



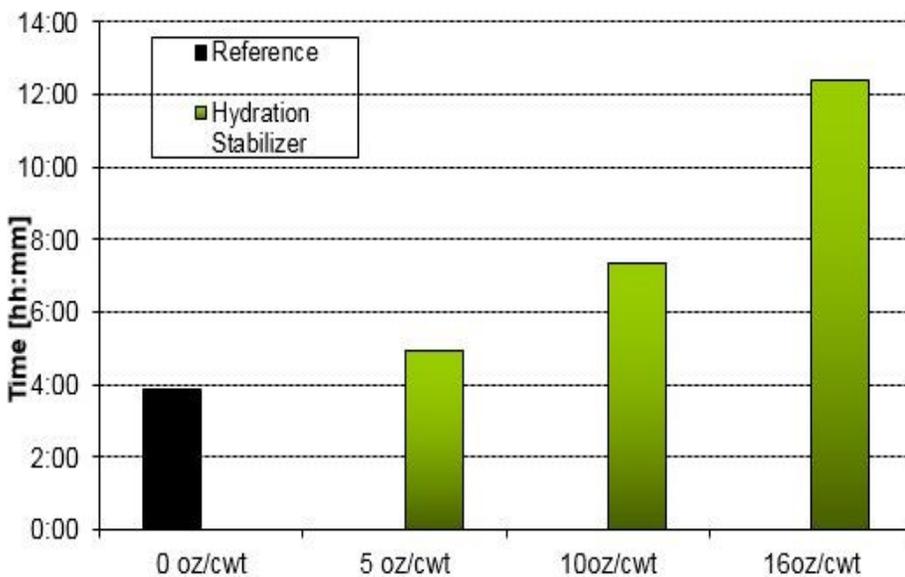
HYDRATION CONTROLLING ADMIXTURES

Product Information Sheet

Hydration Controlling Admixtures (HCAs) which are sometimes referred to as hydration stabilizers (HSs) are becoming more popular with concrete producers today as a replacement for conventional set retarding admixtures. A Hydration Controlling Admixture can be used at designated dosage rates to allow you to start the hydration process when you want. One of the main differences between hydration controlling admixtures and conventional set retarders is that when a conventional set retarder starts to wear off, the concrete tends to set quickly where as a hydration controlling admixture has a time release effect and wears off over time. Concrete finishers like the very predictable set time and workability that hydration controlling admixtures provide regardless of temperature, haul time and placement conditions. Since HCAs slow down the hydration process they also help with temperature, air loss, and slump loss to an extent. Hydration controlling admixtures can also be used to stabilize and use returned concrete and wash water. This eliminates the waste and saves concrete producers money and makes them more sustainable. Hydration controlling admixtures are commonly used in roller compacted concrete, pervious concrete, residential, commercial, high strength concrete and other types of concrete.

A hydration controlling admixture (HCA) is an aqueous solution of chemical compounds specifically formulated to control the hydration of portland cement concretes. Hydration controlling admixtures differ from conventional retarders (CRs) in several ways:

1. Unlike CRs, HCAs have a much wider dosage rate range. This offers the opportunity to have much more control over the degree of retardation.

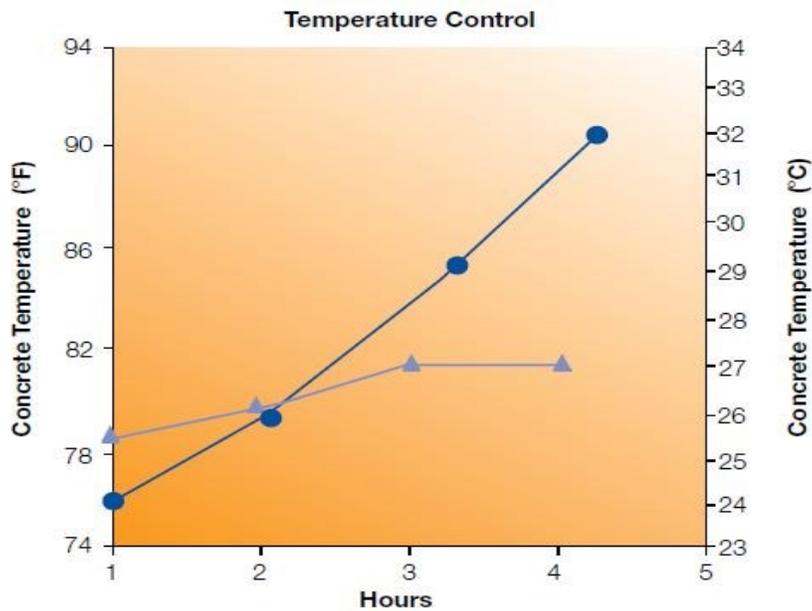
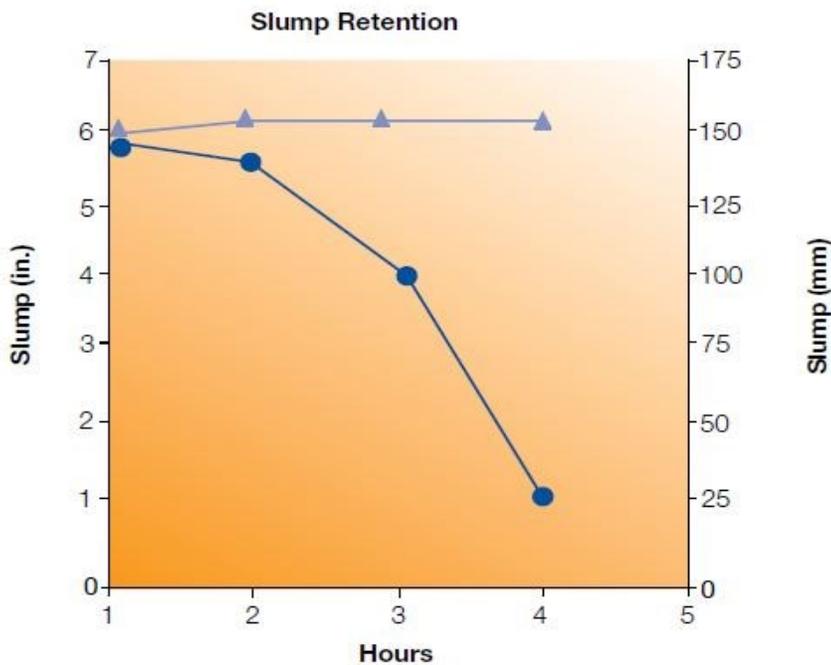


This chart gives an idea about the effect of various doses. **These results may differ with various HCA manufacturers and ambient conditions.**

2. By controlling hydration some HCAs reduce the rate of temperature gain in the plastic concrete and the peak temperature in hardened concrete.
3. When the effect of CRs begin to wear off the concrete setting rate is consistent with the age and temperature of the concrete at that time. When the effect of a hydration controlling admixture begins to wear off the rate of setting is that of the concrete when hydration was dosed.

For example, if a CR is added at the plant and the concrete is 80°F when the retarder begins to wear off, and the concrete is 2 hours old with a 85°F concrete temperature, it will set like concrete that is 2 hours old and 85°F.

If a HCA is added at the plant and begins to wear off in 2 hours and the concrete temperature is 82°F it will set at the rate of fresh concrete at 82°F.



Benefits are:

1. Permits longer hauls or dump times with minimal slump loss.
2. By controlling hydration some HCAs reduce the rate of temperature gain in the plastic concrete and the peak temperature in hardened concrete.
3. Provides predictable setting.
4. Provides better slump control especially when used in conjunction with normal, mid or high range water reducers.
5. Can produce higher early and ultimate strengths. Most HCAs complies with ASTM C494, Specification for Chemical Admixtures for Concrete, Type B Retarding, and or Type D Water Reducing and Retarding admixtures.
6. Allows returned concrete to be used that day or even the next day.
7. At the end of the day HCAs can be added to the wash water allowing the producer to use that water the next day. This saves on water and recycling costs.

It is always advisable to run trial batches with all materials to be used in order to determine the dosage rates and tests should be conducted to assure the intended performance.

Listed below are the Illinois Ready Mixed Concrete Association Members that sell Hydration Controlling Admixtures that you can contact for more information:

- BASF Admixtures Office 847-224-2454
- Brett Admixtures Office 800-989-0655
- Euclid Chemical Office 800-321-7628
- GCP Admixtures Office 877-423-6491
- GRT Admixtures Office 800-324-8154
- Industrial Systems LTD 815-344-5566
- Sika New Construction 800-933-7452



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