

TECHNICAL DATA SHEET



MOXIE SHIELD 1850

SHOTCRETE WATERPROOFING ADMIXTURE

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

AT A GLANCE

MOXIE SHIELD 1850 Shotcrete Waterproofing Admixture is suitable for wet shotcrete applications. The MOXIE SHIELD 1850 Admixture produces a complex chemical reaction by converting the by-products of cement hydration into a higher density cementitious material creating an impermeable material. The unique chemistry of MOXIE SHIELD 1850 forms an integral colloidal gel membrane prior to initial set. The colloidal gels in the membrane eliminate the formation of capillary pathways and restrict the rapid evaporation of surface water. Furthermore, the gels permanently convert into solid cement internal to the material. MOXIE SHIELD 1850 Admixture increases freeze-thaw durability and becomes an integral curing compound.

RECOMMENDED USES

For use on above and below grade:

- Airports
- Arenas
- Basements
- Foundations
- Levees and Dams
- Reservoirs
- Retaining Walls
- Secondary Containment Structures
- Sewage and Water Treatment Plants
- Swimming Pools
- Tunnels and Subway Systems
- Parking Structures
- Underground Mines

ADVANTAGES

- Stops water vapor transmission above and below grade
- Increases compressive and flexural strength
- Provides a shrinkage compensating thermal barrier
- Plasticizer-like characteristics
- Reduces rebound of sprayed shotcrete
- 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
- Inhibits corrosion of reinforcement
- Pumping and finishing aid
- Increases 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 1850 Shotcrete Waterproofing Admixture creates a vapor proof substrate. Moxie enhanced shotcrete meets and exceeds the permeability value requirement of ASTM E1745 for plastic water vapor retarders.

WATER PROOFING

CRD-C 48 Water Permeability of Shotcrete made with Moxie Shield 1850 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.

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 1850 Shotcrete 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 1850 Shotcrete Waterproofing Admixture is not toxic or hazardous; therefore, when protecting shotcrete from moisture intrusion it will not release toxic or hazardous emissions.
- Water-Based – The technology is a water-based carrier for inorganic ingredients.

HARDENED PROPERTIES

ASTM C39 Compressive Strength

MOXIE SHIELD 1850 Concrete Waterproofing Admixture adds an increased level of robustness to the shotcrete mix, especially when less than ideal conditions are present during 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 1850.

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).

DOSAGE RATE/USE

16 to 24 oz per cwt (1040 to 1565 ml/100 kg) of cementitious materials. Include any other cementitious materials (such as fly ash) in the calculation. The proper amount of MOXIE SHIELD 1850 Shotcrete 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.

ON-SITE CONDITIONS

1. PROTECTION: Ensure that fresh shotcrete 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.
3. CURING: MOXIE SHIELD 1850 Shotcrete Waterproofing Admixture functions as a curing compound to significantly reduce surface moisture evaporation of the fresh shotcrete.
4. SLUMP: Maximum benefits have been achieved maintaining a workable slump consistency while using only the necessary amount of batch water for spraying and placement. Do not exceed a 0.52 w/(c+p) ratio regardless of slump.
5. TEMPERATURE: In harsh environments, follow ACI guidance for hot and cold weather shotcrete applications. During cool ambient temperatures, a non-chloride set accelerator may be used. Do Not Use chloride-based set accelerators.
6. WORKABILITY: Shotcrete 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, this indicates the water-to-cement ratio is too high, reduce the amount of water.
7. PUMPING: MOXIE SHIELD 1850 Shotcrete Waterproofing Admixture has characteristics of a pumping aid. There will be less line pressure in shotcrete pump/spraying equipment.

PACKAGING

MOXIE SHIELD 1850 Shotcrete 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 may be applied according to manufacturer instructions.

MANUFACTURER'S GUARANTEE

MOXIE SHIELD 1850 Shotcrete Waterproofing Admixture is guaranteed to perform and be manufactured per the specifications contained in the Moxie Engineering documentation.

RELATED DOCUMENTS

CSI Specification Sheet
Technical Bulletins
Application Procedures
Safety Data Sheet
FAQ