



Wash Water Stabilization and Delayed Set Admixture

MINI DELAYED SET

ADVANTAGES

- One bag typically retards the set of one yard of concrete for one hour.
- Concrete may be kept in a plastic state for reuse or extended delivery times.
- Saves labor, equipment and freight costs by eliminating disposal of waste concrete.
- No need for expensive reclaimer/recycler units and their high maintenance costs.
- Reduces labor costs required for chipping set concrete out of mixer drums when used after each load.
- Reduces the amount of water required for wash down.
- Decreases environmental problems due to the disposal of waste concrete and residual concrete wash water.
- No need for admixture dispensers because **Mini Delayed Set** is packaged in a patented water soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION

Fritz-Pak **Mini Delayed Set** is a dry powdered admixture, packaged in a ready-to-use water soluble bag. **Mini Delayed Set** is designed for stabilizing residual concrete wash water or extending the setting time of concrete while improving concrete quality. Wash water or concrete, treated with the **Mini Delayed Set**, will be stabilized and may be reused after extended time periods. Concrete produced with stabilized wash water will result in performance characteristics equal to or superior to reference concrete. **Mini Delayed Set** does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

APPLICATIONS AND DIRECTIONS

There are many ways to use **Mini Delayed Set** in concrete operations. Directions for varied applications are listed below.

A USE OF MINI DELAYED SET AS A RETARDER:

1. Determine how much **Mini Delayed Set** is needed. See Recommended Dosage Rate.
2. Each 8-oz 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. Agitate at high speed for 5-7 minutes to insure that the **Mini Delayed Set** is dispersed throughout the mix.
4. Air content may increase slightly, depending on dosage rate and mix design.

5. **Mini Delayed Set** concrete may be used with or without the addition of fresh concrete.
6. If delayed set concrete must be used earlier than planned, mix concrete at high speed or add additional fresh concrete to compensate for the remaining set delay.
7. If delayed set concrete must be used later than planned and concrete has not returned to its original slump, more **Mini Delayed Set** may be added.

B STABILIZATION AND REUSE OF RESIDUAL CONCRETE WASH WATER:

1. After discharging all concrete, wash down rear drum fins and chutes.
2. Remove protective outer bag and add one Fritz-Pak **Mini Delayed Set** for each 16 hours of wash water stabilization required.
3. Add 50 to 75 gallons (200 to 300 liters) of water to the mixer.
4. Mix wash water and **Mini Delayed Set** at high speed for 2½ minutes.
5. Reverse drum to coat rear fin assembly. **DO NOT DISCHARGE WASH WATER.**
6. Mix wash water at high speed for an additional 2½ minutes (5 minutes total).
7. If the mixer drum is truck mounted, park the truck and cover the drum opening in order to prevent rain water from coming in.
8. The next time concrete is batched, subtract the added wash water and continue with normal mixing procedures.
9. Maintain a **Mixer Batch Log Sheet**.

C USE IN CONCRETE PUMPS.

During concrete pumping operations there are often interruptions in the concrete supply. **Mini Delayed Set** can be added to the concrete in the pump hopper to allow pumps to wait.

1. To retard the concrete for one hour in small pumps with booms shorter than 42 meters use one bag of **Mini Delayed Set**. For larger pumps, hot weather (>90 °F or 32°C) or pumps with booms painted a dark color, use two bags.
2. Remove the protective outer bag and place the inner water soluble bag into the concrete in the hopper. Turn the agitator and allow the **Mini Delayed Set** to mix completely for 5-7 minutes. Position the boom of the pump so it can discharge into the hopper. Start pumping to allow the retarded concrete to be circulated throughout the complete boom. Recirculate every 5-10 minutes. Check the concrete continuously and if any signs of setting occur, repeat the dosage of **Mini Delayed Set** or discharge the concrete.
3. Notify the contractor or concrete workers that some of the concrete will be retarded and to adjust their finishing and placing requirements if necessary.

D FOR USE IN STAMPED CONCRETE.

The process of stamping concrete may be slow and contractors may not have enough time to finish all the concrete properly from the initial concrete discharged to the final concrete discharged. We recommend retarding the second half of the load.

1. Discharge the first half of the concrete load normally.
2. Add 3-5 bags of **Mini Delayed Set** to the second half of the mix still in the drum and mix for 5-7 minutes (see **Section A 1-3**).
3. Place the second half of the concrete, which is now delayed.
4. Remind the contractor to keep the surface moist to avoid excessive drying of the retarded concrete.

E FOR USE IN DRY-BATCH PLANTS.

These batch plant facilities provide a difficult problem for the producer. During batching cement dust clings to the inner fins. This cement dust hardens rapidly, particularly in hot temperatures. We recommend that **Mini Delayed Set** dissolved in water and sprayed on these surfaces to maintain a high level of inner fin cleanliness.

1. Remove outer bag and introduce the inner water soluble bag into a sprayer container with 2-3 gallons (8-12 liters) of water.

2. Agitate for 5-7 minutes to insure that **Mini Delayed Set** goes in solution.
3. Apply a thin coat of solution to the rear of the drum and the discharge chute before batching the concrete. The coat of solution may be even more effective if allowed to dry, but it is not necessary.

F LOW SLUMP/SLIPFORMED/ SLOWLY DISCHARGED CONCRETE.

These mixes are not totally discharged for 1 to 2 hours after batching and often leave a heavy residue of mortar on the interior of the drum and fins. The use of **Mini Delayed Set** at the mid-point of discharge will retard the remaining concrete and reduce the heavy build-up. (See **Section A** for complete instructions). Also, the addition of **Mini Delayed Set** with 30-50 gallons of water after discharging at the site, will retard the mortar lining the inner surfaces of the drum making it easier to remove.

G NO DISCHARGE AT THE JOB-SITE ALLOWED.

Add one bag of **Mini Delayed Set** to drum together with 25-30 gallons (100-120 liters) of water. Mix for 5 minutes and then rotate the drum in reverse to coat the upper part of the drum without discharging the solution of **Mini Delayed Set**. Proceed to the plant or designated discharge area. At the plant it is not necessary to discharge the contents. Notify the batchman to reduce the same volume of water in the next concrete load.

H LEFTOVER CONCRETE IN DRUM

When not all concrete is discharged at the jobsite, the leftover concrete may be retarded to allow for a safe return to the plant or re-route to another jobsite. Use the dosage recommended above for retarded concrete and proceed as directed by qualified quality control personnel.

RECOMMENDED DOSAGE RATE

Typically one bag of **Mini Delayed Set** will retard the set of one cubic yard for one hour. Double the dosage to get a 2-hour delay, triple it for three hours. See Table 1 for typical dosages. See Table 2 to change dosage rates depending on temperature and variations in cement content of mix. More detailed information is available in *Product Bulletin #104, Standard Delayed Set*.

MINI DELAYED SET

The easy to use, easy to dose
Concrete Set Retarder

One Bag
One Yard
One Hour*

*For a typical mix with 500 lbs of cement per yard at 60-80 °F.

Table 1. Determine the number of bags of Mini Delayed Set to use for 1, 2 or 3 hours of set retardation for 1-10 yards of concrete with a typical 500 lbs cement per yard.

Yards of Concrete	Hours of Set Retardation Required		
	1 hour	2 hours	3 hours
1	1	2	3
2	2	4	6
3	3	6	9
4	4	8	12
5	5	10	15
6	6	12	18
7	7	14	21
8	8	16	24
9	9	18	27
10	10	20	30

Table 2. Dosage rate for each hour of set retardation at different temperatures.

Temperature (°F/°C)	Dosage Rate oz/cwt (ounces of Mini Delayed Set per hundred lbs of cement)	Dosage Rate Grams of Mini Delayed Set per kg of cement
Cold Weather (less than 60°F or 15°C)	1.0	0.62
Normal Weather (60-80°F / 15-27°C)	1.3	0.83
Hot Weather (higher than 80°F or 27°C)	1.7	1.03

COMPATIBILITY

Mini Delayed Set is compatible with all air-entraining admixtures, calcium chloride and other admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

APPLICABLE STANDARDS

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

PACKAGING

Fritz-Pak **Mini Delayed Set**

- 8 oz (227 gram) water soluble bag, 60 bags per case (item #95050)

Also Available:

Fritz-Pak **Standard Delayed Set**

- 2 lb water soluble bag, 18 bags per case (item #95200)
- 1360 gram water soluble bag, 10 bags per case (item #95300)
- 50 lb paper bag (item #95250)

PRECAUTIONS

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

DISCLAIMER

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. Because of numerous factors affecting results, Fritz-Pak Corporation makes no warranty of any kind, expressed 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.

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Also available:

- **Standard Delayed Set**
Delayed set admixture for set retardation with minimal effect on concrete early strength development. In 2-lb bags.
- **Fly-Ash Retarder**
Retards set of Class "C" Fly-Ash. Use for soil stabilization, manufacturing of Class "C" ash based products.
- **FR-1**
Retarder with water reduction capabilities.
- **Specialty Retarders**
Retarders and blends for special applications such as: fast set cements, high temperature retarders, gypsum retarders, long term retarders, calcium-aluminate cements, refractory cements, plaster retarders.

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Contact Fritz-Pak for information on:

- **Concrete Set Retarders**
- **Superplasticizers**
- **Air-Entraining Agents**
- **Pump Primers/Pumping Aids**
- **Water Reducers**
- **Non-Chloride Accelerators**
- **Finishing Aids**
- **Non-Shrink Grout Additives**
- **Concrete Surface Retarders**
- **Admixture Concentrates for Dry Packaged Blenders**