PIA POROSITY INHIBITING ADMIXTURE

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Product Description:

Barrier One PIA ("PIA") is a ready to use liquid concrete admixture that **inhibits and blocks** the redistribution of concrete moisture, allowing interior adhered flooring applications to proceed without the setbacks of the redistribution of concrete moisture. PIA eliminates the need for topical moisture mitigation systems, extended wait times for concrete moisture testing requirements, and provides an adhesion guarantee.

PIA's USA manufactured ingredients are integrally combined with existing elements of your mix design initiating capillary breaks within the concrete. These chemical reactions create abundant insoluble hydration products; permanently disrupting your concrete's natural capillary / pore structures. These reactions eliminate the movement of critical level moisture vapor emissions into & out of the concrete.

PIA has been extensively tested in both laboratory and field conditions. This admix has demonstrated increased early strength gains creating a denser concrete resulting in reduced slab curl. PIA is independently certified to reduce shrinkage, ASR, & corrosion while demonstrating permeability results.

PIA utilization allows for the direct application of primers, cementitious underlayments, sealers, and coatings to be installed on nonporous (power-troweled) slabs in as little as 7 days. Field moisture testing is not a PIA warranty requirement. If conducted (since most flooring companies require) PIA warrants up to 25lbs. per ASTM F1869 or 100% RH per ASTM F2170.

Technical Data:

Appearance: Translucent Blue
Ph: 11.3
Shelf Life: One Year from delivery
Flammability: None
HPD: Available
Sodium Silicates: None
Capillary Break: Yes

Toxicity/ Vapors / Odors: None
Specific gravity: 1.22
Weight: 9.6 lbs./gal (net)
Freeze Temp: 32°F
VOCs: 0 g/l
Chlorine Content Added: None
NSF / ANSI 61 Compliant

Dispensing:

- Compatible with normal & light weight mix designs. Mix design(s) must be approved prior to first concrete placement.
- Compatible with well consolidated steel & composite fibers.
- Dosage: 14oz volume / 100 lb. total cementitious with 1:1 mix water replacement.
- Water to Cementitious ratio design ranges of 0.31 to 0.52
- PIA should be dosed separately from other admixes & at the tail- end of the load. Adding PIA with withheld tail water is recommended. **Do not allow PIA to come in contact with dry cementitious materials.**
- For dosing accuracy & reporting, batch plant application is recommended. Allow a minimum of 7 minutes of rapid drum rotation before discharge.
- Do not let the PIA material freeze at any point prior to application.

Concrete Performance:

- PIA has no deleterious concrete effect & does not accelerate or retard mix set times per ASTM C494 testing. It facilitates finishing by reducing bleed-water, creating a creamier / richer undiluted paste.
- Water reducing admixes are acceptable to achieve slumps > +4".
- PIA has minimal impact on slump. (≤ 0.5" slump loss)
- Added shrinkage reduction admixtures (SRA) or crystalline product utilization are not recommended.
- 3" minimum slab depth for warranty consideration per ASTM 302.1R

Curing:

The Company concurs with ACI 302.2R-06 that any slab receiving moisture sensitive flooring; "shall be cured & covered with waterproof paper, plastic sheets, or a combination of the two for 3 to 7 days". Although leaving the plastic down longer is acceptable; "PIA" dosed slabs only require 24 -48 hours of cure by this means & method. Curing compounds have no deleterious effect on "PIA" performance. *However*, if a curing compound is utilized, adhesive manufacturer guidelines regarding floor prep must be followed per ASTM F-710.

Specification Requirements:

The use of Barrier One PIA admixture must be registered prior to any concrete placement for warranty consideration. In most instances, a certified / independent 3rd party serves as the project's inspection company of record and is present at every concrete placement.
These contracted representatives will be contacted by the Company and must be present on all dosed PIA jobsite placements. One daily cylinder will be collected by this agency for the Company for internal quality control testing.

All slabs on ground (SOG) require the use of an ASTM E 1745 vapor retarder. Installed per ASTM E 1643 and in direct contact with concrete per ASTM F710 & ACI 302.2R-06.

ASTM C-39	Type (1L Cement) (Average Strength Increase)	**22%**
ASTM D-5084	Hydraulic Conductivity of Saturated Porous Materials	**<1.0 x 10^{-9}**
CRD C48-92	Standard Test Method for Water Permeability of Concrete	**Pass**
ASTM C-157	Drying Shrinkage (Average Reduction in Shrinkage) (86% Better Than "0.04" Standard)	**86%**
MIP Testing	Mercury Intrusion & Porosimetry (Reduction of Pore Structure) (Normal Mix)	**15.00%**
MIP Testing	Mercury Intrusion & Porosimetry (Reduction of Pore Structure) (Self Consolidating-SCC Mix)	**36.00%**
W/CM Ratio	Water To Cementitious Ratio Range	**0.31 - 0.52**
ASTM C232	Bleed Water in Concrete (Reduction)	**19.20%**
ASTM C-494	Type S Admixture	**Pass**
ASTM C-1543 & AASHTO T-259	Reduction in Corrosion (Ponding)	**80%**
ASTM C-1202 & AASHTO T-277	Reduction in Chloride Ion Penetration (Coulombs) (Chloride Permeability Rating)	**Very Low**
ASTM C-672	Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals	**No Scaling**
ASTM G-109	Corrosion of Embedded Steel Reinforcement in Concrete Exposed to Chloride Environments	**No Notable Corrosion**
ASTM C-1152	Acid Soluble Chloride in Mortar and Concrete	**Pass**
ASTM C-1260	Potential Alkali Reactivity of Aggregates (Mortar Bond Method) (Average Reduction in ASR Expansion %)	**Pass**
ASTM C-1567	Potential Alkali Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar Bond Method)	**Pass**
ACI 212.3R	Permeability Reducing Admix for Hydrostatic Conditions (PRAH)	**Yes**
ASTM C-666 (No Air)	Freeze-Thaw Resistance (Reduction in Mass Change) (60% Is Passing)	**99%**
ASTM C-666 (No Air)	Freeze Thaw Resistance (Relative Dynamic Modulus) (60% is Passing)	**89%**