

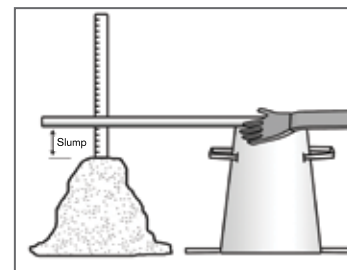
Kryton Internal Membrane™ (KIM®)

Instructions for Quality Control Testing

DESCRIPTION

Kryton Internal Membrane (KIM) is a chemical admixture in powder form used to create waterproof concrete. KIM is used in place of externally applied surface membranes to protect against moisture transmission, chemical attack, and corrosion of reinforcing steel.

IMPORTANT: You are making a waterproof membrane out of the concrete. 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 follow the critical instructions outlined in this document. Furthermore, you must properly record all relevant data in order for the manufacturer's warranty to be valid.



EFFECT ON PLASTIC CONCRETE

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 your Kryton representative for the most appropriate grade of 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):

Type of KIM	Plastic Properties	
	Initial Setting Time* (hh:mm)	Air Content* (%)
Plain	3:00	1.5
KIM-HS (2% wt/wt cementing material)	4:30	1.6
KIM-AE (2% wt/wt cementing material)	4:00	6.0
KIM-ES (2% wt/wt cementing material)	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. Perform trial batches.

*KIM doses at 2% of cementing materials

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SLUMP & CONCRETE HANDLING

- In most cases, KIM increases the slump of the concrete. The amount of increase can vary depending on the other ingredients in the mix. Perform trial mixes.
- It is recommended that cast-in-place concrete be batched at a water to cement (w/c) ratio of approximately 0.40 (0.37 for shotcrete). The maximum total w/c ratio is either 0.45 (0.40 for shotcrete) or the specified maximum w/c ratio. This includes all water present in the concrete and any added on route and on site.
- Under some circumstances, you may observe slump loss at 25 minutes. This is false set and slump will recover with continued mixing. False set normally occurs during transport and is not noticed. Avoid placing concrete during the false set period.
- 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.
- The addition of water without supervision and approval may void the manufacturer's warranty.
- Proper consolidation of the concrete is essential to achieve the performance and benefits of KIM.

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, and forward all test results to manufacturer and/or Kryton representative. 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.