

TECHNICAL DATA SHEET



MOXIE SHIELD 1800 ***CONCRETE WATERPROOFING ADMIXTURE***

A READY TO USE, MULTIPURPOSE LIQUID ADMIXTURE FORMULATED TO STOP MOISTURE VAPOR, WATER MIGRATION AND ALKALI EFFLORESCENCE ABOVE AND BELOW GRADE.

AT A GLANCE

MOXIE SHIELD 1800 Concrete Waterproofing Admixture is suitable for all forms of cementitious construction and products. MOXIE SHIELD 1800 Concrete Waterproofing Admixture creates a complex chemical reaction by converting the by-products of cement hydration into a higher density cementitious material creating an impermeable substrate. The unique chemistry of MOXIE SHIELD 1800 Concrete Waterproofing Admixture forms an integral colloidal gel membrane prior to initial set.

These colloidal gels eliminate the formation of capillary pathways and restrict the rapid evaporation of surface water. MOXIE SHIELD 1800 Concrete Waterproofing Admixture increases freeze-thaw durability and becomes an integral curing compound.

RECOMMENDED USES

For use on above and below grade:

- Airports
- Arenas
- Basements
- Bridges
- Concrete Pipes
- Counter Tops
- CMU
- Foundations
- Levees and Dams
- Reservoirs
- Retaining Walls
- Secondary Containment Structures
- Sewage and Water Treatment Plants
- SRW
- Swimming Pools
- Tunnels and Subway Systems
- Parking Structures
- Underground Vaults
- Semiconductor Plants

ADVANTAGES

- Stops water vapor transmission above and below grade
- Increases compressive and flexural strength
- Provides a shrinkage compensating thermal barrier
- Plasticizer-like characteristics
- Curing compound sealer
- Dust-proofing compound
- Expels up to 90% of internal chlorides
- Stops penetration of chlorides and hydrogen sulfides
- Resists spalling and flaking
- Resists lichen, moss and other accretions
- Resists acids and sulfates erosion
- Increases freeze-thaw durability
- Resists transmission of hazardous gases including radon gas
- Increases surface hardness
- Corrosion inhibitor
- Pumping and finishing aid
- Increases high early strength, surface density and bond strength
- Reduces internal chloride ion levels
- Resists scaling
- Resistant to acids, oils, fats and solvents
- Resists rust and waterborne stains

VAPOUR PROOFING

MOXIE SHIELD 1800 Concrete Waterproofing Admixture creates a vapor proof substrate. In ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials, the tested value is more than full order of magnitude less vapor permeable than acrylic/epoxy based systems. Moxie enhanced concrete meets and exceeds the permeability value requirement of ASTM E1745 for plastic water vapor retarders.

WATER PROOFING

CRD-C 48 Water Permeability of Concrete Concrete made with Moxie Shield 1800 creates a material that is impermeable to water. When tested according to CRD-C 48 Standard Test Method for Water Permeability of Concrete, there was no water transmission detectable through the sample, even when a full pressure of 200 psi was applied to the surface of the sample.

Samples of MOXIE SHIELD 1800 Concrete Waterproofing Admixture enhanced concrete were tested as per ASTM D5084 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter. Moxie Shield 1800 enhanced samples resisted water penetration up to 0.000000005029 centimeters per second, making it more waterproof than landfill liners and retention pond liners.

DURABILITY

Independent laboratory testing using the test method A of ASTM C666 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing was performed on a laboratory sample of MOXIE SHIELD 1800 Concrete Waterproofing Admixture enhanced concrete alongside a control sample without the Moxie Shield technology. Air Entrainment admixture was not used in either sample. The control sample failed when it fell below a durability factor of 80 shortly after 300 cycles, but the Moxie Shield sample continued to 600 cycles maintaining a durability factor of 91. The test was terminated at 600 cycles.

Surface abrasion testing was performed on samples with and without MOXIE SHIELD 1800 Concrete Waterproofing Admixture as per ASTM D4060 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser. Under abrasion wheel H-22 after 1000 cycles, the Moxie sample reduced the weight loss by 30%. Under abrasion wheel CS-17 after 1000 cycles, the Moxie Shield sample reduced the weight loss by 9%. Abrasion resistance and surface hardening are significant advantages of the Moxie technology.

SUSTAINABILITY

- Building for future generations – The MOXIE SHIELD technology strengthens the inner structure of concrete and leads to longer lasting quality structures.
- LEED Certification: MOXIE SHIELD 1800 Concrete Waterproofing Admixture increases available LEED credits for projects.
- Zero VOC (EPA 24 VOC) – The MOXIE SHIELD technology is based on

inorganic compounds.

- Non-Toxic/Non-Hazardous – The liquid MOXIE SHIELD 1800 Concrete Waterproofing Admixture is not toxic or hazardous; therefore, when protecting concrete from moisture intrusion it will not release toxic or hazardous emissions.
- Water-Based – The technology is a water-based carrier for inorganic ingredients.

STANDARDS COMPLIANCE

IBC, SEC 1911 – EPA 24 VOC – EPA Marine – NCHRP 244 – ASTM C494 – UDOT USDA approved for use in food processing areas. Complies with OSHA 29 CFR-1910.1200.

HARDENED PROPERTIES

ASTM C39 Compressive Strength

MOXIE SHIELD 1800 Concrete Waterproofing Admixture adds an increased level of robustness to the concrete mix, especially when less than ideal conditions are present during the concrete placement. As per ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens, compressive strength has revealed an increase compared to a control sample without Moxie Shield 1800.

ASTM C78 Flexural Strength

Along with an increase of compressive strength, an increase in flexural strength is expected as per ASTM C78 Standard Test Method for Flexural Strength of Concrete (using Simple Beam with Third-Point Loading).

ASTM C157 Length Change

MOXIE SHIELD 1800 Concrete Waterproofing Admixture enhanced concrete has shown reduced shrinkage compared to a control sample. Testing was performed in a laboratory on a typical mix design with and without MOXIE SHIELD admixture and as per ASTM C157 Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete.

DOSAGE RATE/USE

10 ounces per 94-pound sack, or 10.64 ounces per cwt (693.6 ml/100 kg) of cementitious materials (50 ounces minimum per cubic yard). Dosing rate for precast, stucco, plaster, mortar/grout, countertop and shotcrete will vary between 16 to 25 fluid ounces per cwt. Refer to the appropriate MOXIE SHIELD 1800 Concrete Waterproofing Admixture Procedures. Include any other cementitious materials (such as fly ash) in the calculation. The proper amount of MOXIE SHIELD 1800 Concrete Waterproofing Admixture to a minimum of 20% of batch water. In central mixing plants, the admixture may be pre-blended with the entire weighed amount of water. Reduce an equal amount of batch water from the mix. Continue the batching process, including cementitious materials, aggregates, remaining batch water and other additives. Do not exceed a .52 w/(c+p) ratio regardless of slump. Higher water-slumps will result in increased slab drying time. Follow ASTM C94 - Standard Specifications for Ready-Mixed Concrete.

ON-SITE CONDITIONS

1. **PROTECTION:** Ensure that fresh concrete is protected from rain, wind, direct sunlight and freezing temperatures.
2. **FINISHING:** If additional protection of surface moisture evaporation is needed, fog misting or an evaporation retardant/finishing aid may be applied per manufacturer instructions. For further questions refer to Moxie Engineering/Construction Considerations Technical Bulletin #18-102.
3. **CURING:** MOXIE SHIELD 1800 Concrete Waterproofing Admixture functions as a curing compound. To be eligible for the MOXIE SHIELD Adhesion Warranty, curing compounds are not allowed. For further questions refer to Moxie Engineering/Construction Considerations Technical Bulletin #18-102.
4. **SLUMP:** Maximum benefits have been achieved maintaining a 3" to 3½" water-slump, or 2" to 2½" for fly ash mix designs.
5. **TEMPERATURE:** In harsh environments, follow ACI 305R Hot Weather Concreting and ACI 306R Cold Weather Concreting. During cool ambient temperatures, a non-chloride set accelerator may be used. **DO NOT** use chloride-based set accelerators.
6. **WORKABILITY:** Concrete may appear to be too stiff. It will, however, have the workability and finishing characteristics of a slump that is 1½" to 2" more than the tested slump. At the above w/(c+p) ratio there will virtually be no bleed water; inform finishers not to use bleed water as the primary indicator for finish timing. If there is any bleed water present indicating the water-to-cement ratio is too high, reduce the amount of water.
7. **PUMPING:** MOXIE SHIELD 1800 Concrete Waterproofing Admixture has characteristics of a pumping aid. There will be less line pressure in concrete pump.

PACKAGING

MOXIE SHIELD 1800 Concrete Waterproofing Admixture is available in 1 gal (3.8 L), 5 gal (18.9 L) pails, 55 gal (208 L) drums and 275 gal (1041 L) totes.

HANDLING AND STORAGE

- Handling: Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. Remove with running water or a damp cloth immediately. Masks and gloves are recommended.
- Due to pH level, **DO NOT** allow this product to come in contact with plant life or leather.
- **DO NOT** allow product to come in contact with glass, porcelain or ceramic tile, aluminum, zinc or galvanized steel. Product will permanently etch or erode the surface. Must be rinsed with running water or removed with damp cloth immediately.
- Storage: Keep the container closed. Store in clean steel or plastic containers.
- Keep separate from acids, reactive metals, and ammonium salts. Store

above 40°F / 4.5°C.

- Indefinite shelf life. **DO NOT ALLOW PRODUCT TO FREEZE.**

ADDITIONAL INFORMATION

If the ambient temperature is below 50°F an accelerator may be needed. **DO NOT USE CHLORIDE ACCELERATORS.** In high ambient temperatures, or if a delayed set time is desired, a set retarder may be used. If additional protection from surface moisture evaporation is needed, fog misting, or an evaporation retardant/finishing aid, per ACI 302, may be applied according to manufacturer instructions. **WHERE ADHERED FLOORS ARE TO BE INSTALLED, DO NOT USE SURFACE SEALERS/HARDENERS OR CURING COMPOUNDS, AS THEY WILL PREVENT PROPER MECHANICAL BOND OF ADHESIVES AND INCREASE DRYING TIME.** MOXIE SHIELD 1800 performs as a curing compound.

MANUFACTURER'S GUARANTEE

MOXIE SHIELD 1800 Concrete Waterproofing Admixture is guaranteed to perform and be manufactured per the specifications contained in the Moxie Engineering documentation.

WARRANTY

When specified, MOXIE SHIELD 1800 Concrete Waterproofing Admixture has an optional 40 year labor and materials warranty to replace the flooring manufacturer's warranty. If necessary, the 40 year registered warranty is available through Moxie International only and not the concrete producers/suppliers, dealers or distributors. For details and full description of the Moxie warranty contact info@moxieinternational.com.

RELATED DOCUMENTS

CSI Specification Sheet
Technical Bulletins
Application Procedures
Safety Data Sheet
Warranty
FAQ