

## WATER REDUCING AND SET RETARDING ADMIXTURE

### ADVANTAGES

- Increases compressive and flexural strengths.
- Higher strengths may be achieved more economically.
- Higher durability.
- Decreases segregation.
- Improved workability.
- Extended set times may be achieved.
- Reduced water content for a given slump.
- FR-1 is packaged in water-soluble Fritz-Pak inner bag for convenient use at plant or job site, eliminating the need for admixture dispensers.

### DESCRIPTION

Fritz-Pak FR-1 is a dry powdered admixture packaged in a patented ready-to-use water-soluble bag. FR-1 is formulated to produce a more uniform and workable mix with less water that yields stronger more durable concrete. FR-1 is recommended for all types of concrete where improved concrete performance with a lower water-cement ratio and/or set retardation is desired. FR-1 does not contain calcium chloride or other potentially corrosive materials and is compatible with all standard concrete admixtures.



### DIRECTIONS

1. Determine the amount of FR-1 required. See Recommended Dosage Rate.
2. Each FR-1 package is double bagged. Remove the protective outer bag and add the water-soluble Fritz-Pak inner bag to the concrete mix. The entire inner bag will easily dissolve.
3. Mix at high speed for 5 to 7 minutes to insure that the FR-1 is uniformly dispersed throughout the mix.

### RECOMMENDED DOSAGE RATE

Use a dosage rate equal to 1.5 to 2.0 ounces per 100 pounds (1.0 to 1.2 grams per kilogram) of total cementitious materials (0.10 to 0.12%). Using FR-1 at the recommended dosage rate, 5 to 7 percent water reduction can be achieved. Concrete temperature, ambient temperature or concrete mixes containing accelerators, retarders, or special admixtures such as silica fume may require dosage rates outside the recommended range. Contact your Fritz-Pak distributor with any questions concerning the dosage rates for this product. It is recommended that testing be done to determine the suitability of FR-1 to your mix designs.

### COMPATIBILITY

FR-1 is compatible with all air-entraining admixtures, calcium chloride and other admixtures. When used with other admixtures, each admixture must be dispensed separately into the mix.

### APPLICABLE STANDARDS

ASTM C-494 Type D, AASHTO M-194 & CRD C-87

### PACKAGING

- 1-lb water soluble bag, 30 bags per case, 25 cases per pallet (item #95910)
- 2.5-lb water soluble bag, 10 bags per case, 25 cases per pallet (item #95300)
- 50-lb paper bag, 40 bags per pallet (item #95913)

### FAQs

- Q. What is the difference between a water reducer and a superplasticizer?
- A. Both have the ability to chemically disperse

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cement, without the addition of water. That is why they are called water reducers. A water reducer has a limited capability in dispersion or water reduction, usually no more than 10% water reduction. A superplasticizer is a much stronger material and can reduce water content up to 40 %.

- Q. Will FR-1 discolor the concrete?  
A. No, at the recommend dosage rate FR-1 will not discolor the concrete
- Q. Does FR-1 affect the strength of the concrete?  
A. Yes, if you use less water when adding FR-1, your concrete will be stronger. If your water content is not changed, strength is not changed.
- Q. Will it change the set time?  
A. Yes. It is a slight retarder.
- Q. Will FR-1 effect the air content?  
A. No.
- Q. What standards does it meet?  
A. Meets ASTM C-494 Type D, AASHTO M-194 & CRD C-87.
- Q. Can I lower my cement content?  
A. Yes. By lowering the water:cement ratio you can expect higher strengths. You can lower your cement content to lower your strength to meet your specification.
- Q. What are the best applications of FR-1?  
A. FR-1 is extensively used as an ingredient in the manufacture of stuccos, bagged concrete, mortars, color hardeners and other cement based materials. Besides water reduction, it can also be used as a retarder for products used in warm weather conditions.

### **PRECAUTIONS**

All Fritz-Pak concrete admixtures should be stored in a dry location, protected from breakage, deterioration and contamination. Fritz-Pak concrete admixtures are not subject to damage from freezing temperatures.

### **WARRANTY**

The information and recommendations in this publication are, to the best of our knowledge, reliable. Suggestions made concerning uses or applications are only the opinion of Fritz-Pak Corporation and users should make their own tests to determine the suitability of these products for their own particular purposes. However, because of numerous factors affecting results, Fritz-Pak Corporation makes no warranty of any kind, express or implied, including those of merchantability and fitness for purpose. Statements herein, therefore, should not be construed as representations or warranties. The responsibility of Fritz-Pak Corporation for claims arising out of breach of warranty, negligence, strict liability, or otherwise are limited to the purchase price of the materials.

U.S. Patents No. 4,961,790 and No. 5,120,367.

Other Patents pending in U.S. and selected foreign countries.

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