

Liquid Fly Ash Discussion

- Product Manufacturer: Specification Products, Indianapolis, IN
- Product Name: E5 Liquid Fly Ash



Liquid Fly Ash

- Product Claims:
 - Superior concrete finishability
 - Same pozzolanic reactivity as traditional SCMs
 - Promotes secondary C-S-H development
 - Up to 15% cementitious material reduction
 - Creates better interfacial bonds
 - Predictable performance
 - Improved finish and reduced re-work
 - Reduced efflorescence
 - Increased density within the matrix

Liquid Fly Ash

- What is it?
 - Proprietary nano silica admixture
 - No information on how it is made but has Ca, Alum., and silica and appears to perform similar as silica fume or other pozzolan products
- What does it do?
 - Allows the cement to hold/retain water
 - Helps with workability
 - No cure (no wet cure blankets on bridge decks)
- Typical w/c ratio 0.42 to 0.49 (0.45 to 0.47 typical)
- Applied rate: 4 to 8 oz/cy
- Costs \$1.00 gallon

Liquid Fly Ash

- Who is using it?
 - Indiana DOT (Specification Products is located at Indianapolis, IN)
 - Used E5 Internal Cure/Liquid Fly Ash product on 50 bridge decks since June 2020
 - Experienced less cracking
 - Improved concrete workability
 - No wet cure
 - Continuing to collect analyze project samples, electron microscope appears to shows that interstitial bonds are increase
 - DOT was skeptical with the product at first but no allows it with the contactors request
 - Other states have shown interest based on Indiana's experience
- Does it work as a replacement as of fly as for ASR mitigation?
 - Ongoing work by Luna Lu with Purdue University
 - ASTM C 1567 and ASTM C 1260 shows ASE potential reduction
 - Purdue working to determine efficiencies with other pozzolans