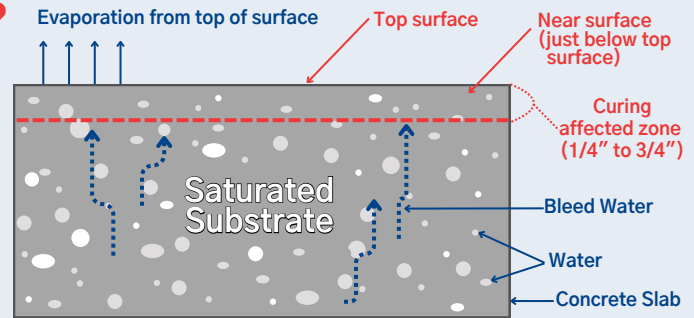




The Relationship Between Water Repellent Admixtures & External Cure of Concrete

What is meant by “water repellent admixture”?

A water repellent admixture for concrete is a chemical additive designed to reduce the absorption of water into cured concrete, thereby enhancing its durability and longevity. These admixtures work by creating a hydrophobic (water-repelling) barrier within the cured concrete matrix, limiting penetration of water and moisture from the surface. Common water repellent admixtures are based on silane/siloxane, silicone, and fatty acid chemistries.



What is meant by “external cure” (surface cure) of concrete?

The American Concrete Institute (ACI) defines curing as an “action taken to maintain moisture and temperature conditions in a freshly placed cementitious mixture to allow hydraulic cement hydration and (if applicable) pozzolanic reactions to occur so that the potential properties of the mixture may develop”. Acceptable curing methods include water cure (ponding, sprinkling, or fogging), water-retention sheet material, liquid membrane forming curing compound, and wet absorbent material (including burlap and blankets).

How Do They Differ?

Water repellent admixtures are added to concrete during the batching process for their hydrophobic qualities, making the cured concrete more resistant to water penetration. External curing is necessary to maintain surface moisture during the curing process and prevent defects like surface cracking. Both water repellent admixtures and surface applied water repellents provide protection from damage caused by freeze/thaw cycles and deicing chemicals.

Type	Mandatory per ACI	Prevents Water Loss at Concrete Surfaces	Cures to ASTM C309 Specs	Prevents Near Surface Craze/Map Cracking	Improves Properties of Hardened Concrete
Internal Cure	✗	✗	✗	✗	✓
External Cure	✓	✓	✓	✓	✓



Water Repellent Admixture is Optional

Is an optional process that reduces water absorption of cured concrete. They will enhance the durability of cured concrete from damage caused by freeze/thaw cycles and deicing chemicals.

External (Surface) Cure is Mandatory

It is essential and mandatory to retain moisture at the concrete surface, ensuring the surface quality and overall durability of the concrete within the “cure affected zone” (top 1/4” to 3/4”).

Research studies conclude that water-repellent admixtures enhance the durability of cured concrete. However, external curing methods remain essential for ensuring surface quality and overall durability. Surface-applied reactive penetrating sealers, such as ChemMasters Aquanil™ and Penseal products, provide similar water repellent properties and protection against damage caused by freeze/thaw cycles and deicing chemicals. ChemMasters Silencure™ and Guard Clear® products are one-step cures for freshly placed concrete that include reactive penetrating water repellent silane.