

## CURING/MEMBRANE FORMING COMPOUNDS

(Revised 6/7/1999)

REF: ASTM C309-91

MOXIE 1500 CONCRETE SEALER when used as a curing compound, provides the proper moist condition and maintains a perfect curing environment for concrete. A portion of the water and all available calcium hydroxides are transformed into a colloidal gel state until the cement paste uses the necessary amount of water required for complete hydration. This complex process properly controls the maximum allowable water loss as determined by ASTM C309, and maintains the ideal internal moist condition *DURING* hydration. This ideal moisture condition does not affect the moisture roll-off process in lightweight suspended floors.

Cast-in-Place Concrete specifications are explained under these sections. The appropriately marked references are explained under their corresponding sections.

### SECTION 3300-12, 3.1, A.

"maintained in a moist condition for **at least** 7 days after placing."

MOXIE 1500 CONCRETE SEALER maintains this moist condition throughout the **entire** curing process

### SECTION 3300-13, 2.c.

"Membrane curing compound may be used . . . provided it is wax free, and compatible with adhesive used" (soap, oil, or silicone free **Ref:** AEIS Technical Installation Manual, Armstrong, © 1994)

More times than not curing compounds **MUST BE REMOVED** and is explained later in this bulletin.

MOXIE 1500 CONCRETE SEALER complied with ASTM C309, in its entirety, until October 15th of 1991, at which time ASTM chose to exclude in-organic, silicate based solutions because they are chemically reactive rather than forming a physical membrane on the surface. MOXIE 1500 CONCRETE SEALER a chemically reactive, in-organic complex silicate, and in the initial phase forms an **integral, colloidal gel membrane**, which continues to react with the calcium hydroxides and free mix water, ultimately, and uniformly forming additional cementitious material. This complex process which controls the curing environment also reduces the permeability of the concrete to a factor of approximately  $6.57 \times 10^{-9}$  cm<sup>2</sup>/sec or .00000000657 cm<sup>2</sup>/sec in decimal form. This calculation equates to less than 6.22 cm<sup>2</sup> of water permeation per 1,000sf, over a 30 year period. Reference ASTM. D5084 Concrete Permeability (Modified).

The technical aspects of the ASTM C309 criteria excludes MOXIE 1500 CONCRETE SEALER as of the October 1991 date however, it continues to meet the **PERFORMANCE** criteria, specifically:

### ASTM C309, Section 1.

"to reduce the loss of water during the early hardening period".

MOXIE 1500 CONCRETE SEALER will reduce the loss of and rapid evaporation of surface water, especially critical in gusty or windy conditions, control initial expansion and ultimate shrinkage thereby eliminating or reducing shrinkage cracks.

### ASTM C309, Section 6.1

"when tested in accordance with 10.1, shall restrict the loss of water to not more than 0.55 kg/m<sup>2</sup> in 72 hr's.

MOXIE 1500 CONCRETE SEALER maintains the maximum allowable loss of water at 0.541 kg/m<sup>2</sup> in 72 hr's.

ASTM C309, was created to establish the proper maximum moisture loss allowable, as well as other curing related parameters for concrete. Since 1975, MOXIE 1500 CONCRETE SEALER has complied with the original intention of that criteria and will reduce the rapid surface evaporation of the mix water, especially in windy or gusty conditions, maintain an ideal

internal moist condition, reduce heat absorption in higher ambient temperatures, and conserve the heat generated by hydration in colder weather. Controlled and proper curing is the purpose of a curing agent. City, State, Federal, Municipal, Architectural/Engineering, and Soils Engineering firms acknowledge the superior curing agent properties, and that MOXIE 1500 CONCRETE SEALER is a more effective vapor barrier alternative than standard sand and visqueen, is just as cost effective, and consistently performs better.

The Portland Cement Association states that "Although it can require several months of air drying, a relative humidity of about 80% or less is often required before floor-covering materials can be placed on concrete floors." If a suspended or lightweight suspended floor is specified it can require several months as well for the hardened concrete to **APPEAR** to be suitable for the installation of a resilient floor. The left-in-place forms restrict curing, and if a typical curing agent is used, it could add years to the process. Furthermore most, if not all, membrane forming compounds **MUST BE REMOVED** before any flooring can be installed (enclosed are the requirements of Armstrong, other manufacturers are comparable). MOXIE 1500 CONCRETE SEALER **DOES NOT EFFECT SUSPENDE OR SUSPENDE LIGHTWEIGHT FLOOR CURING.**

This cost for removal of a typical curing compound can add anywhere from **\$.20 to \$.40 per square foot, or more,** an **absolutely non-existent cost** with the use of MOXIE 1500 CONCRETE SEALER.

When used as a curing compound, MOXIE 1500 CONCRETE SEALER does not require any additional curing time before flooring can be installed, provided complete hydration of the slab has taken place. This accelerates the normal time frame allowing for non-interrupted scheduling of the project. High water cement ratios will require longer hydration times.

Composed of complex, in-organic silicates, reactive catalyst, and active enzymes, MOXIE 1500 CONCRETE SEALER simply forms calcium silicates in the end process, IDENTICAL TO THAT WHICH CEMENT PASTE FORMS IN ITS' CHEMICAL PROCESS, and therefore by its' very chemical nature cannot be incompatible with adhesives, paints, coatings or topping compounds. Refer to MOXIE 1500 CONCRETE SEALER - TESTING PROCEDURES for specific information.

**MOXIE 1500 CONCRETE SEALER REQUIRES NO ADDITIONAL CURING AGENTS, MEMBRANE FORMING COMPOUNDS, OR SURFACE EVAPORATION RETARDERS OR SEALER/HARDNERS.** The application of an additional curing compound in addition to the use of MOXIE 1500 CONCRETE SEALER as a curing compound will **DELAY THE NATURAL HYDRATION OF THE CONCRETE AND DELAY THE APPLICATION OF FLOORING MATERIALS AND RELATED PRODUCTS.**

The recommended test methods, for MOXIE 1500 CONCRETE SEALER, to indicate the absence of moisture migration, permeability, or in-place moisture content level, before the installation of any flooring materials, are:

ASTM D4263 - Standard Test Method for Indicating Moisture by the Plastic Sheet Method

ASTM D4263 - With the addition of a **DEW POINT HYGROMETER** for quantitative results

ASTM D5084 - Concrete Permeability, Modified Permeability of Saturated Soils, Method A

ASTM E96 - Standard Test Method for Water Vapor Transmission of Materials, Method B

REFERENCES - Kosmatka, S. H. and Panarese, W. G., *Design and Control of Concrete Mixtures, Chap. 14, Moisture Content*, Par. 3, Pg. 172, Thirteenth Edition, © Portland Cement Association 1992