# Use of KIM® Admixture: Instructions for Quality Control Testing

## IMPORTANT

KIM is designed to make a waterproof membrane out of the concrete/shotcrete. This is different from traditional construction, where the concrete just forms the structure. The KIM concrete you are placing will be the only barrier to water penetration. This means that common defects found in typical concrete cannot be tolerated. Poor consolidation, unplanned cold joints, cracks, penetrations, contaminations, etc. will all result in a leaking structure. To avoid leakage and to achieve success, you must ensure that all parties follow the critical instructions outlined in these Application Instructions. Furthermore, you must properly record all relevant data in order for the manufacturer's warranty to be valid.

## EFFECT ON PLASTIC CONCRETE

The KIM® admixture has been specially formulated to meet the requirements of projects in different climate conditions as follows:

- **KIM-HS:** This version of KIM® is used for most common applications. KIM-HS is compatible with common admixtures, such as plasticizers, accelerators, retarders and air-entrainers.
- **KIM-AE:** This version of KIM® is specially designed for concrete requiring air-entrainment to resist freezing and thawing cycles. KIM-AE will increase air content by 3-5 %. Adjust or remove any air-entraining admixtures accordingly.
- **KIM-ES:** This version of KIM® is specially designed for use in hot climates and mass concrete. KIM-ES will prolong the slump retention of the concrete and delay the initial setting time. Adjust or remove set retarding admixtures accordingly.

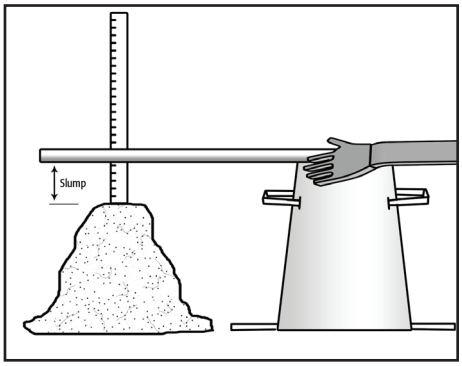
All versions will typically delay the setting times of the concrete. Consult with a Kryton Technical Services Representative for the most appropriate KIM® admixture for your project.

Be aware of the differences in air entrainment and retardation between KIM-HS, KIM-AE & KIM-ES.

General influence of KIM® admixture on concrete plastic properties at standard laboratory conditions (actual field setting times may be shorter):

| | Initial Setting Time* (hh/mm) | Air Content* (%) |
|---|---|---|
| **Plain** | 3:00 | 1.5 |
| **KIM-HS** | 4:30 | 1.6 |
| **KIM-AE** | 4:00 | 6.0 |
| **KIM-ES** | 6:00 | 1.6 |

* This table is to be used as a guide only. Actual setting times and air contents depend on mix design, temperature, and the influence of other chemical admixtures and must be based on trial mix.




## SAFETY

- Before using or handling, read the Material Safety Data Sheet for this product.
- Safety precautions for KIM concrete are no different than for normal concrete.
- KIM powder becomes caustic when mixed with water or perspiration. Take appropriate safety precautions to prevent contact with skin or eyes and to prevent breathing dust.

## NOTE

In cases where concrete loads are accepted that are not conforming to the specifications, record the name of the person authorizing the acceptance and the location of concrete placement.



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## SLUMP & CONCRETE HANDLING

- KIM increases the slump of the concrete. The amount of increase can vary greatly depending on the other ingredients in the mix.
- It is recommended that cast-in-place concrete be batched at water to cementitious ratio (WCR) of approximately 0.40 (0.37 for shotcrete). The maximum total WCR is either 0.45 (0.40 for shotcrete) or the specified maximum WCR. This includes all water present in the concrete and any added on route and on site.
- If the slump is below specification, add a mid or high range water reducer to achieve the required slump. Only add additional water with the approval of the quality control technician (to the maximum of specified WCR). Record all water additions on the batch ticket and do not exceed the specified WCR.
- Under some circumstances, you may observe slump loss at 25-40 minutes. This is false set and slump may recover with continued mixing. False set may be avoided by dosing KIM on the project site. Avoid placing KIM during the false set period.
- The addition of water without supervision and approval may void the manufacturer's warranty.
- Proper consolidation and vibration is required.

## CONCRETE TESTING

The owner, general contractor, or job specifications may require additional testing from what is called for below. The following data must be recorded to comply with the manufacturer's product warranty requirements:

- Slump using CAN/CSA A23.3-5C or ASTM C143.
- Air content using CAN/CSA A23.2-4C or ASTM C231.
- Temperature of concrete and of ambient air.
- Time of batching, testing and placement.
- Cylinders: Take compressive test cylinders from each load tested or as called for in the job specifications.
- Alert the site superintendent and/or manufacturer of any inconsistencies or concerns.
- Forward all test results to manufacturer and/or Kryton representative.


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