

SURE CURE

Hydration Chamber



Do you know how your concrete is hydrating?

Do you know when it reaches initial set?

Knowledge is power.

Know your mix!

BENEFITS

- Know the exact rate of hydration for any mix.
- Develop higher strengths from any mix.
- Produce consistent set times.
- Develop strengths faster.

A SURE CURE hydration chamber can benefit anyone in the concrete industry, especially the precaster. Because early strength development is dependent on hydration, everyone in the precast business should know how their concrete hydrates. The SURE CURE Hydration Chamber generates the information necessary to know how and when the mix begins to react.

COMPONENTS

A SURE CURE Hydration Chamber works in conjunction with a SURE CURE controller to detect the natural

hydration curve of freshly mixed concrete. A sample of concrete (approximately equivalent to a 6 × 12-inch cylinder) is placed in the Hydration Chamber, which is then connected to the controller. The controller monitors the temperature of the concrete sample and controls the chamber so that the concrete neither gains nor loses heat. The recorded time-temperature data reveals the natural hydration curve for that batch of concrete. This hydration curve clearly indicates the onset of hydration and the rate at which it progresses throughout the curing period.

SURE
CURE
Hydration
Chamber
with
Y-cord.



HYDRATION

Hydration is the chemical reaction that occurs in freshly mixed concrete. Heat is generated as this chemical reaction (hydration) takes place; consequently, hydration activity can be monitored by measuring the time-temperature data of fresh concrete. All the reactive ingredients in concrete can impact the rate of hydration

Strength development in concrete is directly related to the rate of hydration. The onset of hydration indicates the initial set of concrete. It pays to know how your mix is hydrating.

WHY A HYDRATION CHAMBER?

Products Engineering developed the SURE CURE Hydration Chamber in response to a situation we encountered working with a precast client. We installed a new computer system to monitor and control the precast plant's accelerated curing systems and cylinder molds. The equipment checked out and operated properly prior to installation. A few weeks later, the client notified us that the temperature of the concrete was exceeding the maximum programmed value.

The system appeared to operate properly during the pre-set period, throughout the heat-up time and into the hold period. A few hours into the hold period, however, the temperature of the concrete would begin climbing above the programmed value. The client believed that the overheating occurred because the computer was allowing the heating circuits to turn on, but after double checking the software and having the customer run several diagnostic tests, we concluded that the system was operating properly. Nevertheless, the next day's castings revealed the same problem.

The following day we flew to the plant to examine the system firsthand and observe the equipment during operation. We again found nothing wrong with the control system. We assured the precaster that the heat causing the temperature overshoot was not coming from the computer controlled curing system. It was, in fact, coming from hydration. The precaster agreed, changed his mix design, and the problem never reoccurred.

This experience pointed out the need for a tool that would readily reveal the natural hydration curve of a concrete mix. Today's computer-controlled SURE CURE Curing System requires the operator to select a time-temperature curve for curing and to program the system accordingly. Tomorrow's system, with the aid of a hydration chamber, will program itself. The computer will take information from the hydration chamber and automatically enhance the data to optimize the curing of the precast members. The result will be maximum concrete strength with minimum energy consumption.

WHO WE ARE

Products Engineering, Inc., is a family-owned business founded in 1970. We are an established company offering innovative, specialty products designed for the prestressed/precast industry. Our innovations include electric curing, match-cure cylinder molds, computer-controlled curing, hydration chambers, and neoprene cylinder capping products.

Family ownership places our personal values at the core of our business philosophy. We use high quality components in our products; we stand behind every product we sell; we provide our customers with practical solutions; and as a specialty company, we are small enough to offer quick responses and personal attention.

G. Bradley Davis founded Products Engineering to offer the precast industry an alternative to traditional piped-steam curing systems. In 1970 he installed his first SURE CURE electric curing system. In the late seventies we introduced our SURE CURE Cylinder Mold System, the first effective match-curing system in the industry. In the eighties we installed the first computer controlled curing system in the country and became the first manufacturer to offer reusable cylinder capping products. Our latest innovation, the SURE CURE Hydration Chamber was developed in the early nineties to enable precasters to analyze the hydration process.

Customer service is central to our business. We welcome all calls and correspondence.



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