



CURECRETE DISTRIBUTION, INC.

Technical Services

Bulletin No. 1, Revision 2

11-27-2000

CONCRETE CURING & THE ASTM C-309 STANDARD

The ASTM C-309 is the standard instituted by The American Society for Testing and Materials for curing compounds that form a surface membrane when applied on freshly placed concrete. This standard outlines the parameters for moisture dissipation to ensure proper hydration. The standard states that no more than .55 kilograms of water per square meter should escape from the concrete slab in 72 hours. These types of curing agent leave a film on the surface of the concrete that mechanically block the escape of moisture. Since the proper hardening of concrete depends on water reacting with cement, it is essential that a sufficient amount of water remain in the concrete during the curing cycle.

The following issues relate to The Ashford Formula and the ASTM C-309 standard:

- 1) As pointed out in a 1991 letter from the ASTM, the C-309 standard does not apply to chemically reactive curing agents like The Ashford Formula. The standard applies only to curing compounds that form a membrane on the surface of the concrete. As a penetrant, The Ashford Formula does not form a membrane, and therefore does not meet the intent of the C-309 standard. The ASTM also points out that presently, there is no standard for chemically reactive curing agents.
- 2) The fact that there is no ASTM standard for The Ashford Formula does not mean it is incapable of delivering excellent curing results. In fact, field experience and testing indicate that The Ashford Formula produces an excellent cure compared to membrane products that meet the C-309 standard. Consistently, results have shown evidence of increased compressive strength and a reduction of surface crazing.
- 3) The Ashford Formula achieves chemically what a C-309-compliant product achieves mechanically. It accomplishes this by immediately stabilizing the finished surface of the concrete and by chemically creating a barrier that prevents the rapid escape of moisture, thus insuring that the concrete will reach its full strength.
- 4) The C-309 test results have been difficult to reproduce on a consistent basis. Over time, several tests have been performed where The Ashford Formula *did* meet or exceed the C-309 standard. However, on separate occasions, test results have indicated that it did not.

Due to the inconsistency of such test results and since the C-309 standard is not applicable to chemically reactive cures, we do not promote The Ashford Formula as being compliant. However, this does not mean that The Ashford Formula will not yield good curing* results as

* **Note:** *The Ashford Formula must be used and applied properly if good curing results are to be achieved.*

evidenced by a history of 50-plus years in the marketplace where it has consistently produced excellent curing results in terms of compressive strength, hardness, resistance to abrasion, and the elimination of most crazing.

- 5) The Ashford Formula is specified and used all over the world as a curing agent. Many large national accounts, have conducted extensive independent research over extended periods and eventually decided on The Ashford Formula to provide for the protection of their concrete floors. In addition, many engineering, architectural and design-build firms consistently specify The Ashford Formula with confidence. These organizations are available as references.

In summary, placing a moisture-blocking membrane on top of a concrete slab can be a method used for curing, but there are alternative ways to achieve similar, if not superior results. Nevertheless, should this method of curing be selected, the C-309 test is appropriate for evaluating the results. However, even though The Ashford Formula can return similar results, because it accomplishes this through a chemical process of densification, the C-309 standard as it is written does not apply.