

# PCA-AWA

## Anti-Washout Admixture and Viscosity Modifier For Concrete

### DESCRIPTION:

**PCA-AWA** is a liquid dispersion of a water soluble polymer that prevents the washout of finer particles in plastic concrete by significantly increasing the cohesiveness and viscosity of the concrete mix during underwater concrete placements.

### USES:

- Any underwater concrete placements where resistance to washout of fines in the concrete mix are desired
- Highly fluid self-consolidating concrete mixes that require the use of a viscosity modifier to eliminate segregation.
- Mixes requiring reduction or elimination of bleed water. **PCA-AWA** enhances concrete performance and provides a means to lower construction costs by eliminating the need for costly dewatering procedures.

### ADVANTAGES:

- Excellent washout resistance, protecting concrete integrity and eliminating the need to dewater placement site
- Improved workability and placeability
- Enhanced pumpability and tremie flow
- Improved mix cohesiveness and resistance to segregation
- Easily and accurately dispensed and mixed into the concrete/grout.
- Improved bond strength and compressive strength
- Reduced surface laitance

### DOSAGE RATE:

**PCA-AWA** is recommended for use at a dosage rate of 2 to 20 oz/cwt (130 to 1300 ml per 100 kg) of cementitious material. The dosage rate of **PCA-AWA** is dependent upon a number of variables including cementitious content, w/cm ratio and degree of washout resistance desired.

### MIX PROPERTIES:

#### Compressive Strengths:

**PCA - AWA** has little effect on the compressive strength of the concrete when designed according to ACI 304 R. When a lower water / cementitious ratio or higher compressive strength is necessary, the use of an additional high-range water reducer, such as **UltraFlo 2000**, will be needed. **Do not use UltraFlo 4600** or any poly-naphthalene high range water reducer with **PCA-AWA** as these materials are incompatible.

#### Set Time:

**PCA-AWA**, when used within the recommended dosage range, has very little effect on set time. A small amount of retardation will be noticed when **PCA-AWA** is added at the higher end of the dosage range.

#### Bleed Water:

Bleed water is significantly reduced and may be eliminated in concrete mixes, neat mixes, and grout mixes.

#### Slump:

Underwater concrete mix designs should be batched at a minimum eight inch slump. A decrease in slump should be expected after the addition of **PCA-AWA**. A high-range water reducer may be added as necessary to meet specified slump for placement. Avoid using water to re-temper the concrete mix. Slump retention will be similar to normal concrete mixes.

#### Air Entrainment:

When using **PCA-AWA** in a mixture, the air entraining admixture dosage requirement may be reduced to reach specified air content. Typically as mix viscosities build there is an increase in the amount of entrapped air in the mix. As mixing is stopped and placement occurs these entrapped air bubbles will slowly leave the mix and the entrained air bubbles will remain. Field trials should be run to become familiar with this effect.



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## USE PER ACI 304R:

ACI-304R, Chapter 8 (Concrete Placed Underwater), Section 3 suggests certain mix proportions for underwater placements be followed. Some examples are:

- Pozzolanic admixtures, such as fly ash, should be used at rate of 15% of total cementitious
- Minimum cementitious of 600 lbs/yd. (356 kg/m)
- Water to cementitious ratio targeted at 0.45 (w/cm)
- 45% to 55% fine aggregate by volume all aggregates
- Slump range 6 to 9 in. (150 to 230 mm)
- Air content – 5%
- Concrete temperatures in the range of 60° to 90°F (15 to 32°C) with a minimum concrete mix temperature of 40°F (5°C)

It is recommended that all underwater concrete be placed continuously by tremie pipe or through a concrete pump per guidelines established in ACI 304R, Chapter 8.

Because local materials, job conditions and project requirements vary, please contact your local **Premiere Concrete Solutions Specialist** for further assistance in designing concretes and grouts for underwater applications.

## TECHNICAL NOTE:

**PCA-AWA** does not contain any purposely-added calcium chloride or other chloride based components. It will not promote or contribute to corrosion of reinforcing steel in concrete.

## COMPATIBILITY:

**PCA-AWA** is compatible with all types of Portland cement, class C and F fly ash, GGBF (slag), silica fume, and approved air-entraining, water reducing, retarding and accelerating Pro Mix admixtures. For best results, each admixture must be dispensed separately into the concrete mix.

Prior to use, mechanical agitation is recommended for optimum performance.

## STORAGE:

**PCA-AWA** may freeze at temperatures below 35° F (2°C) and precautions should be taken to protect it from freezing.

## PACKAGING:

55-gallon drums and bulk deliveries.

## SHELF LIFE:

3 months over 50°F.

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