Description

Specifications called for a concrete with a slump of approximately 5 to 7 inches to facilitate pumping and rebar encapsulation and strengths of 4,000 psi in 7 days. Material was to be consolidated with spud vibrators.



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Project Description (continued)

The trench consisted of floor slabs measuring 8 ft. wide by 12" deep with 18" thick walls varying from 3 to 4 1/2 feet in height over the 705 foot length. Each trench would require just under 500 cubic yards of concrete.

Batching Process

A Vince Hagan portable system with a stand alone 500 barrel (94 ton) round silo that feeds into the weigh hopper via a 12" auger. Aggregates are fed into the weigh hoppers by a radial stacker. The batching system was a semi-automated Command Data system and is capable of direct moisture measurement of the sand. This measurement is then used for daily production until changed by the operator. CERATECH's **KEMROK**® cement Liquid activator was introduced into the mixer using a direct feed admix dispenser with a shepherd's crook. The admix dispenser utilizes a counter and cut-off switch for correct dosing of admix. The number of counts of liquid is dialed into the meter, and the operator hits the start button. The system dispenses until the desired amount of counts is reached.



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Batching Process (continued)

A check-valve is used on the dispensing end of the shepherd's crook to maintain liquid volume in the system downstream of the counter. The dispenser dosed liquid activator a rate of 15 counts per gal. Materials were introduced into the mixer using the following sequence: 1) Truck backs into plant and liquid activator is dispensed. 2) While liquid activator is dispensing, aggregates, cement and water is added. 70% of design water is used for batch water. The plant will put approximately half of the batch water in first and hold the rest back after all the other components have been added. This helps to protect against "head packing" of the load. Stone and sand proportions are also split into equal increments. Stone was initially added to the belt (to help against head packing), then alternated with the sand during the charging process. Cement is ribboned onto the aggregates and the "holdback" water is added last. 3) Mixer then proceeds to the slump rack for wash down and load inspection prior to leaving the plant. Drivers were limited to 10 gal of water for loads 6 cuyd and above, 5 gal for loads less than that.