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BETTERMUD CONCRETE & MASONRY ADMIXTURE

PRODUCT DESCRIPTION INCORPORATING HIGHLIGHTS OF ASTM CASE STUDIES IN SUPPORT OF THE WATER RESISTANT/ WATERPROOF PROPERTIES OF BETTERMUD USED AS AN AGGREGATE STABILIZER, INTERNAL CURING AGENT AND QUALITY CONTROL MEASURE FOR DURABILITY AND SUPERIOR FINISHING OF CONCRETE SURFACES

PRODUCT APPLICATION, INSTRUCTIONS & WARNINGS

INTRODUCTION

Since 1990, BetterMud has been used as a spray-on product to prevent moisture vapor transmissions through concrete slabs, eliminating delamination of topically applied coatings such as paints, sealers, mastics and underlayments. Additionally, BetterMud helps stop efflorescence and other impurities from being carried by water through concrete slabs and walls. BetterMud was originally formulated for use in the concrete tennis court industry in order to prevent coatings from delaminating. BetterMud is now used in all types of concrete construction. When spray applied, BetterMud leaves no surface residues and works well with topically applied products of all types because BetterMud acts as a waterproofing agent rather than a water repellent.

When used as an admixture, BetterMud is especially helpful in the following concrete field operations:

1. Helps stabilize soft aggregates, such as limestone, which helps prevent soft aggregates from internally sucking the water out of the mix design.
2. Helps reduce shrinkage cracks and curling on hot and windy days.
3. Helps prevent or reduce cracks at cold joints that occur from reasonable delays in service. Note: In our experience, with field tests over the past 7 years, we have had great success preventing cold joints from cracking, even when job conditions would dictate that the concrete should have cracked. For the best results, use BetterMud's Spray-on material and spray the cold joint just prior to placing more concrete next to the cold joint. Additionally, BetterMud's multipurpose polymer can be brushed along the entire cold joint for additional adhesion along cold joints to help prevent cracking.

4. Preserves the amount of water that is needed during placing and finishing. Concrete trucks return to the plant with most of the water that they left with, even on hot days.
5. Concrete trucks and finishers have more time to work with BetterMud. For trucks, that means greatly reduced consequences as a result of hot loads. For finishers it means more time to work once the concrete is placed.
6. BetterMud has a history of being self-cleaning for concrete pumps and drums on trucks. Additionally, concrete pumps work much more efficiently because the BetterMud gel is highly salubrious.
7. Workability. BetterMud's gel, within the mix design, forces more of the fines in the mix design to the surface which maintains the strength of the surface instead of forcing bleed water to the surface which often weakens the water/cement ratio at the surface interface. BetterMud.com recommends using BetterMud's spray-on material to finish with instead of water if hot, dry or windy conditions are expected on the day the BetterMud is placed and finished.

Quality concerns in the concrete industry today are due in a large part to contractors who no longer take the time to properly cure concrete over 28 days. Properly curing concrete is essentially a lost art/practice because of the time and money required, which no one is willing to pay for. Today, most contractors, general contractors and owners are willing to take shortcuts when it comes to curing their concrete jobs which sacrifices both short term and long term quality and durability.

BetterMud compensates for the concrete industry's lack of diligence with respect to curing by helping to prevent evaporation. Most authorities attribute up to 80 percent of evaporation and shrinkage in newly placed and finished concrete to improper curing.

BetterMud as a Waterproofing Agent – Case Study #1

BetterMud.com's concrete admixture is a non-hazardous liquid waterproofing agent which originated as a spray applied product chemically formulated to react with the soluble hydroxides within the capillary structures of concrete. BetterMud, as a spray applied product, works by cross linking with the soluble hydroxides (salts) which remain inside the capillary structures in concrete. BetterMud promotes further hydration of undigested tricalcium silicate within the existing capillaries, thereby restricting the capillary size in treated structures and resulting in waterproof concrete.

In new concrete, pathways or capillaries in concrete are created as newly placed concrete shrinks, which results in bleed water being forced to the surface. BetterMud, as an admixture, waterproofs the concrete by creating a waterproof gel within the concrete which promotes curing and creates a dense waterproof concrete. BetterMud substantially alters the standard formation of capillary structures within the concrete by preventing the bleed water from escaping to the surface thereby reducing shrinkage and curling. BetterMud also acts an aggregate stabilizer which helps limit the amount of water absorbed by soft aggregates, such as limestone, within the mix design.

ASTM C 42 test results conducted 24 hours after spray applied applications of BetterMud confirmed a reduction in vapor emissions/vapor transmissions in one field trial with over a 1,000 square feet and documented a decrease in outgassing of the concrete slab from 11.02 lbs. down to 4.98 lbs.

BetterMud vs. Air Entrained Concrete – Case Study #2

In order to illustrate how BetterMud waterproofs concrete it helps to use a simple example of how freeze/thaw cycling impacts concrete. Freeze/thaw cycling occurs when concrete soaks up enough water through its capillary structures to become critically saturated, allowing ice crystals to form in the voids within the concrete. When ice crystals form in the voids within concrete they expand and damage the concrete. Traditionally, air entrainment has been used to reduce the size of the voids within the concrete thereby spreading out, and masking deterioration due to freeze/thaw cycling which made the damage less noticeable yet did nothing to address the problem. BetterMud addresses the problem of freeze/thaw cycling by promoting the hydration and growth of insoluble crystalline structures in BetterMud's mix design that are too restrictive to hold water and thereby prevent the concrete from becoming critically saturated.

ASTM C666/C666M-15, pertaining to resistance of concrete to rapid freezing and thawing, tested concrete core samples with a compressive strength of 4,200 lbs. Both the control core samples, and the BetterMud treated core samples, were subjected to 300 freeze/thaw cycles. Test results showed complete deterioration in the control samples while the BetterMud treated core samples showed no damage and no adverse effects.

BetterMud's Resistance to Chloride Ion Penetration – Case Study #3

Misuse of water during the finishing process results in the premature degradation of structures because they become more susceptible to environmental factors which contribute to problems like carbonation and chloride ion penetration.

ASTM C-1202, measuring BetterMud's resistance to chloride ion penetration, tested control cylinders poured without the BetterMud admixture versus those poured using a standard BetterMud mix design. The control cylinders showed high permeability all the way through two months of testing. Meanwhile, the BetterMud test cylinders showed steadily increasing chloride ion penetration resistance from moderately permeable, after one month of curing and testing, to extremely low chloride ion permeability after two months of testing.

Standard/BetterMud Mix Designs	Time	Permeability
Control Specimen/Standard Mix Design	1 month	High
Control Specimen/Standard Mix Design	2 months	High
BetterMud Mix Design	1 month	Moderate
BetterMud Mix Design	2 months	Very Low

PRODUCT APPLICATION

The recommended dosage for BetterMud is 14 oz per yard of concrete. For the best results, BetterMud should be added at the concrete plant before the driver slumps the truck. BetterMud adds ½ inch of slump to a standard mix design without hurting the water/cement ratio.

BetterMud's Concrete Admixture can also be added to the concrete truck on the job site and should be mixed at high speed for at least (5) minutes before placement. The recommended slump is (5 to 5.5).

WARNING!!! BetterMud is NOT compatible with calcium chloride used in cold climates and winter mix designs.

WARNING!!! BetterMud is NOT compatible with air entraining agents and admixtures.

End of Specification.