

## SECTION 03 05 10–CONCRETE POROSITY INHIBITING ADMIXTURE (“PIA”)-

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 03 Section "Summary."

#### 1.2 SUMMARY

- A. This section includes concrete Porosity Inhibiting Admixture (PIA) for all new concrete slabs, including slab-on-grade, elevated slabs, stair treads and landings.
- B. Related Sections:
  - 1. Division 01 Section: Sustainable Design Requirements”.
  - 2. Division 03 Section "Cast-in-Place Concrete."
  - 3. Division 07 Waterproofing Sections – for horizontal & vertical concrete applications in which waterproofing is to be applied over concrete substrates.
  - 4. Division 09 Flooring Sections for all moisture sensitive flooring materials installed over **“power-troweled”** concrete substrates requiring nonporous adhesives.

#### 1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with specific mix design and ACI requirements.

#### 1.4 REFERENCES

- A. American Concrete Institute (ACI):
  - 1. ACI 306R-10 Guide to Cold Weather Concreting
  - 2. ACI 305R-10 Guide to Hot Weather Concreting
  - 3. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture Sensitive Flooring
  - 4. ACI 308R-16 Guide to Curing Concrete
  - 5. ACI 302.1R- 96 Guide for Concrete Floor Slab Construction (Topping Depth)
  - 6. ACI 503R-93& 98 Use of Epoxy Compounds with Concrete
  - 7. ACI 544 Fibers

#### 1.5 SUBMITTALS

- A. Product Data: Manufacturer’s Technical Data Sheet.
- B. Sample copy of “Life of the Concrete” warranty with Adhesive Bond Consideration.
- C. Safety Data Sheet. (SDS)

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer will provide an on-site, contracted and independently certified ACI technical representative capable of randomly sampling each day’s placement.
- B. Project Specific Slab Porosity Testing and Evaluation: ASTM D5084 and/or Army Corp of Engineers CRD C48-92 tested results are used by the manufacturer to determine whether the concrete slab is acceptable to receive flooring, coatings, etc.
- C. Adhesive Bond Testing should be in basic compliance with ASTM F-710, the flooring, adhesive and possible underlayment manufacturer’s installation instructions and guidelines.

D. Manufacturer's Product Performance Shall Meet or Exceed the below Testing Data.

1. Shrinkage Reduction- 65% or Greater per ASTM C-157
2. Corrosion Inhibitor- 70% or greater per ASTM C-1543
3. Strength- 10% increase or greater per ASTM C39
4. Permeability - ASTM D-5084 maximum of  $6.10 \times 10^{-9}$

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver "PIA" in manufacturer's original, undamaged containers. Do not allow product to freeze.
- B. Store "PIA" protected from exposure to harmful weather conditions and in a temperature-controlled area above 36F degrees.
- C. Confirm with manufacturer that the product is within ideal shelf-life.

#### 1.8 WARRANTY REQUIREMENTS:

- A. Porosity Inhibiting Admixture ("PIA") must be installed per the manufacturer's published data sheet.
- B. Manufacturer's Warranty Requirements Shall Meet or Exceed the following:
  1. Term: "Life of the Concrete".
  2. ASTM D5084 Project Specific Testing
  3. Repair and/or Removal of Failed Flooring System upon completion of a manufacturer's authorized forensic investigation determination.
  4. Placement of a Topical Moisture Remediation System in event that the PIA fails.
  5. At manufacturer's discretion, replacement of flooring materials like original installed to include material and labor.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Basis-of-Design: Porosity Inhibiting Admixture (PIA) by Barrier One Concrete Admixtures : 640 Garden Commerce Parkway, Winter Garden, Florida 34787. Phone: (800) 562-9986; Email: [info@barrierone.com](mailto:info@barrierone.com)
- B. Local Representative: Dewayne Thomas; [dthomas@BarrierOne.com](mailto:dthomas@BarrierOne.com); (407) 374-0206

#### 2.2 MATERIALS

- A. "PIA" for interior slabs on ground and elevated decks ,shall be a non-toxic, liquid admixture that is free of volatile organic compounds (VOC) and sodium silicates. The PIA shall create a natural chemical reaction forming a permanent barrier (capillary break) that is integral to the concrete, insoluble, and irremovable.
  1. Hydraulic conductivity: Project specific maximum of  $6.0 \text{ E-9 cm/s}$  per ASTM D5084.
- B. Topical field treatments and/or systems and crystalline products are "**not equal**" or acceptable performance substitutes.
- C. Moisture Vapor Reduction Admixtures (MVRA's) that have Project specific maximum of  $6.0 \text{ E-8 cm/s}$  per ASTM D5084 are "**not equal**" or acceptable performance substitutes. As per ASTM D-5084, these products are 10-times less effective than PIA's.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION & CURING

- A. As Per The Most Current PIA Technical Data Sheet.

#### 3.2 FIELD QUALITY CONTROL

- A. Testing and Inspecting: The manufacturer of the "PIA" will, at their expense, contract with a qualified independent agency to obtain project specific sample cylinders and independent certified laboratories for subsequent testing per ASTM D5084 and/or CRD C48-92.