Fritz-Pak Corporation manufactures a complete line of concrete admixtures and pump primers in powdered form. We have distributors and dealers throughout the U.S. and sales worldwide. Fritz-Pak Corporation was established in 1998. The Fritz-Pak line of products has been in use since 1988. Our products are packaged in patented water-soluble bags, a unique method that no other company can offer. Fritz-Pak Corporation is a member of the following associations: the American Concrete Institute, the American Concrete Pumping Association, the American Society of Concrete Contractors and its Decorative Concrete Council, the International Packaged Concrete Manufacturer’s Association, the National Ready-Mix Concrete Association and the National Pool Plasterer’s Council.

FRITZ-PAK PRODUCTS

Save Money. Our admixtures are pre-weighed and dosed; there’s no need to buy expensive dispensing equipment. Powdered admixtures are 100% active so you never pay to ship water. They are not subject to freezing, and they have a long shelf-life.

Save time. Our products are easily added at the job site, with no need to re-weigh or measure bulky liquids. You can extend your delivery times when the unexpected happens.

Make the job easier. Just open the outer bag and add the inner to concrete right in your truck. The products are easily carried by operators, whose risk of on-the-job injuries is reduced. Simple field corrections of concrete mixes are possible.

Award Winning. Two time winner of Most Innovative Product at the World of Concrete.
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SET ACCELERATORS

FRITZ-PAK NCA

(ASTM C 494 TYPE “C” and “E” ADMIXTURE)

Non-chloride set accelerator in powdered form. It is packaged in water soluble bags for easy addition to concrete ready mix trucks. It shortens set times while increasing early compressive strength. Fritz-Pak NCA does not contain calcium chloride or any other materials that promote corrosion in steel or efflorescence in concrete.

MORTAR SET ACCELERATOR

(ASTM C 494 TYPE “C” and “E” ADMIXTURE)

Non-chloride set accelerator packaged especially for masons and contractors who use pre-packaged concrete or mortar. It speeds up mortar or concrete set time while providing high early strengths. It contains no chlorides, so it will not promote efflorescence or corrosion, and it will not affect colored concrete. Excellent for use in polymer modified mixes.
ADVANTAGES

• Speeds up concrete set-time.
• Provides higher early strength.
• Does not promote steel corrosion.
• Dosage can be increased for faster acceleration.
• Can be easily stored for use as needed.
• Does not require heated warehousing.
• Can be used in all weather.
• Acceleration is dependent on the dosage used.
• The need for protection and heating of concrete in cold climates is reduced or eliminated.
• Allows faster reuse and stripping of forms.
• Suitable for all types of concrete.
• Packaged in a patented water-soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION

Fritz-Pak NCA is a non-chloride accelerator in powdered form. It is packaged in water soluble bags for easy addition to concrete ready mix trucks. It shortens set times while increasing early compressive strength. Fritz-Pak NCA does not contain calcium chloride or any other materials that promote corrosion in steel or efflorescence in concrete. Unlike some other non-chloride accelerators, such as those containing calcium nitrite, Fritz-Pak NCA is not hazardous. No special handling, storage or transportation expense is required.

DIRECTIONS

1. Determine the amount of NCA required. See Recommended Dosage Rate.
2. Each NCA package is double bagged. Remove the protective outer bag and add the entire water-soluble Fritz-Pak inner bag and contents to the wet concrete mix. The inner bag will easily dissolve.
3. Mix thoroughly for at least 5 minutes at high speed to ensure proper dispersion throughout the mix.
4. When working at low temperatures, users should follow the ACI Guidelines and Specifications for Cold Weather Concreting (ACI 306R-88 and ACI 306.1-90).

RECOMMENDED DOSAGE RATE

Dosage rate varies depending on temperature and the amount of acceleration desired. Increased dosages provide higher acceleration rates. Recommended dosage is 1-3 bags per cubic yard of concrete (1-3 lbs/cwt or 1-3% by weight of cement). Higher dosages may be used for faster acceleration. Dosage percentages are percent of Fritz-Pak NCA by weight of cement.

COMPATIBILITY

Fritz-Pak NCA is compatible with most concrete admixtures. When used with other admixtures, each one should be dispensed separately into the mix. Effectiveness of NCA is dependent on the proportion of C3A to SO3 in the cement. Higher acceleration will be obtained in cements with ratios greater than 4.0. In general, higher accelerations will be obtained in mixes with Type I, III or white cement.

APPLICABLE STANDARDS

ASTM C-494 Types C and E
AASHTO M-154 CRD C-87

continued...
Non-Chloride Accelerator

PACKAGING
- 5-lb (2.27-kg) water soluble bag
  8 bags per case
  48 cases per pallet (item #98450)
- 50-lb paper bag, 42 bags per pallet

FAQs

Q. What other effects will this product have on my concrete?
A. You may notice a slight increase in slump, since the product has some water reducing properties as well.

Q. Can I use less than one bag per yard?
A. Yes, you just need to experiment to get the right dosage for your particular needs.

Q. Can I use more than three bags per yard?
A. There’s no point. More than 3 bags per yard will not give any faster acceleration.

Q. What standards does it meet?
A. It meets ASTM standards C-494 Type C and Type E.

Q. Will it change the final strength of my concrete?
A. No.

Q. Will NCA promote the corrosion of steel in concrete?
A. No, unlike the commonly-used calcium chloride, Fritz-Pak NCA will not promote corrosion or efflorescence.

Q. When I use powdered calcium chloride I notice that the water or the calcium chloride gets hot, but it does not happen with NCA. Why?
A. The heat released by calcium chloride when it dissolves in solution is called heat of solution and is not related to the concrete setting up faster. The heat of solution of NCA is much less than the heat of solution of calcium chloride. That is why it is also a safer product.

Q. Will Fritz-Pak NCA have any affect on colored concrete?
A. No. NCA will not cause colors to segregate, the way calcium chloride tends to do in concrete containing integral color.

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. However, the inner bag may become somewhat brittle at very low temperatures and should be handled carefully.

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. 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.

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

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Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name/Trade Name  FRITZ-PAK NCA

Supplier/Manufacturer:  FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX 75149 U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

Chemical Family  Calcium Diformate
Material Uses  Concrete Additive

Section II. Composition and Information on Ingredients:

Name  CAS #  % by Weight  TLV/PEL  LC50/LD50
Calcium Diformate   544-17-2  >90  N/A  2560 mg/kg [rat]

Section III. Hazards Identification

Human Health Hazards  Risk of serious damage to eyes.

Section IV. First Aid Measures

Eye Contact  Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.

Skin Contact  Immediately flush skin with plenty of water. Remove contaminated clothes and shoes. Get medical attention if irritation develops.

Inhalation  Remove victim from area of exposure if possible.

Ingestion  Make victim drink water. If large quantities of this material are swallowed, call a physician immediately.

Section V. Fire and Explosion Data - Non-Flammable

Extinguishing Media  SMALL FIRE: Use DRY chemical powder.
Suitable  LARGE FIRE: Use water spray, for or foam. Do not use jet water.

Protection for Fire Fighters  A self-contained breathing apparatus should be used to avoid inhalation of the product.

Section VI. Accidental Release Measures

Personal Precautions  Avoid contact with skin and eyes. Do not breathe dust. Use suitable protective equipment (Section VIII).

Environmental Precautions and Clean-Up Methods  Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section VII. Handling and Storage

Handling  Ventilation is normally required what handling or using this product. Take precautionary measures against electrostatic discharges.

Storage  Keep container tightly closed. Keep container dry.

Section VIII. Exposure Controls/Personal Protection

Engineering Measures  Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Hygiene Measures  Wash thoroughly after handling.

Continued on Next Page
Section IX. Physical and Chemical Properties

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<th>Solid (powder)</th>
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<tbody>
<tr>
<td>Melting Point</td>
<td>&gt;380°C</td>
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<tr>
<td>Density</td>
<td>2 g/cm³ (20°C)</td>
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<td>Solubility</td>
<td>Soluble in cold water</td>
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<td>Flash Point</td>
<td>Not applicable</td>
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<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Color</td>
<td>Off-white</td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

Stability: The product is stable.

Section XI. Toxicological Information

Eye Contact: Risk of serious damage to eyes.
Acute Toxicity: ORAL (LD50): 2560mg/kg [Rat].
Skin Irritation: Non-irritant for skin.
Eye Irritation: Irritating to eyes
Mutagenic effects: Ames Test: Negative

Section XII. Ecological Information

Persistence/degradability: The product is readily biodegradable.

Section XIII. Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state, and local environmental control regulations.

Section XIV. Transport Information - Non-Hazardous

DOT Classification: Not a DOT controlled material (United States)

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations: Not available

Other Classifications:
- WHMIS (Canada): Not controlled under WHMIS (Canada)
- DSCL (EEC): R41 Irritating to eyes.

HMIS (U. S. A.):
- Health Hazard: 2
- Fire Hazard: 1
- Reactivity: 0
- Personal Protection: a

WHMIS (Canada) (Pictograms)

TDG (Canada) Pictograms

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
MORTAR SET ACCELERATOR

SET ACCELERATOR FOR CONCRETE OR MORTAR

ADVANTAGES
• Designed for masons and contractors who use bagged concrete or mortar.
• Speeds up set time by 1-3 hours.
• Non-Chloride set accelerator.
• Provides higher early strength.
• Will not promote steel corrosion or efflorescence in concrete.
• Will not affect colors in concrete.
• Dosage can be increased for faster acceleration.
• Can be easily stored for use as needed.
• Does not require heated warehousing.
• Can be used in all weather.
• Suitable for all types of concrete.
• Excellent for use in polymer modified mixes.
• Easy directions in both English and Spanish.

DESCRIPTION
Fritz-Pak’s Mortar Set Accelerator is a dry, white, powdered set accelerator packaged for use in pre-packaged mortar or concrete. It speeds up set times while increasing early compressive strength. Mortar Set Accelerator contains calcium, but no chlorides. Chlorides, such as the commonly used calcium chloride, promote corrosion in steel, promote efflorescence, and disturb color dispersion in colored concrete or plaster.

Unlike other non-chloride accelerators, such as those containing calcium nitrite, Mortar Set Accelerator is not hazardous. No special handling, storage or transportation expense is required.

RECOMMENDED DOSAGE RATE
Start with one bag of Mortar Set Accelerator (5.3 oz) for each sack of concrete or mortar (usually 60-80 lbs). This equals about 1% calcium. Up to 3 bags per sack (about 3% calcium) may be used for faster acceleration. It will not hurt concrete to dose at higher rates, but you will probably not get additional benefit. You will usually get about 1-3 hours reduction in set time depending on temperature.

Factors that affect set acceleration time:
• Percent of cement in your mix. The calcium in Mortar Set Accelerator reacts only with cement, so rich mixes will require higher doses.
• Temperature. The acceleration effects are faster at lower temperatures. For example, a 2% dose will give about 1 hr set time reduction at 85°F, and 3 hr set time reduction at 40°F.
• Number of bags used. Higher doses give faster set times.

To calculate dosage based on precise weight of cement:
• 3 bags of Mortar Set Accelerator per 100 lbs of cement = 1%.

APPLICABLE STANDARDS
ASTM C-494 Types C and E
AASHTO M-154 CRD C-87

PACKAGING
• 5.3 oz Mortar Set Accelerator per bag
  24 bags/display box
  6 display boxes per case
  32 cases per pallet  (Item #98454)

DIRECTIONS FOR USE
1. Tear or cut open the plastic bag.
2. Pour powdered contents into the wet mortar or concrete mix.
3. Mix thoroughly for 5 minutes to ensure complete dispersion of the Mortar Set Accelerator throughout the mix.
4. Use concrete as you normally would.

continued...
FAQs

Q. What does Mortar Set Accelerator do?
A. It speeds up the set time of your mortar or concrete by 1-3 hours.

Q. What standard does Mortar Set Accelerator meet?
A. It meets ASTM C-494, Type C and E.

Q. Will Mortar Set Accelerator change the strength of my concrete?
A. It will produce higher early strength, and it will increase durability.

Q. Will Mortar Set Accelerator increase efflorescence in mortar?
A. No. Efflorescence is promoted by the chlorides in some accelerators. Mortar Set Accelerator does not contain any chlorides, thus it does not promote efflorescence.

Q. Can it be used in polymer modified mixes?
A. Yes, one bag of Mortar Set Accelerator treats about one bag of polymer modified mix.

Q. Will Fritz-Pak NCA have any affect on colored concrete?
A. No. NCA will not cause colors to segregate, the way calcium chloride tends to do in concrete containing integral color.

PRECAUTIONS AND STORAGE

Avoid contact with eyes or skin, flush with water if contact occurs. Store in a dry location, protected from breakage, deterioration and contamination. Mortar Set Accelerator is 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. 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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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

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<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
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| 2    | HCS Class: Irritating substance | Splash goggles  
Dust Respirator  
Gloves  
Work uniform or laboratory coat |

### Common Name/Trade Name

NON-CHLORIDE MORTAR ACCELERATOR

### Supplier/Manufacturer:

FRITZ-PAK CORPORATION  
4821 Eastover Circle  
Mesquite, TX 75149 U.S.A.  
Tel: 214-221-9494  
Fax: 214-349-3182

### Chemical Family

Calcium Diformate

### Material Uses

Concrete Additive

### Last Update

03/01/2008

## Section II. Composition and Information on Ingredients:

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<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
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<tbody>
<tr>
<td>Calcium Diformate</td>
<td>544-17-2</td>
<td>&gt;90</td>
<td>N/A</td>
<td>2560 mg/kg [rat]</td>
</tr>
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</table>

## Section III. Hazards Identification

### Human Health Hazards

Risk of serious damage to eyes.

### Eye Contact

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.

### Skin Contact

Immediately flush skin with plenty of water. Remove contaminated clothes and shoes. Get medical attention if irritation develops.

### Inhalation

Remove victim from area of exposure if possible.

### Ingestion

Make victim drink water. If large quantities of this material are swallowed, call a physician immediately.

## Section IV. First Aid Measures

### Section V. Fire and Explosion Data - Non-Flammable

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<th>Suitable</th>
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<td>SMALL FIRE: Use DRY chemical powder.</td>
<td>LARGE FIRE: Use water spray, for or foam. Do not use jet water.</td>
<td>A self-contained breathing apparatus should be used to avoid inhalation of the product.</td>
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### Section VI. Accidental Release Measures

<table>
<thead>
<tr>
<th>Personal Precautions</th>
<th>Environmental Precautions and Clean-Up Methods</th>
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</thead>
<tbody>
<tr>
<td>Avoid contact with skin and eyes. Do not breathe dust. Use suitable protective equipment (Section VIII).</td>
<td>Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.</td>
</tr>
</tbody>
</table>

### Handling

Ventilation is normally required what handling or using this product. Take precautionary measures against electrostatic discharges.

### Storage

Keep container tightly closed. Keep container dry.

Continued on Next Page
Section IX. Physical and Chemical Properties

Physical state and appearance: Solid (powder)
Odor: Odorless
Density: 2 g/cm³ (20°C)
Solubility: Soluble in cold water
Flash Point: Not applicable
Explosive Properties: Not applicable

Section X. Stability and Reactivity Data

Stability: The product is stable.

Section XI. Toxicological Information

Eye Contact: Risk of serious damage to eyes.
Acute Toxicity: ORAL (LD₅₀): 2560 mg/kg [Rat].
Skin Irritation: Non-irritant for skin.
Eye Irritation: Irritating to eyes
Mutagenic effects: Ames Test: Negative

Section XII. Ecological Information

Persistence/degradability: The product is readily biodegradable.

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DSCL (EEC) R41 Irritating to eyes.

HMIS (U. S. A.): Health Hazard 2
Fire Hazard 1
Reactivity 0
Personal Protection a

WHMIS (Canada) (Pictograms)

TDG (Canada) Pictograms

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SET RETARDERS

MINI DELAYED SET
(ASTM C 494 TYPE “D” ADMIXTURE)
Small bag of retarder for emergencies, small concrete batches, concrete pump hoppers or for wash water stabilization. Normally one bag will delay the set of 1 yard of concrete for 1 hour. For wash water stabilization one bag is used for overnight stabilization.

STANDARD DELAYED SET
(ASTM C 494 TYPE “D” ADMIXTURE)
For concrete set retardation with minimal effect on concrete early strength development. May be redosed in the field to prolong the life of fresh concrete.

GYPSUM RETARDER
Set retarder for use in anhydrate, hemihydrate and gypsum-based materials. It is a synthetic amino acid with no unpleasant odor. Packaged in triple-layered paper bags with inner polyethylene liner. For industrial use only.

EXPO-ROCK
Surface retarder for the production of exposed aggregate concrete.

MORTAR SET RETARDER
Set retarder packaged especially for masons and contractors who use pre-packaged concrete or mortar. It slows down mortar or concrete set time without affecting compressive strength. It is white and will not affect colored concrete.

SPECIALTY RETARDERS
Fritz-Pak Corporation can provide many different types of retarders and blends for special applications such as: fast set cements, Class “C” fly-ash, high temperature retarders, gypsum retarders, long term retarders, calcium-aluminate cements, refractory cements, and plaster retarders. For specific needs contact Fritz-Pak directly.
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 ensure that the Mini Delayed Set is dispersed throughout the mix.
4. Air content may increase slightly, depending on dosage rate and mix design.

continued...
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.

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.
3. 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.
4. 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 be dissolved in water and sprayed on these surfaces to maintain a high level of inner fin cleanliness.
1. Remove the 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 into 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 will be even more effective if allowed to dry, but it is not necessary.

continued...
F. LOW SLUMP/SLIP-FORMED/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 CLEAN-UP DISCHARGE AT THE JOB SITE ALLOWED.
Add one bag of Mini Delayed Set to the 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 Standard Delayed Set.

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
- 8-oz (227-g) water soluble bag, 60 bags per case, 30 cases per pallet (item #95050)
- Fritz-Pak Standard Delayed Set
  - 2-lb water soluble bag, 18 bags per case, 25 cases per pallet (item #95200)
  - 1360-g water soluble bag, 10 bags per case, 25 cases per pallet(item #95300)
  - 50-lb paper bag, 40 bags per pallet (item #95250)

FAQs
Q. Will Mini Delayed Set affect my color?
A. No, it will not affect color of gray concrete. If using white concrete, use Fritz-Pak Plaster Delay Set.

Q. Can I re-dose?
A. Yes. You can add more Mini Delayed Set if the initial concrete set has not started. You may re-dose up to three times.

Q. What happens if I overdose the concrete?
A. Set time will be longer, but set will still occur.

Q. Will it change the strength of my concrete?
A. No.

Q. Will it react with other admixtures?
A. No, Mini Delayed Set is compatible with most other admixtures.

Q. Is it possible to mix for shorter times?
A. No. Mini Delayed Set needs to dissolve and be distributed evenly throughout the concrete. Short mixing times or mixing at slow speed may produce concrete with brown spots.

Q. The concrete already has a retarder in it; will Mini Delayed Set still work?
A. Yes. Mini Delayed Set is compatible with other admixtures.

continued...
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.

<table>
<thead>
<tr>
<th>Yards of Concrete</th>
<th>Hours of Set Retardation Required</th>
<th>1 hour</th>
<th>2 hours</th>
<th>3 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 bag</td>
<td>1</td>
<td>2 bags</td>
<td>3 bags</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>7</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>9</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Dosage Rate oz/cwt (ounces of Mini Delayed Set per hundred lbs of cement)</th>
<th>Dosage Rate Grams of Mini Delayed Set per kg of cement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold Weather (less than 60°F or 15°C)</td>
<td>1.0</td>
<td>0.62</td>
</tr>
<tr>
<td>Normal Weather (60-80°F / 15-27°C)</td>
<td>1.3</td>
<td>0.83</td>
</tr>
<tr>
<td>Hot Weather (higher than 80°F or 27°C)</td>
<td>1.7</td>
<td>1.03</td>
</tr>
</tbody>
</table>
Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Trade Name | Standard Delayed Set / Mini Delayed Set
Supplier/Manufacturer: | FRITZ-PAK CORPORATION
Address: | 4821 Eastover Circle
City, State, Zip: | Mesquite, TX 75149 U.S.A.
Telephone: | Tel: 214-221-9494 Fax: 214-349-3182

Section II. Composition and Information on Ingredients for Personal Protection

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% By Weight</th>
<th>TLV / PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>No hazardous ingredient</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Section III. Hazards Identification

Potential Acute Health Effects: No specific information is available in our database regarding the other toxic effects of this material for humans.

Potential Acute and Chronic Effects: Very slightly to slightly dangerous in case of skin contact (irritant), eye contact (irritant), inhalation. CARCINOGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. Toxicity of the product to the reproductive system: Not available.

Eye Contact: IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used.

Skin Contact: Rinse with water.

Inhalation: Allow the individual to rest in a well ventilated area. Seek immediate medical attention.

Ingestion: Remove dentures if any. Have conscious person drink several glasses of water or milk. INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not re-enter the mouth or throat. NEVER give an unconscious person anything to ingest. Seek medical attention.

Section IV. First Aid Measures

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill: Our database contains no additional information in case of a spill and/or a leak of the product. Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section VII. Handling and Storage—No specific storage is required.
Section VIII. Exposure Controls/Personal Protection

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection
Safety glasses. Lab coat. Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Dust Respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Section IX. Physical and Chemical Properties

Physical state and appearance
Solid.

Specific Gravity
1.3 (Water = 1)

Odor
Smoky

Color
Brown (dark)

Volatile
2% (v/v)

Dispersion Properties
See solubility in water.

Solubility
Partially soluble in cold water.

Section X. Stability and Reactivity Data

Stability
The product is stable.

Section XI. Toxicological Information

Routes of Entry
Ingestion.

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

Waste Disposal
Landfill

Section XIV. Transport Information - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

Other Classifications

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>WHMIS (Canada)</th>
<th>DSCL (EEC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Personal Protection</td>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>

National Fire Protection Association (U. S. A.)

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

Specific Hazard

WHMIS (Canada) (Pictograms)

TDG (Canada) (Pictograms)

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
FRITZ-PAK DELAYED SET

TEST DATA 1.5 HOUR DELAY

Location: Mesquite, Texas
Design Requirements: 3000 psi 28 days with 1.5 hour delay in setting time.

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Trinity</td>
<td>470 lbs</td>
<td>470 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1420 lbs</td>
<td>1420 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1850 lbs</td>
<td>1850 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td>DELAYED SET</td>
<td>0 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.53</td>
<td>0.53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Data</th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump</td>
<td>3.25&quot;</td>
<td>3.75&quot;</td>
</tr>
<tr>
<td>Air Temperature</td>
<td>80 °F</td>
<td>80 °F</td>
</tr>
<tr>
<td>Concrete Temperature</td>
<td>78 °F</td>
<td>78 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>3:15</td>
<td>4:25</td>
</tr>
</tbody>
</table>

Control slump was taken immediately after batching. Delayed Set was then added and mixed for 5 minutes: slump 4.75". The mixer was shut off for 1.5 hours. Then the concrete was mixed for 5 minutes and samples were made: slump 3.75".

<table>
<thead>
<tr>
<th>Compressive Strength, psi</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Control</td>
<td>Delayed Set</td>
</tr>
<tr>
<td>3 Days</td>
<td>2150</td>
<td>2490</td>
</tr>
<tr>
<td>7 Days</td>
<td>2950</td>
<td>3130</td>
</tr>
<tr>
<td>28 Days</td>
<td>3640</td>
<td>3820</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Southwestern Laboratories. Compressive strength results are averages of two or more breaks.

Fritz-Pak Corporation
11220 Grader Street, Suite 600
Dallas, Texas 75238, USA
Tel: 214-221-9494
Fax: 214-349-3182
Toll Free: 1-888-746-4116
www.fritzpak.com
FRITZ-PAK DELAYED SET

TEST DATA  2.5 HOUR DELAY

Location: Mesquite, Texas
Design Requirements: 3000 psi 28 days with 2.5 hour delay in setting time.

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Trinity</td>
<td>470 lbs</td>
<td>470 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1420 lbs</td>
<td>1420 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1850 lbs</td>
<td>1850 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td>DELAYED SET</td>
<td>0 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.53</td>
<td>0.53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Data</th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump</td>
<td>3”</td>
<td>3.5”</td>
</tr>
<tr>
<td>Air Temperature</td>
<td>83 °F</td>
<td>85 °F</td>
</tr>
<tr>
<td>Concrete Temperature</td>
<td>83 °F</td>
<td>83 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>3:00</td>
<td>5:35</td>
</tr>
</tbody>
</table>

Control slump was taken immediately after batching. Delayed Set was then added and mixed for 5 minutes; slump 6.25”. The mixer was shut off for 2.5 hours. Then the concrete was mixed for 5 minutes and samples were made: slump 3.5”.

<table>
<thead>
<tr>
<th>Compressive Strength, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>3 Days</td>
</tr>
<tr>
<td>7 Days</td>
</tr>
<tr>
<td>28 Days</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Southwestern Laboratories. Compressive strength results are averages of two or more breaks.
FRITZ-PAK DELAYED SET

TEST DATA

4 HOUR DELAY

Location: Mesquite, Texas
Design Requirements: 3000 psi 28 days with 4 hour delay in setting time.

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Trinity</td>
<td>470 lbs</td>
<td>470 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1420 lbs</td>
<td>1420 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1850 lbs</td>
<td>1850 lbs</td>
</tr>
<tr>
<td>Admixtures DELAYED SET</td>
<td>0 oz./cwt</td>
<td>6.5 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.53</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Test Data

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump</td>
<td>3.5&quot;</td>
<td>4.25&quot;</td>
</tr>
<tr>
<td>Air Temperature</td>
<td>83 °F</td>
<td>89 °F</td>
</tr>
<tr>
<td>Concrete Temperature</td>
<td>84 °F</td>
<td>85 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>3:15</td>
<td>7:00</td>
</tr>
</tbody>
</table>

Control slump was taken immediately after batching. Delayed Set was then added and mixed for 5 minutes; slump 8.5". The mixer was shut off for 4 hours. Then the concrete was mixed for 5 minutes and samples were made: slump 4.25".

Compressive Strength, psi

<table>
<thead>
<tr>
<th>Age</th>
<th>Control</th>
<th>Delayed Set</th>
<th>% of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Days</td>
<td>2150</td>
<td>2920</td>
<td>136%</td>
</tr>
<tr>
<td>7 Days</td>
<td>2950</td>
<td>3250</td>
<td>110%</td>
</tr>
<tr>
<td>28 Days</td>
<td>3640</td>
<td>3710</td>
<td>102%</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Southwestern Laboratories. Compressive strength results are averages of two or more breaks.

Fritz-Pak Corporation
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FRITZ-PAK DELAYED SET

TEST DATA

7 HOUR DELAY

Location: Mesquite, Texas
Design Requirements: 3000 psi 28 days with 7 hour delay in setting time.

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Trinity</td>
<td>470 lbs</td>
<td>470 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1420 lbs</td>
<td>1420 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1850 lbs</td>
<td>1850 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELAYED SET</td>
<td>0 oz./cwt</td>
<td>10 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.53</td>
<td>0.53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Data</th>
<th>Control</th>
<th>DELAYED SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump</td>
<td>3.25”</td>
<td>3.75”</td>
</tr>
<tr>
<td>Air Temperature</td>
<td>74 °F</td>
<td>88 °F</td>
</tr>
<tr>
<td>Concrete Temperature</td>
<td>75 °F</td>
<td>76 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>3:00</td>
<td>10:15</td>
</tr>
</tbody>
</table>

Control slump was taken immediately after batching. Delayed Set was then added and mixed for 5 minutes: slump 9.5”. The mixer was shut off for 7 hours. Then the concrete was mixed for 5 minutes and samples were made: slump 3.75”.

<table>
<thead>
<tr>
<th>Compressive Strength, psi</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Control</td>
<td>Delayed Set</td>
</tr>
<tr>
<td>3 Days</td>
<td>2150</td>
<td>2620</td>
</tr>
<tr>
<td>7 Days</td>
<td>2950</td>
<td>3330</td>
</tr>
<tr>
<td>28 Days</td>
<td>3640</td>
<td>4040</td>
</tr>
<tr>
<td>% of Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>113%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>111%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Southwestern Laboratories. Compressive strength results are averages of two or more breaks.

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ADVANTAGES
• Keeps concrete in a plastic state for reuse or extended delivery time requirements.
• Fewer environmental problems associated with the disposal of waste concrete.
• Saves labor, equipment and freight cost by eliminating disposal of waste concrete.
• Eliminates the need for expensive reclaiming or recycler units with high maintenance costs.
• Improves concrete workability.
• Allows wash water stabilization for extended periods of time.
• No need for admixture dispensers because Standard Delayed Set is packaged in water-soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION
Fritz-Pak Standard Delayed Set is a dry powdered admixture, packaged in a ready-to-use water soluble bag. Standard Delayed Set is formulated to extend the setting time of concrete while improving concrete quality. It does not contain any calcium chloride or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
Standard Delayed Set should be added to plastic concrete as soon as job site conditions permit. Review cement and fly ash content from batch ticket and check actual concrete temperature. As with all admixtures, the effectiveness of Standard Delayed Set is reduced as concrete age and temperature increase.
1. Calculate how much Standard Delayed Set is required. See Recommended Dosage Rate.
2. Each Standard Delayed Set package is double bagged. Remove the protective outer bag and add the water-soluble Fritz-Pak inner bag to water or concrete mix. The entire bag will easily dissolve.
3. Agitate at high speed for 5 to 7 minutes to insure that the Standard Delayed Set is uniformly dispersed throughout the mix.
4. Concrete will gain from 2 to 6 inches (5 to 15 centimeters) in slump. Air content may increase slightly, depending on dosage rate and mix design. The concrete will gradually return to the original slump and air content when the set delay is completed.
5. Standard 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 Standard Delayed Set may be added.

RECOMMENDED DOSAGE RATE
Use 1.0-1.67 ounces per 100 pounds (0.67-1.0 grams per kilogram) of total cementitious materials for every hour of set delay required. Refer to the Standard Delayed Set dosage rates presented in Table 1. For extended or shorter delays, increase or decrease dosage proportionately. Concrete temperature, air 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. We recommend that testing be done to determine the suitability of Standard Delayed Set to your mix designs.

COMPATIBILITY
Standard 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

continued...
Table 1. Dosage rate for each hour of set retardation at different temperatures.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Dosage Rate oz/cwt</th>
<th>Dosage Rate Grams of Standard Delayed Set per kg of cement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold Weather (less than 60°F or 15°C)</td>
<td>1.0</td>
<td>0.62</td>
</tr>
<tr>
<td>Normal Weather (60-80°F / 15-27°C)</td>
<td>1.3</td>
<td>0.83</td>
</tr>
<tr>
<td>Hot Weather (higher than 80°F or 27°C)</td>
<td>1.7</td>
<td>1.03</td>
</tr>
</tbody>
</table>
ADVANTAGES
• Slows the set time of gypsum and gypsum-containing materials.
• It is a high-strength retarder that is effective at low dosages.
• Purified material with no offensive odors.
• Dose-response is linear, making the determination of effective dosage easy.
• Can be used in cement-gypsum blends.
• Effective over wide range of pH.
• Efficacy does not diminish during storage.

DESCRIPTION
Fritz-Pak Gypsum Retarder is a dry powdered admixture used for extending the set time of gypsum or gypsum-containing blended materials. It is an organic synthetic poly-oxy-methylene amino acid of high purity. It does not contain any carriers or extenders.

Gypsum Retarder does not contain any materials that interfere with Portland cement or Calcium Aluminate cements. It can be used in blends of gypsum with these type of cements to prevent the early stiffening caused by gypsum. Recommended for industrial use only.

DIRECTIONS
1. Determine the estimated dosage required for set retardation from Figure 1.
2. Validate the dosage required from field trials.
3. For batch blending add the Gypsum Retarder to each batch of gypsum and blend for approximately 5 minutes to insure proper dispersion. Minimum blending time needs to be validated by taking samples from different locations of the blender at different blending times.
4. For in-line or continuous blending it might be better to dilute the retarder to insure proper addition. Use calcium carbonate or hydrated gypsum as the filler in proportions of 9 parts filler to 1 part Gypsum Retarder for 10% active ingredient. Or use 1 part Gypsum Retarder to 99 parts filler for a 1% active ingredient.

PACKAGING
• 44-lb (20-kg) bag. Packed in triple layered paper bags with inner polyethylene liner. 40 bags per pallet. Item # 99419
• Custom packaging available on request.

FAQs
Q. Does Gypsum Retarder have a strong or offensive odor?
A. No. Gypsum Retarder is a synthetic amino acid that does not have any odor.

Q. Is Gypsum Retarder available in water soluble bags?
A. No. Gypsum Retarder is for industrial use, and it is only available in 44 lb bags.

Q. Will Gypsum Retarder retard portland cement or calcium aluminate cement?
A. No. Gypsum Retarder is specific for gypsum.

Q. Can Gypsum Retarder be used in blends of cement and gypsum?
A. Yes. However you may have to increase the dosage of Gypsum Retarder.

Q. The dosage rate of Gypsum Retarder is too low for effective plant addition. Can Fritz-Pak blend it with inert materials?
A. Yes. Diluted blends for easier plant addition can be made.

PRECAUTIONS
Fritz-Pak Gypsum Retarder should be stored in a dry location protected from breakage, deterioration and contamination. It is 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. 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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continued...
Figure 1. Typical retardation effect of Fritz-Pak Gypsum Retarder as a function of dosage. Actual results will vary by differences in test conditions and gypsum composition. Tests are highly recommended to determine actual dosage for your applications. Note: 0.01% is equivalent to 100 grams per metric ton or 0.2 lbs per short ton.

Table 1. Comparison of relative gypsum retardation effect of Fritz-Pak Gypsum Retarder and other common chemicals used and their efficacy at different pH. Higher numbers indicate higher retardation effect. For example Gypsum Retarder at 0.2% is more than 20 times more effective than Calcium Tartrate at the same concentration at a pH of 6-10.
Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name/Trade Name: GYPSUM RETARDER

Supplier/Manufacturer: FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX 75149 U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

Chemical Family: Polymer

Material Uses: Gypsum Retarder

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca-salt of Amino acid</td>
<td></td>
<td>&gt;90</td>
<td></td>
<td>LD 50 (mg/kg): &gt; 2000</td>
</tr>
</tbody>
</table>

Section III. Hazards Identification

Human Health Hazards: Irritating for eyes and skin.

Section IV. First Aid Measures

Eye Contact: Wash with plenty of water for 10 minutes. Seek medical advice immediately.

Skin Contact: Take off immediately all contaminated clothing. Wash with plenty of water. Seek medical advice.

Inhalation: Go out for fresh air. Seek medical advice.

Ingestion: Wash mouth with plenty of water. Seek medical advice immediately.

Section V. Fire and Explosion Data - Non-Flammable

Extinguishing Media Suitable: Foam, powder extinguisher, water, CO₂.

Section VI. Accidental Release Measures

Personal Precautions: Avoid eye and skin contact, wear personal protection equipment, avoid dusting, remove ignition sources.

Precautions for environmental protection: Prevent pollution of sewers and waters.

Steps for cleaning: Mechanical sweep up and dispose according to local regulations.

Section VII. Handling and Storage

Handling: Wear personal protection equipment. Avoid dusting and ignition sources.

Storage: Keep dry and cool in well-ventilated areas. Keep containers tightly closed.

Section VIII. Exposure Controls/Personal Protection

Engineering Measures: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Continued on Next Page
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid (powder)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>&gt;200 °C</td>
</tr>
<tr>
<td>Bulk density</td>
<td>380 (approx)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Easy soluble</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive Hazard</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Odor</td>
<td>Noticeable</td>
</tr>
<tr>
<td>Color</td>
<td>Light brown</td>
</tr>
<tr>
<td>pH</td>
<td>12-13</td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

Stability  The product is stable.

Section XI. Toxicological Information

Acute Toxicity  ORAL (LD50): >2000mg/kg [Rat].

Section XII. Ecological Information

Persistence/degradability  The product is readily biodegradable.

Section XIII. Disposal Considerations

Waste Disposal  Waste must be disposed of in accordance with federal, state, and local environmental control regulations.

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations  Not available

Other Classifications

<table>
<thead>
<tr>
<th>Classification</th>
<th>Notation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHMIS (Canada)</td>
<td></td>
<td>Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td>DSCL (EEC)</td>
<td></td>
<td>R36/38– Irritating to eyes and skin.</td>
</tr>
<tr>
<td>HMIS (U. S. A.)</td>
<td>Health Hazard 2</td>
<td>National Fire Protection Association (U. S. A.)</td>
</tr>
<tr>
<td></td>
<td>Fire Hazard 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reactivity 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal Protection e</td>
<td></td>
</tr>
<tr>
<td>WHMIS (Canada) Pictograms</td>
<td></td>
<td>Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td>TDG (Canada) Pictograms</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
EXPO-ROCK

CONCRETE SURFACE RETARDER

ADVANTAGES

• Expo-Rock gives a clean, professional, even look to exposed aggregate finishes. The concentrated retarder keeps mortar from sticking to the aggregate. It allows even removal of mortar from the slab surface.
• Packaged in water soluble bags. Just prepare what you need. Material in a dry form does not need to be protected from freezing.
• Easily mixed with water in the field. Only 5-10 minutes of mixing are required. For large jobs the solution can be prepared the day before. One bag prepares one gallon of solution, thus eliminating the need to store and carry heavy drums of product.
• Contains a tracer dye for easy and even spraying. The dye provides a yellow-green color for easy identification. The dye will decompose in sunlight after drying, so there is no problem with overspray or staining of forms, equipment or clothing.
• No fumes, VOC’s or smell. Since it is prepared with water, there are no unpleasant or noxious smells. It can be safely applied in areas with low ventilation.
• Formulated with thickeners for easier spraying, less misting and less dripping. The thickeners eliminate the accumulation of material in low spots that gives uneven results. The spray pattern is also better, since it reduces fine mist blowing in windy conditions.
• Expo Rock is non-toxic and biodegradable. It does not contain harmful biocides, or require special storage. Safe for applicators.
• Reduces storage space. Since packaged Expo-Rock is concentrated and does not contain water, it reduces storage space and can easily be transported to jobsites.

DIRECTIONS

All finishing must be completed before applying Expo-Rock.

1. Remove outer bag and add inner bag and contents to a pump sprayer. Add water to sprayer until half full, and mix vigorously for one minute. Add rest of water, and continue mixing slowly for 5-10 minutes for complete dissolution of concentrated powders. The solution prepared will be a distinctive yellow-green in color to help produce an even coverage.

2. Apply the solution with a low pressure sprayer to fresh concrete after all finishing has been done, just after the concrete loses its sheen. Do not rework the concrete after Expo-Rock has been applied or an uneven finish will result.

3. Remove surface mortar within about 8-24 hours after the initial set of the concrete. Time will vary depending on weather conditions. Use a stiff broom to loosen the mortar and remove with a low pressure hose sprayer.

COVERAGE

One gallon (3,785 ml) of prepared solution will cover 150-200 sq ft. (15-20 sq. m.), of freshly placed concrete. Coverage varies depending on amount of reveal required. Follow concrete curing guidelines after application of Expo-Rock to reduce excessive drying of the surface.

LIMITATIONS

Use of accelerating admixtures, placement in hot weather conditions or accelerated curing conditions will reduce the effectiveness of Expo-Rock. It is recommended that testing be done to determine the suitability of Expo-Rock to your particular applications. Not recommended for vertical applications.
FIRST AID
Mild irritant. Skin contact: wash thoroughly with soap and water. Eye contact: rinse eyes with clean water for 10-15 minutes, contact a physician immediately.

CLEAN-UP
Expo-Rock is biodegradable and environmentally safe. Any spilled product can be washed away with water or picked up with absorbent material. Always follow local, state and federal regulations concerning disposal.

STORAGE
Store in a dry environment. Dry material is stable for about 3 years. Prepared solutions are stable for about 3 days.

PACKAGING
- 1-lb (454-g) bags
  40 bags per case
  35 cases per pallet (item #98419).

FAQs
Q. What does Expo-Rock do for concrete?
A. It retards the concrete set on the surface of the concrete.

Q. How do I know when to wash off the concrete surface?
A. It is best to do it right after the concrete sets. Time will vary with air temperature. When you think it’s ready, start removing a small patch. If aggregates begin to become loose, stop and wait longer.

Q. Will the tracer dye discolor my concrete?
A. No, it will completely disappear after a few hours’ exposure to sunlight.

Q. How long can I keep it after I mix it with water?
A. 3-4 days.

Q. Can Expo-Rock be added directly into concrete to slow the set time?
A. No, Expo-Rock is designed for use as a surface retarder only.

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.

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Material Safety Data Sheet

Section I. Chemical Product and Company Identification
Common Name / Trade Name: Fritz-Pak Expo-Rock
Supplier/Manufacturer: FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U. S. A.
Tel: 214-221-9494  Fax: 214-349-3182
Last Update: 03/01/2008

Section II. Composition and Information on Ingredients for Personal Protection

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>LC50/LD50 (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soda Ash</td>
<td>497-19-8</td>
<td>Oral: 5140 (Rat.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dermal: 4000 (Rabbit)</td>
</tr>
</tbody>
</table>

Potential Acute Health And Chronic Effects: Slightly dangerous in case skin contact (irritant), eye contact (irritant), ingestion, inhalation (irritant). Corrosive to eyes and skin.

Section III. Hazards Identification
Eye Contact: Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Seek medical attention.

Skin Contact: Remove contaminated clothes and place the individual under a shower. Wash the contaminated skin with running water and non-abrasive soap. Seek medical attention.

Inhalation: Allow the individual to rest in a well ventilated area. Seek immediate medical attention.

Ingestion: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

Section IV. First Aid Measures

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures
Small Spill: Place the spilled solid in a convenient waste disposal container.

Large Spill: Avoid runoff to ground water, surface waters, and sewers.

Section VII. Handling and Storage
Precautions: Keep container dry. Keep away from heat. Keep away from sources of ignition. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes. Keep away from incompatibles such as acids.

Storage: Keep material dry. Keep in a cool place.

Section VIII. Exposure Controls/Personal Protection
Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal Protection: Splash goggles. Wear appropriate respirator when ventilation is inadequate.

Continued on Next Page
### Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (1% soln/water)</td>
<td>10 ~ 11</td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in cold water and hot water.</td>
</tr>
</tbody>
</table>

### Section X. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with acids. Reactive with bleaching agents (oxidizers).</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Slightly corrosive to corrosive in presence of aluminum.</td>
</tr>
</tbody>
</table>

### Section XI. Toxicological Information

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Ingestion. Inhalation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to Animals</td>
<td>Acute oral toxicity (LD50): &gt; 5000 mg/kg (Rat)</td>
</tr>
<tr>
<td></td>
<td>Acute dermal toxicity (LD50): 4000 mg/kg (Rabbit)</td>
</tr>
<tr>
<td>Chronic Effects on Humans</td>
<td>Toxicity of the product to the reproductive system: Not available.</td>
</tr>
</tbody>
</table>

### Section XII. Ecological Information - Not Available

### Section XIII. Disposal Considerations

| Waste Disposal | Recycle to process, if possible. Consult your local or regional authorities. |

### Section XIV. Transport Information

<table>
<thead>
<tr>
<th>DOT Classification</th>
<th>Not Regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
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</tr>
<tr>
<td>DOT Identification Number</td>
<td></td>
</tr>
<tr>
<td>DOT (Pictograms)</td>
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</tr>
</tbody>
</table>

### Section XV. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>Federal and State Regulation</th>
<th>WHMIS (Canada)</th>
<th>WHIMCS Class E</th>
</tr>
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<tbody>
<tr>
<td>Other Classifications</td>
<td>WHMIS (Canada) (Pictograms)</td>
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<tr>
<td>TDG (Canada) (Pictograms)</td>
<td></td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>

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ADVANTAGES
• Designed for masons and contractors who use bagged concrete or mortar.
• Slows down set time of pre-packaged mortar or concrete.
• Easy to use. One bag extends set time about one hour.
• Dosage can be increased for longer retardation, as long as 3 hours.
• Improves mortar or concrete workability.
• Does not affect strength.
• Excellent for use in hot summer months.
• Will not affect colors in concrete.
• Allows for prolonged decorative work.
• Can be easily stored for use as needed.
• Suitable for all types of concrete.

DESCRIPTION
Fritz-Pak’s Mortar Set Retarder is a white powdered set retarder packaged for use in pre-packaged mortar or concrete. It slows down set times without affecting compressive strength. It is ready for easy dosing; no premixing is required. Since Mortar Set Retarder is white, it will not affect colors in concrete, so it is ideal for decorative concrete work.

No special handling, storage or transportation expense is required.

RECOMMENDED DOSAGE RATE
One 5.3 oz (150 gram) bag of Mortar Set Retarder will retard one 60-80 lbs bag of pre-packaged mortar or concrete for about one hour. You may redose for longer periods of retardation, without exceeding 3 bags of Mortar Set Retarder per bag of mortar or concrete.

For Portland cement use 4 bags per 100 lbs of cement for one hour set retardation. Do not exceed 12 bags per 100 lbs of cement.

At higher air temperatures, the retardation effect is reduced.

APPLICABLE STANDARDS
ASTM C-494 Type B.

PACKAGING
• 5.6 oz (158 gram) Mortar Set Retarder per bag
  24 bags / display box
  6 display boxes per case (item #98453)

DIRECTIONS FOR USE
1. Tear or cut open the plastic bag.
2. Pour powdered contents into the wet mortar or concrete mix.
3. Mix thoroughly for 5 minutes to ensure complete dispersion of the Mortar Set Retarder throughout the mix.
4. Use concrete as you normally would.

FAQs
Q. Will Mortar Set Retarder harm the concrete?
A. No.

Q. Can I redose?
A. Yes. You can add more Mortar Set Retarder if the initial concrete set has not started. You may redose up to three times.

Q. What happens if you overdose the concrete?
A. Set time will be longer, but set will still occur.

Q. Will it change the color of concrete or mortar?
A. No.

continued...
PRECAUTIONS AND STORAGE
Avoid contact with eyes or skin, flush with water if contact occurs. Store in a dry location, protected from breakage, deterioration and contamination. Mortar Set Retarder is 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. 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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Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name/ Trade Name

FRITZ-PAK MORTAR SET RETARDER

Last Update 03/01/2008

Supplier/ Manufacturer:
FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX 75149 U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

Chemical Family Citric Acid

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid Anhydrous</td>
<td>77-92-9</td>
<td>N/A</td>
<td>N/A</td>
<td>3 g/kg [rat]</td>
</tr>
</tbody>
</table>

Section III. Hazards Identification

Human Health Hazards
Causes irritation to skin and respiratory tract.

Section IV. First Aid Measures

Eye Contact
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Skin Contact
Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Inhalation
Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Get medical attention.

Ingestion
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

Section V. Fire and Explosion Data - Non-Flammable

Extinguishing Media
Water spray dry chemical alcohol foam or carbon dioxide.

Protection for Fire Fighters
Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Section VI. Accidental Release Measures

Spills
Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. Ventilate area of leak or spill. Wear appropriate personal protective equipment such as impervious protective clothing, including boots, gloves, lab coat, respirator.

Section VII. Handling and Storage

Handling
Keep container tightly closed. Keep container dry.

Storage
Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Continued on Next Page
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid (powder)</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Melting Point</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>Density</td>
<td>1.542</td>
</tr>
<tr>
<td>Solubility</td>
<td>60 g/100 ml @ 20°C° (Anhydrous)</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>pH</td>
<td>2.2</td>
</tr>
<tr>
<td>Color</td>
<td>Off-white</td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

Stability The product is stable.

Section XI. Toxicological Information

Eye Contact May produce severe irritation

Acute Toxicity ORAL (LD50): 3 g/kg [Rat].

Skin Irritation May produce mild-severe irritation

Section XII. Ecological Information

Persistence/degradability No information found.

Section XIII. Disposal Considerations

Waste Disposal Waste should be managed in an appropriate and approved waste disposal facility. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section XIV. Transport Information - Non-Hazardous

DOT Classification Not a DOT controlled material (United States)

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations Not available

Other Classifications

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>WHMIS (Canada)</th>
<th>DSCL (EEC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>1</td>
<td>Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>1</td>
<td>R41 Irritating to eyes.</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Personal Protection</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
SUPERPLASTICIZERS

SUPERCIZER 1

(ASTM C 494 TYPE “F” ADMIXTURE)
Provides up to 20% water reduction. Maintains slump 30-60 minutes depending on temperature. The product of choice for slump increase for easier placement of concrete in slabs, walls and mid-strength precast.

SUPERCIZER 2

(ASTM C 494 TYPE “D” ADMIXTURE)
Extended Slump Plasticizer. Maintains slump 45-90 minutes. Excellent for warm and hot weather applications. Due to increased retardation, it is not recommended for cold weather use.

SUPERCIZER 3

(ASTM C 494 TYPE “G” ADMIXTURE)
Provides up to 25% water reduction. Can be used for high early strengths when maintaining low water:cement ratios.

SUPERCIZER 5

(ASTM C 494 TYPE “F” ADMIXTURE)
Provides up to 35% water reduction. Excellent choice for precast, and high early strength development. Used extensively in bagged materials for high strength products or self-leveling materials.

SUPERCIZER 6

(ASTM C 494 TYPE “F” ADMIXTURE)
Up to 40% water reduction. Best material for use when high early strength (0-24 hours) is required. Well suited for repair/patch materials requiring early strength development. Allows maximum water reduction for high strength grout applications and products requiring high flow (low viscosities) rates. At high dosages it may affect color of concrete with gray cement. At low dosages it will affect color of white cements.

SUPERCIZER 7

(ASTM C 494 TYPE “G” ADMIXTURE)
Up to 40% water reduction. Provides excellent finishing characteristics in flatwork and precast. Extensively used in statuary and stonework for precast pieces with high detail. Provides high early strength and high ultimate strengths. Recommended for “quick-dry” concretes. Will not affect color of concrete.
ADVANTAGES
• Up to 20% water reduction or 6” slump increase.
• Slump control at the job site without adding water.
• Higher early and ultimate strengths.
• Improves concrete workability with no loss in strength.
• Addition of Supercizer 1 will not affect the water-cement ratio.
• Higher strengths may be achieved more economically.
• Improves cohesiveness and reduces concrete segregation.
• Produces concrete with lower permeability.
• Concrete achieves higher durability.
• Allows concrete placement in difficult access or heavily reinforced areas.
• No need for admixture dispensers because Supercizer 1 is packaged in a patented water soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION
Fritz-Pak Supercizer 1 is a dry powdered admixture, packaged in a patented ready-to-use, water soluble bag. Supercizer 1 is formulated to produce stronger, more durable concrete. As a slump enhancer, Supercizer 1 may be added with the normal amount of mix water to produce more flowable concrete with up to a 6 inch (15 centimeter) slump increase. When used as a high range water reducer, Supercizer 1 will increase concrete compressive strength at all ages, reduce permeability and increase durability. Supercizer 1 does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
1. Determine the amount of Supercizer 1 required. See Recommended Dosage Rate.
2. Each 1.75-lb or 1.1-kg Supercizer 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 Supercizer 1 is uniformly dispersed throughout the mix.

RECOMMENDED DOSAGE RATE
Use a dosage rate equal to 5 to 7 ounces per 100 pounds (3 to 4.5 grams per kilogram) of total cementitious materials (0.30 to 0.45%). One 1.75 pound bag (1.1 kilogram) of Supercizer 1 is recommended for each cubic yard (cubic meter) of concrete to increase the slump up to 6 inches (15 centimeters) or to achieve up to 20% water reduction. The slump gain will remain in effect for 30 to 45 minutes. The concrete will then gradually return to the original slump. 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. We recommend that testing be done to determine the suitability of Supercizer 1 to your mix designs.

COMPATIBILITY
Supercizer 1 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.

continued...
## APPLICABLE STANDARDS

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

## PACKAGING

- 1.75-lb water soluble bag, 24 bags per case, 25 cases per pallet (item #95575)
- 1.1-kg water soluble bag, 20 bags per case, 25 cases per pallet (item #95577)
- 50-lb paper bag, 40 bags per pallet (item #95576)

## 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.

## FAQS

**Q.** How long will the slump change last?

**A.** 30-45 minutes. The concrete will gradually return to the original slump. Time will be shorter in warm weather.

**Q.** What standards does it meet?

**A.** It meets ASTM C-494, type F, AASHTO M-194 and CRD C-87 standards.

**Q.** Will it change the set time?

**A.** Supercizer 1 is a slight retarder. In temperatures between 50° and 70°F you may see up to an hour of set retardation.

**Q.** Will it affect the air content?

**A.** It may increase air content up to 2%. If air content is critical in your application eliminate the addition of air entrainment admixture at the plant and correct the air content at the jobsite using Super Air Plus if needed.

**Q.** Will it change my concrete strength?

**A.** If water is reduced during the batching, you should expect an increase in strength. If water content is not changed, you will not see any changes in concrete strength.

**Q.** Do you recommend Supercizer 1 for use in the winter?

**A.** No. Supercizer 3 or Supercizer 5 should be used in the winter.

**Q.** Can the concrete be redosed if slump starts to change?

**A.** Yes. You may redose to maintain your slump.

**Q.** Is Supercizer 1 compatible with other superplasticizers?

**A.** Supercizer 1 is compatible with most other superplasticizers. However, due to the constant change in formulations by other manufacturers, we strongly recommend testing for compatibility with other superplasticizers. For specific applications, contact Fritz-Pak Corporation.

### 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. 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.

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

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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>Last Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERCIZER 1</td>
<td>03/01/2008</td>
</tr>
</tbody>
</table>

**Supplier/Manufacturer:**
FRITZ-PAK CORPORATION  
4821 Eastover Circle  
Mesquite, TX 75149 U.S.A.  
Tel: 214-221-9494  
Fax: 214-349-3182

**Chemical Family:** Sulfonated Organic Polymer

**Material Uses:** Concrete Additive

## Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## Section III. Hazards Identification

**Potential Acute Health and Chronic Effects:**
May irritate skin. Mildly irritating to eyes.

### Eye Contact
IMMEDIATELY flush eyes with running water.

### Skin Contact
No known effect.

### Inhalation
May be irritating to the respiratory tract. Treat as nuisance dust.

### Ingestion
Have conscious person drink several glasses of water or milk. Seek medical attention.

## Section IV. First Aid Measures

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
</table>
| 1    | HCS Class: Irritating substance | Splash goggles  
Respirator  
Gloves |

## Section V. Fire and Explosion Data - Non-Flammable

## Section VI. Accidental Release Measures

<table>
<thead>
<tr>
<th>Small Spill</th>
<th>Use appropriate tools to put the spilled solid in a convenient waste disposal container.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Spill</td>
<td>Use a shovel to put material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.</td>
</tr>
</tbody>
</table>

## Section VII. Handling and Storage

**Precautions:**
DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.

**Storage:**
Keep container dry. Keep in a cool place.

## Section VIII. Exposure Controls/Personal Protection

<table>
<thead>
<tr>
<th>Engineering Controls</th>
<th>Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Protection</td>
<td>Splash goggles. Dust respirator.</td>
</tr>
</tbody>
</table>

*Continued on Next Page*
**Section IX. Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid</td>
</tr>
<tr>
<td>Odor</td>
<td>Smoky. Sweet.</td>
</tr>
<tr>
<td>PH (1% soln/water)</td>
<td>10</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>3% (v/v)</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>Only soluble or dispersed in water.</td>
</tr>
</tbody>
</table>

**Section X. Stability and Reactivity Data**

| Stability        | The product is stable.         |
| Incompatibility with Various Substances | Slightly reactive to reactive with oxidizing agents. |
| Corrosivity      | Non-corrosive in presence of glass. |

**Section XI. Toxicological Information**

- **Routes of Entry**: Ingestion. Inhalation

**Section XII. Ecological Information - Not Available**

**Section XIII. Disposal Considerations**

- **Waste Disposal**: Landfill.

**Section XIV. Transport Information - Non-Hazardous**

- **DOT Classification**: Not a DOT controlled Material (United States)

**Section XV. Other Regulatory Information and Pictograms**

| Federal and State Regulations | Not available |
| Other Classifications         | WHMIS (Canada) - Not controlled under WHMIS (Canada) |
|                              | DSCL (EEC) - R36/38 - Irritating to eyes and skin. |

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHMIS (Canada) (Pictograms)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>National Fire Protection Association (U. S. A.)</th>
<th>Health</th>
<th>Fire Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOT Pictograms</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DOT Pictograms</th>
<th>National Fire Protection Association (U. S. A.)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>WHMIS (Canada) (Pictograms)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DOT Pictograms</th>
<th>National Fire Protection Association (U. S. A.)</th>
</tr>
</thead>
</table>

**Section XVI. Other Regulatory Information and Pictograms**

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
## FRITZ-PAK SUPERCIZER 1
High-Range Water Reducer

### TEST DATA

**Location**: Mesquite, Texas  
**Design Requirements**: 3000 psi 28 days

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>SUPERCIZER 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Titan Ideal</td>
<td>470 lbs</td>
<td>470 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1593 lbs</td>
<td>1593 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate.</td>
<td>1971 lbs</td>
<td>1971 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SUPERCIZER 1</strong></td>
<td>0 oz./cwt</td>
<td>6 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.55</td>
<td>0.47</td>
</tr>
<tr>
<td>Water Reduction</td>
<td>0%</td>
<td>15%</td>
</tr>
</tbody>
</table>

### Test Data

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>SUPERCIZER 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>3&quot;</td>
<td>3.5&quot;</td>
</tr>
<tr>
<td>Air, %</td>
<td>2.5%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Unit Weight, lb/ft³</td>
<td>145.1 lb/ft³</td>
<td>144.3 lb/ft³</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>77 °F</td>
<td>79 °F</td>
</tr>
<tr>
<td>Concrete Temp., °F</td>
<td>80 °F</td>
<td>83 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>3:30</td>
<td>3:45</td>
</tr>
</tbody>
</table>

### Compressive Strength, psi

<table>
<thead>
<tr>
<th>Age</th>
<th>Control</th>
<th>SUPERCIZER 1</th>
<th>% of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 Hours</td>
<td>1300</td>
<td>1720</td>
<td>132%</td>
</tr>
<tr>
<td>2 Days</td>
<td>1790</td>
<td>2540</td>
<td>142%</td>
</tr>
<tr>
<td>3 Days</td>
<td>1990</td>
<td>3040</td>
<td>153%</td>
</tr>
<tr>
<td>7 Days</td>
<td>2770</td>
<td>4130</td>
<td>149%</td>
</tr>
<tr>
<td>28 Days</td>
<td>3610</td>
<td>4660</td>
<td>129%</td>
</tr>
</tbody>
</table>

---

Note: Cylinders were tested according to ASTM C-39 by Fritz Industries, Inc. R&D. Compressive strength results are averages of two or more breaks.

Fritz-Pak Corporation  
11220 Grader Street, Suite 600  
Dallas, Texas 75238, USA  
Tel: 214-221-9494  
Fax: 214-349-3182  
Toll Free: 1-888-746-4116  
www.fritzpak.com
## Test Data

**Location:** Ideal Concrete Houston, Texas  
**Design Requirements:** 3000 psi 28 days, Slump increase 4-6”

### Mix Design (per Cubic Yard)

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>SUPERCIZER 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Box Crow</td>
<td>355 lbs</td>
<td>355 lbs</td>
</tr>
<tr>
<td>Class C Fly Ash</td>
<td>115 lbs</td>
<td>115 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1270 lbs</td>
<td>1270 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1950 lbs</td>
<td>1950 lbs</td>
</tr>
</tbody>
</table>

### Admixtures

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>SUPERCIZER 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal W/R</td>
<td>2.5 oz./cwt</td>
<td>2.5 oz./cwt</td>
</tr>
<tr>
<td>AEA</td>
<td>3 oz./yd³</td>
<td>3 oz./yd³</td>
</tr>
<tr>
<td>SUPERCIZER 1</td>
<td>0 oz./cwt</td>
<td>6 oz./cwt</td>
</tr>
</tbody>
</table>

### Water-Cement Ratio

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>SUPERCIZER 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.51</td>
<td>0.51</td>
</tr>
</tbody>
</table>

### Test Data

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>SUPERCIZER 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>2.5”</td>
<td>7.75”</td>
</tr>
<tr>
<td>Air, %</td>
<td>5.5%</td>
<td>5%</td>
</tr>
<tr>
<td>Unit Weight, lb/ft³</td>
<td>142.6 lb/ft³</td>
<td>143.1 lb/ft³</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>73 °F</td>
<td>74 °F</td>
</tr>
<tr>
<td>Concrete Temp., °F</td>
<td>83 °F</td>
<td>83 °F</td>
</tr>
</tbody>
</table>

Control samples were made immediately after batching. Supercer 1 was added and mixed for 7 minutes, then Supercer 1 samples were made. Mixing continued. One hour after addition of Supercer 1, concrete slump was 5.25”.

### Compressive Strength, psi

<table>
<thead>
<tr>
<th>Age</th>
<th>Control</th>
<th>SUPERCIZER 1</th>
<th>% of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Days</td>
<td>2650</td>
<td>2790</td>
<td>105%</td>
</tr>
<tr>
<td>7 Days</td>
<td>3160</td>
<td>3180</td>
<td>101%</td>
</tr>
<tr>
<td>28 Days</td>
<td>4190</td>
<td>4300</td>
<td>103%</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Ideal Concrete Lab. Compressive strength results are averages of two or more breaks.
EXTENDED LIFE SLUMP ENHANCER (WARM WEATHER)

ADVANTAGES
• Specifically designed for warm weather.
• Water reduction of up to 20% or slump increase up to 7”.
• Slump control at the job site without adding water.
• Long lasting slump life facilitates extended delivery and placement requirements.
• Higher early and ultimate strengths.
• Improves concrete workability with no loss in strength.
• Addition of Supercizer 2 will not affect the water-cement ratio.
• Higher strengths may be achieved more economically.
• Improves cohesiveness and reduces concrete segregation.
• Produces concrete with lower permeability.
• Concrete achieves higher durability.
• Allows concrete placement in difficult access or heavily reinforced areas.
• No need for admixture dispensers because Supercizer 2 is packaged in a patented water-soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION
Fritz-Pak Supercizer 2 is a dry powdered admixture, packaged in a patented, ready-to-use, water-soluble bag. Supercizer 2 is formulated to produce stronger more durable concrete. It is similar to Fritz-Pak Supercizer 1, but designed for warmer weather. As an extended life slump enhancer, Supercizer 2 may be added with the normal amount of mix water to produce more flowable concrete with up to a 7 inch (18 centimeter) slump increase. When used as a high range water reducer, Supercizer 2 will increase concrete compressive strength at all ages, reduce permeability and increase durability. Supercizer 2 does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
1. Determine the amount of Supercizer 2 required. See Recommended Dosage Rate.
2. Each 1.75-lb or 1.1-kg Supercizer 2 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 Supercizer 2 is uniformly dispersed throughout the mix.
4. Concrete containing Supercizer 2 may be redosed if necessary.

RECOMMENDED DOSAGE RATE
Use a dosage rate equal to 5 to 7 ounces per 100 pounds (3 to 4.5 grams per kilogram) of total cementitious materials (0.30 to 0.45%). One bag of Supercizer 2 is recommended for each cubic yard (cubic meter) of concrete to increase the slump up to 7 inches (18 centimeters) or to achieve up to 20% water reduction. The slump gain will remain in effect for 60 to 90 minutes. The concrete will then gradually return to the original slump. 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. We recommend that testing be done to determine the suitability of Supercizer 2 to your mix designs.

COMPATIBILITY
Supercizer 2 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.

continued...
APPLICABLE STANDARDS
ASTM C-494 Type D, AASHTO M-194 & CRD C-87

PACKAGING
• 1.75-lb water soluble bag, 20 bags per case, 30 cases per pallet (item #95590)
• 1.1-kg water soluble bag, 18 bags per case, 25 cases per pallet (item #95596)
• 50-lb paper bag, 40 bags per pallet (item #95591)

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.

FAQs
Q. What standards does it meet?
   A. It meets ASTM C-494, type D, AASHTO M-194 and CRD C-87 standards.

Q. How long will the slump gain last?
   A. Slump gain will remain in effect for 60-90 minutes.

Q. Will it change the set time?
   A. Supercizer 2 is a slight retarder. In temperatures between 50 and 70 F you may see up to an hour of set retardation.

Q. Will it affect the air content?
   A. It may increase air content up to 2%. If air content is critical in your application eliminate the addition of air entrainment admixture at the plant and correct the air content at the jobsite using Super Air Plus if needed.

Q. Will it change my concrete strength?
   A. If water is reduced during the batching, you should expect an increase in strength. If water content is not changed, you will not see any changes in concrete strength.

Q. Can the concrete be redosed if slump starts to change?
   A. Yes. You may redose to maintain your slump.

Q. Is Supercizer 2 compatible with other superplasticizers?
   A. Supercizer 2 is compatible with most other superplasticizers. However, due to the constant change in formulations by other manufacturers, we strongly recommend testing for compatibility with other superplasticizers. For specific applications, contact Fritz-Pak Corporation.

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. 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.

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

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Material Safety Data Sheet

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**Section I. Chemical Product and Company Identification**

**Common Name/Trade Name:** SUPERCIZER 2

**Last Update:** 03/01/2008

**Supplier/Manufacturer:** FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX 75149 U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

**Chemical Family:** Sulfonated Organic Polymer

**Material Uses:** Concrete Additive

---

**Section II. Composition and Information on Ingredients:**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

---

**Section III. Hazards Identification**

**Potential Acute Health and Chronic Effects:**

May irritate skin. Mildly irritating to eyes.

**Eye Contact:** IMMEDIATELY flush eyes with running water.

**Skin Contact:** Rinse with water.

**Inhalation:** May be irritating to the respiratory tract. Treat as nuisance dust.

**Ingestion:** Have conscious person drink several glasses of water or milk. Seek medical attention.

---

**Section IV. First Aid Measures**

---

**Section V. Fire and Explosion Data - Non-Flammable**

---

**Section VI. Accidental Release Measures**

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill:** Use a shovel to put material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.

---

**Section VII. Handling and Storage**

**Precautions:** DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.

**Storage:** Keep container dry. Keep in a cool place.

---

**Section VIII. Exposure Controls/Personal Protection**

**Engineering Controls:** Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Splash goggles. Dust respirator.

---

Continued on Next Page
**Section IX. Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid</td>
</tr>
<tr>
<td>Odor</td>
<td>Smoky. Sweet.</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>10</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>3% (v/v)</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>Only soluble or dispersed in water.</td>
</tr>
<tr>
<td>Color</td>
<td>Brown (Light).</td>
</tr>
</tbody>
</table>

**Section X. Stability and Reactivity Data**

| Stability                        | The product is stable.      |
| Incompatibility with various substances | Slightly reactive to reactive with oxidizing agents. |
| Corrosivity                      | Non-corrosive in presence of glass. |

**Section XI. Toxicological Information**

| Routes of Entry                  | Ingestion. Inhalation       |

**Section XII. Ecological Information - Not Available**

**Section XIII. Disposal Considerations**

| Waste Disposal                  | Landfill.                   |

**Section XIV. Transport Information - Non-Hazardous**

**Section XV. Other Regulatory Information and Pictograms**

| Other Classifications            | WHMIS (Canada)              |
|                                 | Not controlled under WHMIS (Canada) |
|                                 | DSCL (EEC)                   |
|                                 | R36/38– Irritating to eyes and skin. |

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Personal Protection</th>
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<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>National Fire Protection Association (U. S. A.)</th>
<th>Health Hazard</th>
<th>Reactivity</th>
<th>Specific Hazard</th>
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</thead>
<tbody>
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<td></td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHMIS (Canada) (Pictograms)</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>TDG (Canada) Pictograms</th>
<th></th>
</tr>
</thead>
</table>

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SUPERCIZER 3

SUPERPLASTICIZER (COLD WEATHER)

ADVANTAGES
- Excellent for colder weather.
- Up to 25% water reduction or 6” slump increase.
- Slump control at the job site without adding water.
- Higher early and ultimate strengths.
- Improves concrete workability with no loss in strength.
- Addition of Supercizer 3 will not affect the water-cement ratio.
- Higher strengths may be achieved more economically.
- Excellent finishing characteristics.
- Improves cohesiveness and reduces concrete segregation.
- Produces concrete with lower permeability.
- Concrete achieves higher durability.
- Allows concrete placement in difficult access or heavily reinforced areas.
- No need for admixture dispensers because Supercizer 3 is packaged in a patented water-soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION
Fritz-Pak Supercizer 3 is a dry powdered admixture, packaged in a patented, ready-to-use, water-soluble bag. Supercizer 3 is formulated to produce stronger more durable concrete with higher early strengths. It is best suited for colder weather use (<50°F or 10°C), and does not retard the concrete set. Supercizer 3 may be added with the normal amount of mix water to produce more flowable concrete with up to a 6-inch (15 centimeter) slump increase. As a mid-range water reducer, Supercizer 3 possesses excellent water reduction with improved workability and finishing characteristics. When used as a high-range water reducer, Supercizer 3 reduces water requirements up to 25%, increases concrete compressive strength at all ages, reduces permeability and increases durability. Supercizer 3 is recommended for all types of concrete where improved concrete performance with a lower water-cement ratio, higher early strengths and improved slump characteristics are desired. Supercizer 3 does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
1. Determine the amount of Supercizer 3 required. See Recommended Dosage Rate.
2. Each 1.75-lb or 1.1-kg Supercizer 3 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 Supercizer 3 is uniformly dispersed throughout the mix.
4. Concrete containing Supercizer 3 may be redosed if necessary.

RECOMMENDED DOSAGE RATE
Use a dosage rate equal to 5 to 7 ounces per 100 pounds (3 to 4.5 grams per kilogram) of total cementitious materials (0.30 to 0.45%). One 1.75 pound (1.1 kilogram) bag of Supercizer 3 is recommended for each cubic yard (cubic meter) of concrete to increase the slump up to 6 inches (15 centimeters) or to achieve up to 25% water reduction. The slump gain will remain in effect for 30 to 45 minutes. The concrete will then gradually return to the original slump. 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 Supercizer 3 to your mix designs.

**COMPATIBILITY**
Supercizer 3 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 F, AASHTO M-194 & CRD C-87

**PACKAGING**
- 1.75-lb water soluble bag, 24 bags per case, 25 cases per pallet (item #95584)
- 1.1-kg water soluble bag, 20 bags per case, 25 cases per pallet (item #95582)
- 50-lb paper bag, 40 bags per pallet (item #95588)

**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.

**FAQs**
Q. What standards does it meet?
A. It meets ASTM C-494, type G, AASHTO M-194 and CRD C-87 standards.

Q. How long will slump gain last?
A. Slump gain will remain in effect 30-45 minutes.

Q. Will it change the set time?
A. No. Supercizer 3 is not a retarding superplasticizer.

Q. Will it affect the air content?
A. No.

Q. Will it change the set time?
A. No.

Q. Will it change my concrete strength?
A. If water is reduced during the batching, you should expect an increase in strength. If water content is not changed, you will not see any changes in concrete strength.

Q. Can the concrete be redosed if slump starts to change?
A. Yes. You may redose to maintain your slump

**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. 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.

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

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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>Supplier/Manufacturer:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUPERCIZER 3</strong></td>
<td>FRITZ-PAK CORPORATION</td>
</tr>
<tr>
<td></td>
<td>4821 Eastover Circle</td>
</tr>
<tr>
<td></td>
<td>Mesquite, TX 75149 U.S.A.</td>
</tr>
<tr>
<td></td>
<td>Tel: 214-221-9494</td>
</tr>
<tr>
<td></td>
<td>Fax: 214-349-3182</td>
</tr>
</tbody>
</table>

**Chemical Family**: Sulfonated Organic Polymer  
**Material Uses**: Concrete Additive  

## Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## Section III. Hazards Identification

**Potential Acute Health and Chronic Effects**:  
May irritate skin. Mildly irritating to eyes.

**Eye Contact**  
IMMEDIATELY flush eyes with running water.

**Skin Contact**  
Rinse with water.

**Inhalation**  
May be irritating to the respiratory tract. Treat as nuisance dust.

**Ingestion**  
Have conscious person drink several glasses of water or milk. Seek medical attention.

## Section IV. First Aid Measures

## Section V. Fire and Explosion Data - Non-Flammable

## Section VI. Accidental Release Measures

**Small Spill**  
Use appropriate tools to put the spilled solid an a convenient waste disposal container.

**Large Spill**  
Use a shovel to put material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.

## Section VII. Handling and Storage

**Precautions**  
DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.

**Storage**  
Keep container dry. Keep in a cool place.

## Section VIII. Exposure Controls/Personal Protection

**Engineering Controls**  
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection**  
Splash goggles. Dust respirator.

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*Continued on Next Page*
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
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<tr>
<td>pH (1% soln)</td>
<td>10</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>3% (v/v)</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>Only soluble or dispersed in water</td>
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<tr>
<td>Color</td>
<td>Brown (Light)</td>
</tr>
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</table>

Section X. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Slightly reactive to reactive with oxidizing agents.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
</tbody>
</table>

Section XI. Toxicological Information

<table>
<thead>
<tr>
<th>Route of Entry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
</tr>
</tbody>
</table>

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

<table>
<thead>
<tr>
<th>Waste Disposal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landfill</td>
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</tbody>
</table>

Section XIV. Transport Information - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
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<tbody>
<tr>
<td>Federal and State Regulations</td>
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<tr>
<td>WHMIS (Canada)</td>
<td>Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td>DSCL (EEC)</td>
<td>R36/38– Irritating to eyes and skin</td>
</tr>
<tr>
<td>HMIS (U. S. A.)</td>
<td>Health Hazard 2  Fire Hazard 0  Reactivity 0  Personal Protection e</td>
</tr>
<tr>
<td>WHMIS (Canada) (Pictograms)</td>
<td>Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td>TDG (Canada) Pictograms</td>
<td>(Blank pictogram)</td>
</tr>
</tbody>
</table>

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ADVANTAGES
• Slump control at the job site without additional water.
• Higher early and ultimate strengths.
• Improves concrete workability with no loss in strength.
• Addition of Supercizer 5 will not affect the water-cement ratio.
• Higher strengths may be achieved more economically.
• Improves cohesiveness and reduces concrete segregation.
• Produces concrete with lower permeability.
• Concrete achieves higher durability.
• Allows concrete placement in difficult access or heavily reinforced areas.
• Concrete produced with Supercizer 5 can be used in the ready mix or prestressed/precast concrete industry.
• Reduced shrinkage cracks and creep.
• Higher modulus of elasticity.
• Supercizer 5 is packaged in a water-soluble Fritz-Pak inner bag for convenient use at plant or job site, eliminating the need for admixture dispensers.

DESCRIPTION
Fritz-Pak Supercizer 5 is a dry powdered admixture, packaged in a ready-to-use water-soluble bag. Supercizer 5 is formulated to produce stronger more durable concrete. As a superplasticizer, Supercizer 5 may be added with the normal amount of mix water to produce more flowable concrete with up to a 6-inch (15 centimeter) slump increase. When used as a high-range water reducer, Supercizer 5 will reduce water requirements up to 25%, increase concrete compressive strength at all ages, reduce permeability and increase durability. Supercizer 5 does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
1. Determine the amount of Supercizer 5 required. See Recommended Dosage Rate.
2. Each Supercizer 5 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 Supercizer 5 is uniformly dispersed throughout the mix.
4. Concrete containing Supercizer 5 may be redosed if necessary.

RECOMMENDED DOSAGE RATE
Use a dosage rate equal to 5 to 7 ounces per 100 pounds (3 to 4.5 grams per kilogram) of total cementitious materials (0.30 to 0.45%). One 1.75-pound (1.1-kilogram) bag of Supercizer 5 is recommended for each cubic yard (cubic meter) of concrete to increase the slump up to 6 inches (15 centimeters) or to achieve up to 25% water reduction. The slump gain will remain in effect for 30 to 45 minutes. The concrete will then gradually return to the original slump. 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 Supercizer 5 to your mix designs.

COMPATIBILITY
Supercizer 5 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.
### Packaging
- 1.75-lb water soluble bag, 24 bags per case, 25 cases per pallet (item #95600)
- 1.1-kg water soluble bag, 20 bags per case, 25 cases per pallet (item #95650)
- 50-lb paper bag, 40 bags per pallet (item #95652)

### Applicable Standards
ASTM C-494 Type F, AASHTO M-194 & CRD C-87

### 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.

### FAQs
**Q.** Will it discolor the concrete?
**A.** No. In fact, adding Supercizer 5 before adding color will improve the mixing of color into the concrete.

**Q.** Will it change the set time?
**A.** No, it will not speed or slow the set.

**Q.** Will Supercizer 5 change the air content of my concrete?
**A.** No, at the recommended dosage rate, no change in entrained air content should occur.

**Q.** Will it change my concrete strength?
**A.** If you use less water when adding Supercizer 5, your concrete will be stronger. If your water content is not changed, strength is not changed.

**Q.** What standards does it meet?
**A.** It meets ASTM C-494 type F, AASHTO M-194 and CRD C-87 standards.

**Q.** Do you recommend Supercizer 5 for shotcrete?
**A.** Yes. Supercizer 5 is the most indicated product for shotcrete applications.
# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC&lt;sub&gt;50&lt;/sub&gt;/LD&lt;sub&gt;50&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td></td>
</tr>
</tbody>
</table>

**Common Name/Trade Name:** SUPERCIZER 5  
**Supplier/Manufacturer:** FRITZ-PAK CORPORATION  
4821 Eastover Circle  
Mesquite, TX 75149 U.S.A.  
Tel: 214-221-9494  
Fax: 214-349-3182  
**CAS#** 9084-06-4  
**TSCA** On the TSCA list  
**DSL** All the ingredients are on the DSL list  
**Chemical Family:** Sulfonated Naphthalene Condensate, Sodium Salt (Salt).  
**Material Uses** Not Available

## Section II. Composition and Information on Ingredients:

- **Name**: Formaldehyde  
  **CAS #**: 50-00-0  
  **% by Weight**: Trace  
  **TLV/PEL**: 1.0 ppm

## Section III. Hazards Identification

**Potential Acute Health and Chronic Effects:** May irritate skin. Mildly irritating to eyes.

## Section IV. First Aid Measures

- **Eye Contact**: IMMEDIATELY flush eyes with running water.  
- **Skin Contact**: Rinse with water.  
- **Inhalation**: May be irritating to the respiratory tract. Treat as nuisance dust.  
- **Ingestion**: Have conscious person drink several glasses of water or milk. Seek medical attention.

## Section V. Fire and Explosion Data - Non-Flammable

- **Section VI. Accidental Release Measures**
  - **Small Spill**: Use appropriate tools to put the spilled solid in a convenient waste disposal container.  
  - **Large Spill**: Use a shovel to put material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.

## Section VII. Handling and Storage

- **Precautions**: DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.  
- **Storage**: Keep container dry. Keep in a cool place.

## Section VIII. Exposure Controls/Personal Protection

- **Engineering Controls**: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.  
- **Personal Protection**: Splash goggles. Dust respirator.

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**Continued on Next Page**
Section IX. Physical and Chemical Properties

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Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

<table>
<thead>
<tr>
<th>Waste Disposal</th>
<th>Landfill</th>
</tr>
</thead>
</table>

Section XIV. Transport Information - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>Federal and State Regulations</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Classifications</td>
<td>WHMIS (Canada) Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td></td>
<td>DSCL (EEC) R36/38– Irritating to eyes and skin.</td>
</tr>
<tr>
<td>HMIS (U. S. A.)</td>
<td>Health Hazard 2 National Fire Protection Association (U. S. A.)</td>
</tr>
<tr>
<td></td>
<td>Fire Hazard 0 Health 1</td>
</tr>
<tr>
<td></td>
<td>Reactivity 0 Fire Hazard 0</td>
</tr>
<tr>
<td></td>
<td>Personal Protection e Reactivity Specific Hazard</td>
</tr>
<tr>
<td>WHMIS (Canada) (Pictograms)</td>
<td>Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td>TDG (Canada) Pictograms</td>
<td>![Pictogram]</td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
FRITZ-PAK SUPERCIZER 5
High-Range Water Reducer

TEST DATA

Location: Mesquite, Texas
Design Requirements: 3000 psi 28 days

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>SUPERCIZER 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Ideal</td>
<td>470 lbs</td>
<td>470 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1593 lbs</td>
<td>1593 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1971 lbs</td>
<td>1971 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPERCIZER 5</td>
<td>0 oz./cwt</td>
<td>6 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.55</td>
<td>0.46</td>
</tr>
<tr>
<td>Water Reduction</td>
<td>0</td>
<td>16%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Data</th>
<th>Control</th>
<th>SUPERCIZER 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>3.00&quot;</td>
<td>2.75&quot;</td>
</tr>
<tr>
<td>Air, %</td>
<td>2.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Unit Weight, lb/ft³</td>
<td>145.1 lb/ft³</td>
<td>146.1 lb/ft³</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>77 °F</td>
<td>82 °F</td>
</tr>
<tr>
<td>Concrete Temp., °F</td>
<td>80 °F</td>
<td>82 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>3:30</td>
<td>3:15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compressive Strength, psi</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Control</td>
<td>SUPERCIZER 5</td>
</tr>
<tr>
<td>24 Hours</td>
<td>1300</td>
<td>1810</td>
</tr>
<tr>
<td>2 Days</td>
<td>1790</td>
<td>2640</td>
</tr>
<tr>
<td>3 Days</td>
<td>1990</td>
<td>3120</td>
</tr>
<tr>
<td>7 Days</td>
<td>2770</td>
<td>4380</td>
</tr>
<tr>
<td>28 Days</td>
<td>3610</td>
<td>5110</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Fritz Chemical R&D.
Compressive strength results are averages of two or more breaks.
FRITZ-PAK SUPERCIZER 5
Slump Enhancer

TEST DATA

Location: Ideal Concrete Houston, Texas
Design Requirements: 3000 psi 28 days, Slump increase 4-6"

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>SUPERCIZER 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Box Crow</td>
<td>355 lbs</td>
<td>355 lbs</td>
</tr>
<tr>
<td>Class C Fly Ash</td>
<td>115 lbs</td>
<td>115 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1270 lbs</td>
<td>1270 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1950 lbs</td>
<td>1950 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td>Normal W/R</td>
<td>2.5 oz./cwt</td>
</tr>
<tr>
<td>AEA</td>
<td>3 oz./yd³</td>
<td>3 oz./yd³</td>
</tr>
<tr>
<td>SUPERCIZER 5</td>
<td>0 oz./cwt</td>
<td>6 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.51</td>
<td>0.51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Data</th>
<th>Control</th>
<th>SUPERCIZER 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump</td>
<td>2.5&quot;</td>
<td>8.5&quot;</td>
</tr>
<tr>
<td>Air, %</td>
<td>4%</td>
<td>2.5%</td>
</tr>
<tr>
<td>U. W., lb/ft³</td>
<td>142.9</td>
<td>147.6</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>75 °F</td>
<td>75 °F</td>
</tr>
<tr>
<td>Concrete Temp., °F</td>
<td>85 °F</td>
<td>86 °F</td>
</tr>
</tbody>
</table>

Control samples were made immediately after batching. SUPERCIZER 5 was added and mixed for 7 minutes, then SUPERCIZER 5 samples were made. Mixing was continued. One hour after addition of SUPERCIZER 5: Concrete slump was 5.75".

| Compressive Strength, psi   |          |              |              |
|-----------------------------|----------|--------------|
| Age                         | Control  | SUPERCIZER 5 | % of Control |
| 3 Days                      | 2510     | 3020         | 120%         |
| 7 Days                      | 2920     | 3490         | 120%         |
| 28 Days                     | 3970     | 4950         | 125%         |

Note: Cylinders were tested according to ASTM C-39 by Ideal Concrete Lab. Compressive strength results are averages of two or more breaks.

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ADVANTAGES

- Designed for ultra-high strength gain in less than 24 hours.
- Up to 40% water reduction.
- Improves concrete workability.
- Higher strengths may be achieved more economically.
- Improves cohesiveness and reduces concrete segregation.
- Easily adaptable to fast track paving applications.
- Steam curing may be reduced or eliminated in the prestressed/precast industry.
- Beneficial in all types of high strength concrete applications.
- Allows concrete placement in difficult access or heavily reinforced areas.
- Produces concrete with lower permeability.
- Concrete achieves higher durability.
- Reduced shrinkage cracks and creep.
- Higher modulus of elasticity.
- Type I cement may be substituted for Type III cement.
- No need for admixture dispensers because Supercizer 6 is packaged in a patented water soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION

Fritz-Pak Supercizer 6 is a dry powdered admixture, packaged in a patented, ready-to-use, water soluble bag. Supercizer 6 is a new generation of superplasticizer, uniquely formulated with a new chemistry never before available to the concrete industry. Supercizer 6 provides maximum water reduction with ultra-high early strengths while producing stronger more durable concrete. When used as a high range water reducer, Supercizer 6 will reduce water requirements up to 40% and increase concrete compressive strength at all ages, reduce permeability and increase durability. Supercizer 6 is recommended for all types of concrete when improved concrete performance with a lower water-cement ratio, ultra-high early strengths and improved slump characteristics are desired. It does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS

1. Determine the amount of Supercizer 6 required. See Recommended Dosage Rate.
2. Each 2.5-lb or 1.5-kg 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 the Supercizer 6 is uniformly dispersed throughout the mix.

RECOMMENDED DOSAGE RATE

Use a dosage rate equal to 4 to 12 ounces per 100 pounds (2.5 to 7.5 grams per kilogram) of total cementitious materials (0.25 to 0.75 %). One bag of Supercizer 6 is recommended for each cubic yard (cubic meter) of concrete. Due to the high level of water reduction (up to 40%), concrete produced with Supercizer 6 should have a water-cement ratio less than 0.4. 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. We recommend that testing be done to determine the suitability of Supercizer 6 to your mix designs.

continued...
SUPERCIZER 6

ULTRA HIGH-EARLY STRENGTHS

COMPATIBILITY
Supercizer 6 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 F, AASHTO M-194 & CRD C-87

PACKAGING
- 2.5-lb water soluble bag, 18 bags per case, 25 cases per pallet (item #95655)
- 1.5-kg water soluble bag, 10 bags per case, 25 cases per pallet (item #95656)
- 50-lb paper bag, 40 bags per pallet (item #95659)

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.

FAQs
Q. What standards does it meet?
A. It meets ASTM C-494, type F, AASHTO M-194 and CRD C-87 standards.

Q. Will it affect the color of concrete?
A. Yes. Supercizer 6 is red in color. When added to concrete in medium to high dosages it will make it slightly lighter in color. If color is an issue, we recommend testing.

Q. Will it change the set time?
A. No, it will not speed or slow the set.

Q. Will Supercizer 6 affect the air content of my concrete?
A. No, at the recommended dosage rate, no change in entrained air content should occur.

Q. Will it change my concrete strength?
A. If you use less water when adding Supercizer 6, your concrete will be stronger. If your water content is not changed, strength is not changed.

Q. What are the best applications for Supercizer 6?
A. Supercizer 6 is a superplasticizer with no set retardation and also very high early strength gain. For applications where high strengths are required in less than 18 hours, no other product matches the performance of Supercizer 6.

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. 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.

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

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# Material Safety Data Sheet

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HCS Class: Irritating substance</td>
<td>Splash goggles, Respirator, Gloves</td>
</tr>
</tbody>
</table>

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>SUPERCIZER 6</th>
<th>Last Update</th>
<th>03/01/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier/Manufacturer:</td>
<td>FRITZ-PAK CORPORATION</td>
<td>CAS#</td>
<td>9084-06-4</td>
</tr>
<tr>
<td></td>
<td>4821 Eastover Circle</td>
<td>TSCA</td>
<td>On the TSCA list</td>
</tr>
<tr>
<td></td>
<td>Mesquite, TX 75149 U.S.A.</td>
<td>DSL</td>
<td>All the ingredients are on the DSL list</td>
</tr>
<tr>
<td></td>
<td>Tel: 214-221-9494</td>
<td>Chemical Family</td>
<td>Sulfonated Organic Polymer</td>
</tr>
<tr>
<td></td>
<td>Fax: 214-349-3182</td>
<td>Material Uses</td>
<td>Concrete Additive</td>
</tr>
</tbody>
</table>

## Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## Section III. Hazards Identification

| Potential Acute Health and Chronic Effects | May irritate skin. Mildly irritating to eyes. |

## Section IV. First Aid Measures

| Eye Contact | IMMEDIATELY flush eyes with running water. |
| Skin Contact | Rinse with water. |
| Inhalation  | May be irritating to the respiratory tract. Treat as nuisance dust. |
| Ingestion   | Have conscious person drink several glasses of water or milk. Seek medical attention. |

## Section V. Fire and Explosion Data - Non-Flammable

## Section VI. Accidental Release Measures

| Small Spill | Use appropriate tools to put the spilled solid in a convenient waste disposal container. |
| Large Spill | Use a shovel to put material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill. |

## Section VII. Handling and Storage

| Precautions | DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. |
| Storage     | Keep container dry. Keep in a cool place. |

## Section VIII. Exposure Controls/Personal Protection

| Engineering Controls | Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. |
| Personal Protection | Splash goggles. Dust respirator. |

*Continued on Next Page*
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>Smoky. Sweet.</td>
</tr>
<tr>
<td>pH (1% soln)</td>
<td>10</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>3% (v/v)</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>Only soluble or dispersed in water.</td>
</tr>
<tr>
<td>Color</td>
<td>Brown (Light).</td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

| Stability                      | The product is stable. |
| Incompatibility with various substances | Slightly reactive to reactive with oxidizing agents. |
| Corrosivity                    | Non-corrosive in presence of glass. |

Section XI. Toxicological Information

| Routes of Entry | Ingestion. Inhalation |

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

| Waste Disposal | Landfill |

Section XIV. Transport Information - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

| Federal and State Regulations | Not available |
| Other Classifications | WHMIS (Canada) Not controlled under WHMIS (Canada) |
| HMIS (U. S. A.) | Health Hazard 2 National Fire Protection Association (U. S. A.) |
| Fire Hazard | 0 |
| Reactivity | 0 |
| Personal Protection | e |
| WHMIS (Canada) (Pictograms) | Not controlled under WHMIS (Canada) |
| TDG (Canada) Pictograms | |

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FRITZ-PAK SUPERCIIZER 6
HIGH-RANGE WATER REDUCER

TEST DATA

Location: Harmony Road-Fast Track Paving/Whitetopping Job
Fort Collins, Colorado
Design Requirements: 4000 psi 12 hours, 2" ± 1/2" Slump and 5% ± 1% Air Content

<table>
<thead>
<tr>
<th>MIX DESIGN (per cubic yard)</th>
<th>SUPERCIIZER 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type III Ideal</td>
<td>660 lbs</td>
</tr>
<tr>
<td>Fine Aggregate 1</td>
<td>1243 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1815 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td>SUPERCIIZER 6</td>
</tr>
<tr>
<td></td>
<td>8.7 oz./cwt</td>
</tr>
<tr>
<td>AEA</td>
<td>10 oz./yd³</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set No.</th>
<th>Sample Time</th>
<th>Slump</th>
<th>Air</th>
<th>12 Hours</th>
<th>24 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2:16 p.m.</td>
<td>2&quot;</td>
<td>5.1%</td>
<td>5810</td>
<td>6190</td>
</tr>
<tr>
<td>2</td>
<td>3:15 p.m.</td>
<td>1.75&quot;</td>
<td>4.4%</td>
<td>5800</td>
<td>6270</td>
</tr>
<tr>
<td>3</td>
<td>4:20 p.m.</td>
<td>1.75&quot;</td>
<td>4.7%</td>
<td>5730</td>
<td>6290</td>
</tr>
</tbody>
</table>

SUMMARY: An 800 foot test section of Harmony Road (S.H. 68, Fort Collins Colorado) was used by the Colorado Department of Highways to determine the effectiveness of placing a concrete overlay over the existing asphalt surface. Two different thicknesses of whitetopping were evaluated (3.5" and 5.5"). It was desired to have the section, both westbound lanes, traffic-ready as quickly as possible. At 6:00 a.m. on June 2nd, 1990, the section was closed to traffic, and grading and setting up the string line for the paver began. Concrete placement began at 10:35 a.m. that same morning. The last load was placed at 7:30 p.m. that night. Based on the compressive strength results, the surface was striped and open to traffic the next day, June 3rd at 10:35 a.m.

Note: Cylinders were tested according to ASTM C-39 by Ideal Cement Lab. Compressive strength results are averages of two or more breaks.

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## TEST DATA

**Location:** Houston, Texas  
**Design Requirements:** 3000 psi 8 hours, Type III Cement  

<table>
<thead>
<tr>
<th>MIX DESIGN (per cubic yard)</th>
<th>Control</th>
<th>SUPERCIZER 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type III Capital</td>
<td>700 lbs</td>
<td>700 lbs</td>
</tr>
<tr>
<td>Fine Aggregate 1</td>
<td>1173 lbs</td>
<td>1173 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1800 lbs</td>
<td>1800 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPERCIZER 6</td>
<td>0 oz./cwt</td>
<td>8 oz./cwt</td>
</tr>
<tr>
<td>Normal W/R</td>
<td>2.5 oz./cwt</td>
<td>2.5 oz./cwt</td>
</tr>
<tr>
<td>AEA</td>
<td>2.5 oz./yd³</td>
<td>2.5 oz./yd³</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.30</td>
<td>0.30</td>
</tr>
</tbody>
</table>

**Test Data**

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>SUPERCIZER 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>0.5”</td>
<td>6.5”</td>
</tr>
<tr>
<td>Air Temperature, °F</td>
<td>89 °F</td>
<td>89 °F</td>
</tr>
<tr>
<td>Concrete Temperature, °F</td>
<td>93 °F</td>
<td>95 °F</td>
</tr>
</tbody>
</table>

Control mix was sampled immediately after batching. Vibration was required to consolidate. SUPERCIZER 6 was added and mixed 7 minutes. Fifteen minutes after addition: 9.5” slump. Forty-five minutes after addition: 6.5” slump and samples were made. Normal water reducer was used to control slump life.

**Compressive Strength Results, psi**

<table>
<thead>
<tr>
<th>Age</th>
<th>Control</th>
<th>SUPERCIZER 6</th>
<th>Percent of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Hours</td>
<td>1400</td>
<td>1400</td>
<td>100%</td>
</tr>
<tr>
<td>5 Hours</td>
<td>2600</td>
<td>2650</td>
<td>102%</td>
</tr>
<tr>
<td>6 Hours</td>
<td>3350</td>
<td>3900</td>
<td>116%</td>
</tr>
<tr>
<td>7 Hours</td>
<td>3800</td>
<td>5050</td>
<td>133%</td>
</tr>
<tr>
<td>8 Hours</td>
<td>3950</td>
<td>6000</td>
<td>152%</td>
</tr>
<tr>
<td>24 Hours</td>
<td>4840</td>
<td>7660</td>
<td>158%</td>
</tr>
<tr>
<td>3 Days</td>
<td>5580</td>
<td>9140</td>
<td>163%</td>
</tr>
<tr>
<td>7 Days</td>
<td>5970</td>
<td>9470</td>
<td>159%</td>
</tr>
<tr>
<td>14 Days</td>
<td>6320</td>
<td>9860</td>
<td>156%</td>
</tr>
<tr>
<td>28 Days</td>
<td>6950</td>
<td>10440</td>
<td>150%</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Ideal Cement Lab.  
Compressive strength results are averages of two or more breaks.
SUPERCIZER 7

HIGH-PERFORMANCE SUPERPLASTICIZER

ADVANTAGES
- Designed for very high early and ultimate strength with smoothest possible finish.
- Excellent for Precast/Prestressed Concrete.
- Steam curing may be reduced or eliminated.
- Up to 40% water reduction.
- Improves concrete workability.
- Higher strengths may be achieved more economically.
- Improves cohesiveness and reduces concrete segregation.
- Easily adaptable to fast track paving applications.
- Beneficial in all types of high strength concrete applications.
- Allows concrete placement in difficult access or heavily reinforced areas.
- Produces concrete with lower permeability.
- Concrete achieves higher durability.
- Reduced shrinkage cracks and creep.
- Higher modulus of elasticity.
- Type I cement may be substituted for Type III cement.
- No need for admixture dispensers because Supercizer 7 is packaged in a patented water-soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION
Fritz-Pak Supercizer 7 is a dry powdered admixture, packaged in a patented, ready-to-use, water-soluble bag. Supercizer 7 is a superplasticizer, uniquely formulated to provide maximum water reduction for high early strengths while producing stronger, more durable concrete. When used as a high range water reducer, Supercizer 7 will reduce water requirements up to 40% and increase concrete compressive strength at all ages, reduce permeability and increase durability. Supercizer 7 is recommended for all types of concrete where improved concrete performance with a lower water-cement ratio, ultra-high early strengths and improved slump characteristics are desired. Supercizer 7 does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
1. Determine the amount of Supercizer 7 required. See Recommended Dosage Rate.
2. Each 2.5-lb or 1.5-kg Supercizer 7 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 Supercizer 7 is uniformly dispersed throughout the mix.

RECOMMENDED DOSAGE RATE
Use a dosage rate equal to 4 to 12 ounces per 100 pounds (2.5 to 7.5 grams per kilogram) of total cementitious materials (0.25 to 0.75 %). One bag of Supercizer 7 is recommended for each cubic yard (cubic meter) of concrete. Due to the high level of water reduction (up to 40%), concrete produced with Supercizer 7 should have a water-cement ratio less than 0.4. 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 Supercizer 7 to your mix designs.

continued...
COMPATIBILITY
Supercizer 7 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 G, AASHTO M-194 & CRD C-87

PACKAGING
• 2.5-lb water soluble bag, 18 bags per case, 25 cases per pallet (item #97140)
• 50-lb paper bag, 40 bags per pallet (item #97142)

FAQs
Q. Will it discolor the concrete?
A. No. In fact, adding Supercizer 7 before adding color will improve the mixing of color into the concrete.

Q. Will it change the set time?
A. Yes. Supercizer 7 is a retarding superplasticizer.

Q. Will Supercizer 7 affect the air content of my concrete?
A. No, at the recommended dosage rate, no change in entrained air content should occur.

Q. Will it change my concrete strength?
A. If you use less water when adding Supercizer 7, your concrete will be stronger. If your water content is not changed, strength is not changed.

Q. What standards does it meet?
A. It meets ASTM C-494, type G, AASHTO M-194 and CRD C-87 standards.

Q. Is Supercizer 7 good for shotcrete?
A. No. For shotcrete we recommend the use of Supercizer 5.

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.

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. 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.

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

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Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name/ Trade Name        SUPERCIZER 7

Supplier/ Manufacturer:        FRITZ-PAK CORPORATION
                             4821 Eastover Circle
                             Mesquite, TX 75149 U.S.A.
                             Tel: 214-221-9494
                             Fax: 214-349-3182

Chemical Family:               Sulfonated Organic Polymer

Material Uses:                 Not Available

NFPA 1 0

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Section III. Hazards Identification

Potential Acute Health and Chronic Effects:  May irritate skin. Mildly irritating to eyes.

Section IV. First Aid Measures

Eye Contact: IMMEDIATELY flush eyes with running water.
Skin Contact: Rinse with water.
Inhalation: May be irritating to the respiratory tract. Treat as nuisance dust.
Ingestion: Have conscious person drink several glasses of water or milk. Seek medical attention.

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill: Use a shovel to put material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.

Section VII. Handling and Storage

Precautions: DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.
Storage: Keep container dry. Keep in a cool place.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection: Splash goggles. Dust respirator.

Continued on Next Page
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
<th>Odor</th>
<th>Smoky. Sweet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (1% soln)</td>
<td>10</td>
<td>Color</td>
<td>Brown (Light).</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatility</td>
<td>3% (v/v)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>Only soluble or dispersed in water.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompatibility with various substances</td>
<td>Slightly reactive to reactive with oxidizing agents.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
</tbody>
</table>

Section XI. Toxicological Information

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Ingestion. Inhalation</th>
</tr>
</thead>
</table>

Section XII. Ecological Information  - Not Available

Section XIII. Disposal Considerations

<table>
<thead>
<tr>
<th>Waste Disposal</th>
<th>Landfill</th>
</tr>
</thead>
</table>

Section XIV. Transport Information  - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>Federal and State Regulations</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Classifications</td>
<td>WHMIS (Canada) Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td></td>
<td>DSCL (EEC) R36/38– Irritating to eyes and skin.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard 2</th>
<th>National Fire Protection Association (U. S. A.) Health 1 0 Fire Hazard 1 0 Reactivity e Specific Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fire Hazard 0</td>
<td>Reactivity 0</td>
</tr>
<tr>
<td></td>
<td>Personal Protection e</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHMIS (Canada) (Pictograms)</th>
<th>Not controlled under WHMIS (Canada)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDG (Canada) Pictograms</td>
<td></td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
# TEST DATA

**Location:** Denver, Colorado  
**Design Requirements:** 4000 psi 28 days.

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>SUPERCIZER 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Ideal Type I/II, lbs</td>
<td>521 lbs</td>
<td>515 lbs</td>
</tr>
<tr>
<td>Fine Aggregate, lbs</td>
<td>1283 lbs</td>
<td>1355 lbs</td>
</tr>
<tr>
<td>1” Coarse Aggregate, lbs</td>
<td>1812 lbs</td>
<td>1793 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPERCIZER 7</td>
<td>0 oz./cwt</td>
<td>8 oz./cwt</td>
</tr>
<tr>
<td>AEA</td>
<td>4.2 fl. oz./yd³</td>
<td>3.7 fl. oz./yd³</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.50</td>
<td>0.36</td>
</tr>
<tr>
<td>Water Reduction</td>
<td>0</td>
<td>28%</td>
</tr>
</tbody>
</table>

## Test Data

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>SUPERCIZER 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>3.00&quot;</td>
<td>3.25&quot;</td>
</tr>
<tr>
<td>Air, %</td>
<td>5.2 %</td>
<td>5.5 %</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>75 °F</td>
<td>75 °F</td>
</tr>
<tr>
<td>Concrete Temp., °F</td>
<td>71 °F</td>
<td>72 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>4:45</td>
<td>6:15</td>
</tr>
</tbody>
</table>

## Compressive Strength, psi

<table>
<thead>
<tr>
<th>Age</th>
<th>Control</th>
<th>SUPERCIZER 7</th>
<th>% of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 Hours</td>
<td>1520</td>
<td>2510</td>
<td>165%</td>
</tr>
<tr>
<td>3 Days</td>
<td>3010</td>
<td>4960</td>
<td>156%</td>
</tr>
<tr>
<td>7 Days</td>
<td>3750</td>
<td>5590</td>
<td>149%</td>
</tr>
<tr>
<td>28 Days</td>
<td>4900</td>
<td>7010</td>
<td>143%</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Commercial Testing Laboratories in Denver, Colorado. Compressive strength results are averages of two or more breaks.
WATER REDUCERS

FR-1
(ASTM C 494 TYPE “D” ADMIXTURE)

Water reducer with set-retarding properties.
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...
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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Material Safety Data Sheet

Section VI. Accidental Release Measures

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HCS Class: Irritating substance</td>
<td>Splash Goggles, Respirator,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gloves</td>
</tr>
</tbody>
</table>

Section I. Chemical Product and Company Identification

Common Name/Trade Name: FR-1

Last Update: 03/01/2008

Supplier/Manufacturer: FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX 75149 U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Section III. Hazards Identification - None

Section IV. First Aid Measures

Eye Contact: IMMEDIATELY flush eyes with running water.

Skin Contact: After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Cold water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention.

Inhalation: May be irritating to the respiratory tract. Treat as nuisance dust.

Ingestion: Have conscious person drink several glasses of water or milk. Seek medical attention.

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

All Spills: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Section VII. Handling and Storage - No specific storage required.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Splash goggles. Dust respirator.

Continued on Next Page
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid</td>
<td>Odor</td>
<td>Smoky, Sweet</td>
</tr>
<tr>
<td>pH (1% soln)</td>
<td>4-5</td>
<td>Color</td>
<td>Brown (Light)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>N. A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatility</td>
<td>N. A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>N. A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility</td>
<td>N. A.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data - Product is stable

Section XI. Toxicological Information

Routes of Entry: Ingestion, Inhalation

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

Waste Disposal: Landfill

Section XIV. Transport Information - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations: Not available

Other Classifications:
- WHMIS (Canada): Not controlled under WHMIS (Canada)
- DSCL (EEC): R36/38 – Irritating to eyes and skin.

HMIS (U. S. A.): Health Hazard 2, Fire Hazard 0, Reactivity 0, Personal Protection e

WHMIS (Canada) (Pictograms): Not controlled under WHMIS (Canada)

TDG (Canada) Pictograms: Not available

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TEST DATA

Location: Mesquite, TX
Design Requirements: 3000 psi 28 days

<table>
<thead>
<tr>
<th>MIX DESIGN (per cubic yard)</th>
<th>Control</th>
<th>FR-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Ideal</td>
<td>470 lbs</td>
<td>470 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1593 lbs</td>
<td>1593 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1971 lbs</td>
<td>1971 lbs</td>
</tr>
<tr>
<td>Admixtures FR-1</td>
<td>0 oz./cwt</td>
<td>1.75 oz./cwt</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.55</td>
<td>0.51</td>
</tr>
<tr>
<td>Water Reduction</td>
<td>0</td>
<td>7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEST DATA:</th>
<th>Control</th>
<th>FR-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>3”</td>
<td>3”</td>
</tr>
<tr>
<td>Air, %</td>
<td>2.5%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Unit Weight, lb/ft³</td>
<td>145.1 lb/ft³</td>
<td>144.7 lb/ft³</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>77 °F</td>
<td>77 °F</td>
</tr>
<tr>
<td>Conc. Temp., °F</td>
<td>80 °F</td>
<td>79 °F</td>
</tr>
<tr>
<td>Initial Set (hours:mins)</td>
<td>3:30</td>
<td>3:40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compressive Strength, psi</th>
<th>Control</th>
<th>FR-1</th>
<th>Percent of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 hours</td>
<td>1300</td>
<td>1560</td>
<td>120%</td>
</tr>
<tr>
<td>2 days</td>
<td>1790</td>
<td>2110</td>
<td>118%</td>
</tr>
<tr>
<td>3 days</td>
<td>1990</td>
<td>2410</td>
<td>121%</td>
</tr>
<tr>
<td>7 days</td>
<td>2770</td>
<td>3420</td>
<td>123%</td>
</tr>
<tr>
<td>28 days</td>
<td>3610</td>
<td>4220</td>
<td>117%</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Fritz Chemical R&D
Compressive strength results are averages of two or more breaks.
AIR ENTRAINERS AND DETRAINERS

AIR PLUS

(ASTM C 260 ADMIXTURE)
For small corrections (0.5-1.0%) of air entrained in concrete use at the rate of one bag per truckload of concrete.

SUPER AIR PLUS

(ASTM C 260 ADMIXTURE)
For corrections of 1-2% of air entrained concrete use at the rate of 1 bag per truckload. May be used as the primary air-entraining admixture.

AIR-MINUS

Specialty admixture to reduce the amount of air entrained in concrete and cement based materials. Recommended for high strength grouts, high-density concrete and high strength concrete. To reduce the air entrained and entrapped in statuary and small precast pieces. To allow reduction of air in grouts mixed with high shear rates or in self-leveling materials. If Air-Minus is to be used for field correction of concrete with high air entrained content, prior testing is required. This is due to the great variety of conditions that can cause air content to increase in a specific mix.
ADVANTAGES
• Reduces amount of concrete rejected due to low entrained air content
• Air Plus is a premeasured, dry material and will not freeze
• Easily transported and dispensed
• Improves concrete workability
• Addition of Air Plus will not affect the water/cement ratio
• Entrained air content may be easily adjusted prior to job site testing
• Air Plus is packaged in water-soluble Fritz-Pak inner bags for convenient use at plant or job site.

DESCRIPTION
Fritz-Pak Air Plus is a dry powdered admixture, packaged in patented ready-to-use water-soluble bags. Air Plus is recommended for all types of air entrained concrete when an increase in entrained air content is necessary. Air Plus may also be used as a primary air-entraining admixture. Air Plus is compatible with all standard concrete admixtures.

DIRECTIONS
1. If entrained air content is below the specified level, determine which Air Plus product is required. (See Recommended Dosage Rate).
2. Each Air Plus package is double bagged. Remove the protective outer bag and add the water-soluble Fritz-Pak inner bag to plastic concrete. The entire inner bag will easily dissolve.
3. Mix at high speed for 5 to 7 minutes to insure that the Air Plus is uniformly dispersed throughout the mix.
4. If entrained air content remains below specified levels, more Air Plus may be added.

RECOMMENDED DOSAGE RATE
FOR CONCRETE:
Air Plus. One 8-oz bag (227 g) of Air Plus should increase the entrained air content for a full load (8 to 12 cubic yards or 6 to 9 cubic meters) of concrete by ⅛ to 1%.

Cementitious content, concrete temperature, ambient temperature or concrete mixes containing accelerators, retarders, or special admixtures such as superplasticizers or silica fume may require dosage rates outside the recommended range. Contact your Fritz-Pak distributor with any questions concerning the dosage rates for these products. It is recommended that testing be done to determine the suitability of Air Plus to your mix designs.

FOR ONE YARD TRAILER MIXERS:
Use specially packaged product in 4 oz. water-soluble bags. (Item #95661).

COMPATIBILITY
Air Plus 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
Air Plus meets ASTM C-260, AASHTO M-154 & CRD C-13 specifications.

PACKAGING
Fritz-Pak Air Plus
• 8-oz. (227 grams) water soluble bag, 60 bags per case, 35 cases per pallet (Item #95660)

FAQs
Q. What does increased air content do to concrete?
A. It increases its durability by making it more resistant to damage from freezing.

Q. Can I use Air Plus in dry mixes for the production of mortars and stuccos?
A. Yes, Air Plus can be used for those applications. However, we recommend the use of Super Air Plus for the production of dry blended materials. (Item #95664)

Q. Will it change the set time?
A. No, it will not speed or slow the set.

Q. What standards does Air Plus meet?
A. They meet ASTM C-260, AASHTO M-154 and CRD C-13 standards.

Q. Will these products affect the strength of my concrete?
A. They will not significantly change strength, and they will increase durability. continued...
Q. What is the difference between Super Air Plus and Air Plus?
A. Super Air Plus has twice the concentration of the active ingredient of Air Plus.

Q. Which product should I use, Air Plus or Super Air Plus?
A. Air Plus should be used by concrete producers who have very consistent quality in their supply of raw materials, thus only needing small corrections of air. Concrete producers that have variation in their quality of raw materials normally experience wider fluctuations in air content and should consider using Super Air Plus.

Q. What is the raw material used in the production of Super Air Plus?
A. Vinsol Resin, a natural air entrainer.

Q. Are these products compatible with synthetic air entrainers?
A. Yes. Additionally the spacing and size of air bubbles is improved when natural air entrainers are used to correct synthetic air entrainers.

Q. Can they be used in dry-blended materials like mortars and stuccos?
A. Yes. See the recommended dosage rate chart.

Q. Are Super Air Plus and Air Plus effective in concrete with fly ash containing high levels of organic compounds (i.e. high LOI)?
A. Yes. Natural air entrainers are more effective than synthetic air entrainers.

Q. Can I add Super Air Plus or Air Plus to water to make a liquid admixture?
A. No. Some of the components will only dissolve under special conditions of temperature and pH.

Q. How long have the products been in the market?

**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.

**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. 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.

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

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Material Safety Data Sheet

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not controlled under the HCS (United States)</td>
<td>Safety glasses, Respirator</td>
</tr>
</tbody>
</table>

### Section I. Chemical Product and Company Identification

**Common Name/Trade Name:**

- FRITZ-PAK
- AIR PLUS  

**Supplier/Manufacturer:**

- FRITZ-PAK CORPORATION  
  - 4821 Eastover Circle  
  - Mesquite, TX 75149 U.S.A.  
  - Tel: 214-221-9494  
  - Fax: 214-349-3182

**Chemical Family:**

- Material Uses: Concrete Additive

**Material Uses:**

- Concrete Additive

**Section II. Composition and Information on Ingredients:**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
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<tbody>
<tr>
<td>No hazardous ingredient</td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Section III. Hazards Identification: Non-Hazardous**

**Potential Acute Health and Chronic Effects:**

- Slightly dangerous in case of inhalation.

**Eye Contact:**

- IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used.

**Skin Contact:**

- Rinse with water.

**Inhalation:**

- Allow the individual to rest in a well-ventilated area. Seek immediate medical attention.

**Ingestion:**

- Have conscious person drink several glasses of water or milk. Seek medical attention.

### Section IV. First Aid Measures

**Section V. Fire and Explosion Data - Non-Flammable**

**Section VI. Accidental Release Measures**

**Small Spill:**

- Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill:**

- Use a shovel to put material into a convenient waste disposal container and dispose of it in an appropriate landfill.

### Section VII. Handling and Storage - No specific storage is required.

**Section VIII. Exposure Controls/Personal Protection**

**Engineering Controls:**

- Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:**

- Safety glasses. Dust respirator.

Continued on Next Page
## Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>Sweet. Soapy.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.3 (Water = 1)</td>
</tr>
<tr>
<td>Color</td>
<td>Brown (Light).</td>
</tr>
<tr>
<td>Volatility</td>
<td>2% (v/v)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Very slightly soluble.</td>
</tr>
</tbody>
</table>

## Section X. Stability and Reactivity Data

**Stability**
The product is stable.

## Section XI. Toxicological Information

**Routes of Entry**
Ingestion.

**Toxicity to Animals**
- LD50: Not available.
- LC50: Not Available.

## Section XII. Ecological Information - Not Available

## Section XIII. Disposal Considerations

**Waste Disposal**
Use dustless method to sweep up and place in container for disposal.

## Section XIV. Transport Information

**DOT Classification**
Not a DOT controlled Material (United States)

**DOT Pictograms**

## Section XV. Other Regulatory Information and Pictograms

**Federal and State Regulations**
Not available

**Other Classifications**

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Personal Protection</th>
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</thead>
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<td>WHMIS (Canada)</td>
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<td>0</td>
<td>0</td>
<td>a</td>
</tr>
<tr>
<td>DSCL (EEC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WHMIS (Canada)**
Not controlled under WHMIS (Canada)

**TDG (Canada)**
Not controlled under DSCL (Europe)

**HMIS (U. S. A.)**
- Health Hazard: 0
- Fire Hazard: 0
- Reactivity: 0
- Personal Protection: a

**National Fire Protection Association (U. S. A.)**
- Health: 0
- Fire Hazard: 1
- Reactivity: 0
- Specific Hazard: 0

**WHMIS (Canada) (Pictograms)**

**TDG (Canada) Pictograms**

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
TEST DATA

Location: Ideal Concrete, Houston, TX
Design Requirements: 3000 psi 28 days, with increased entrained air content.

<table>
<thead>
<tr>
<th>MIX DESIGN (per cubic yard)</th>
<th>Control</th>
<th>AIR PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Type I Box Crow</td>
<td>355 lbs</td>
<td>355 lbs</td>
</tr>
<tr>
<td>Class C Fly Ash</td>
<td>115 lbs</td>
<td>115 lbs</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1270 lbs</td>
<td>1270 lbs</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>1950 lbs</td>
<td>1950 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td>Normal W/R</td>
<td>2.5 oz./cwt</td>
</tr>
<tr>
<td></td>
<td>AEA</td>
<td>3 oz./yd^3</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.51</td>
<td>0.51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEST DATA:</th>
<th>Control</th>
<th>AIR PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>5.5&quot;</td>
<td>6.0&quot;</td>
</tr>
<tr>
<td>Air, %</td>
<td>2.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Unit Weight, lb/ft^3</td>
<td>147.6 lb/ft^3</td>
<td>142.9 lb/ft^3</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>82 °F</td>
<td>82 °F</td>
</tr>
<tr>
<td>Conc. Temp., °F</td>
<td>86 °F</td>
<td>89 °F</td>
</tr>
</tbody>
</table>

Four yards of concrete were batched out. Control readings were taken immediately after batching. AIR PLUS was added and mixed for 7 minutes, then AIR PLUS readings were taken and samples made. Mixing was continued and thirty minutes after addition of AIR PLUS, air content was 4.0%.

<table>
<thead>
<tr>
<th>Age</th>
<th>Compressive Strength, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 day</td>
<td>2760</td>
</tr>
<tr>
<td>7 day</td>
<td>3070</td>
</tr>
<tr>
<td>28 day</td>
<td>4420</td>
</tr>
</tbody>
</table>

Note: Cylinders were tested according to ASTM C-39 by Ideal Concrete Lab. Compressive strength results are averages of two or more breaks.
ADVANTAGES
• Reduces amount of concrete rejected due to low entrained air content
• Super Air Plus is a premeasured dry material and will not freeze
• Easily transported and dispensed
• Improves concrete workability
• Addition of Super Air Plus will not affect the water/cement ratio
• Entrained air content may be easily adjusted prior to job site testing
• Super Air Plus is packaged in water-soluble Fritz-Pak inner bags for convenient use at plant or job site.

DESCRIPTION
Fritz-Pak Super Air Plus is a dry powdered admixture, packaged in patented ready-to-use water-soluble bags or in bulk (50 lb bags). Super Air Plus is recommended for all types of air entrained concrete when an increase in entrained air content is necessary. Super Air Plus may also be used as a primary air-entraining admixture. Super Air Plus is compatible with all standard concrete admixtures.

DIRECTIONS
1. If entrained air content is below the specified level, determine which Air Plus product is required. (See Recommended Dosage Rate).
2. Each Super Air Plus package is double bagged. Remove the protective outer bag and add the water-soluble Fritz-Pak inner bag to plastic concrete. The entire inner bag will easily dissolve.
3. Mix at high speed for 5 to 7 minutes to insure that the Super Air Plus is uniformly dispersed throughout the mix.
4. If entrained air content remains below specified levels, more Super Air Plus may be added.

RECOMMENDED DOSAGE RATE

<table>
<thead>
<tr>
<th>Desired Air Content</th>
<th>Dosage of Super Air Plus By weight of cement</th>
<th>By total weight of blend</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-7%</td>
<td>0.25-1.25 oz/cwt 0.15-0.80 g/kg</td>
<td>0.9-4.5 oz/ton 28-141 g/MT</td>
</tr>
<tr>
<td>7-10%</td>
<td>1.0-4.0 oz/cwt 0.63-2.5 g/kg</td>
<td>5.0-12.0 oz/ton 156-375 g/MT</td>
</tr>
<tr>
<td>10-15%</td>
<td>4.0-6.0 oz/cwt 2.5-3.75 g/kg</td>
<td>14.0-22.0 oz/ton 438-688 g/MT</td>
</tr>
</tbody>
</table>

COMPATIBILITY
Super Air Plus 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

PACKAGING
• 8-oz. (227 g) water soluble bag, 60 bags per case, 35 cases per pallet (item #95664)
• 50-lb paper bag, 40 bags per pallet (item #95667)
FAQs

Q. What does increased air content do to concrete?
A. It increases its durability by making it more resistant to damage from freezing.

Q. Will it change the set time?
A. No, it will not speed or slow the set.

Q. What standards does Super Air Plus meet?
A. They meet ASTM C-260, AASHTO M-154 and CRD C-13 standards.

Q. Will it affect the strength of my concrete?
A. It will not significantly change strength, and it will increase durability.

Q. What is the difference between Super Air Plus and Air Plus?
A. Super Air Plus has twice the concentration of the active ingredient of Air Plus.

Q. Which product should I use, Air Plus or Super Air Plus?
A. Air Plus should be used by concrete producers who have very consistent quality in their supply of raw materials, thus only needing small corrections of air. Concrete producers that have variation in their quality of raw materials normally experience wider fluctuations in air content and should consider using Super Air Plus.

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.

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. 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.

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

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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/ Trade Name</th>
<th>FRITZ-PAK SUPER AIR PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier/ Manufacturer:</td>
<td>FRITZ-PAK CORPORATION</td>
</tr>
<tr>
<td></td>
<td>4821 Eastover Circle</td>
</tr>
<tr>
<td></td>
<td>Mesquite, TX 75149 U.S.A.</td>
</tr>
<tr>
<td></td>
<td>Tel: 214-221-9494</td>
</tr>
<tr>
<td></td>
<td>Fax: 214-349-3182</td>
</tr>
</tbody>
</table>

## Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>No hazardous ingredient</td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

## Section III. Hazards Identification: Non-Hazardous

Potential Acute Health and Chronic Effects: Slightly dangerous in case of inhalation.

## Section IV. First Aid Measures

| Eye Contact                      | IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. |
| Skin Contact                     | Rinse with water. |
| Inhalation                       | Allow the individual to rest in a well-ventilated area. Seek immediate medical attention. |
| Ingestion                        | Have conscious person drink several glasses of water or milk. Seek medical attention. |

## Section V. Fire and Explosion Data - Non-Flammable

## Section VI. Accidental Release Measures

| Small Spill                     | Use appropriate tools to put the spilled solid in a convenient waste disposal container. |
| Large Spill                     | Use a shovel to put material into a convenient waste disposal container and dispose of in an appropriate landfill. |

## Section VII. Handling and Storage - No specific storage is required.

## Section VIII. Exposure Controls/Personal Protection

| Engineering Controls            | Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. |
| Personal Protection             | Safety glasses. Dust respirator. |

Continued on Next Page
**Section IX. Physical and Chemical Properties**

Physical state and appearance
- **Solid**

Odor
- Sweet. Soapy.

Specific Gravity
- **2.3 (Water = 1)**

Volatile
- **2% (v/v)**

Solubility
- Very slightly soluble.

**Section X. Stability and Reactivity Data**

Stability
- The product is stable.

**Section XI. Toxicological Information**

Routes of Entry
- Ingestion.

Toxicity to Animals
- LD50: Not available.
- LC50: Not Available.

**Section XII. Ecological Information - Not Available**

**Section XIII. Disposal Considerations**

Waste Disposal
- Use dustless method to sweep up and place in container for disposal.

**Section XIV. Transport Information**

DOT Classification
- Not a DOT controlled Material (United States)

DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**

Federal and State Regulations
- Not available

Other Classifications
- WHMIS (Canada): Not controlled under WHMIS (Canada)
- DSCL (EEC): Not controlled under DSCL (Europe)

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Personal Protection</th>
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<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
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<th>National Fire Protection Association (U. S. A.)</th>
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<th>Fire Hazard</th>
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<table>
<thead>
<tr>
<th>Specific Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**WHMIS (Canada)**

(Pictograms)

**TDG (Canada)**

(Pictograms)

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ADVANTAGES
• Reduces the amount of concrete rejected due to high entrained air content.
• Increases unit weight of concrete.
• Recommended for the production of heavyweight concrete.
• Allows high speed mixing of cement and fly ash without foaming.
• May increase compressive strength of concrete.
• Counteracts entrained air caused by the new generation of superplasticizers.
• Maintains slurry densities.
• Air-Minus is available in bulk or in a patented water-soluble Fritz-Pak inner bag for convenient use at the plant or job site.

DESCRIPTION
Fritz-Pak Air-Minus is a dry powdered defoamer for use in dry blended materials, or for wet/plastic concrete. It decreases foaming and minimizes air entrainment in cement slurries, grouts, concrete and mortars. It can also be used to counteract the air entrainment caused by water reducers and plasticizers.

DIRECTIONS
Air-Minus may be added to dry or wet mixes.
Dry Mixes:
1. Determine the amount of Air-Minus required. See Recommended Dosage Rate.
2. Blend thoroughly as a dry powder into dry mixes.
For Ready-Mix Concrete:
1. Determine the amount of Air-Minus required. See Recommended Dosage Rate.
2. Each 1.1-lb (500 g) package is double-bagged. Remove the protective outer bag and add the entire inner water-soluble Fritz-Pak bag and contents to the plastic/wet concrete. The entire inner bag will easily dissolve.
3. Mix at high speed for 5 to 7 minutes to insure that Air-Minus is uniformly dispersed throughout the mix.
4. Concrete containing Air-Minus may be redosed to achieve the desired level of air entrainment.

RECOMMENDED DOSAGE RATE
Dry Mixes:
Recommended Dosage is 0.1% to 0.5% by weight of the cement for dry-blended materials. Since many factors may affect air entrained and entrapped in concrete, extensive testing with your specific materials is recommended to determine the optimum dosage rate. Contact Fritz-Pak for technical assistance with your dry mix designs.

Ready-Mix Concrete:
Mix Design: Use one bag of 1.1 lbs (500 g) for every 1-4 yards (1-3 cubic meters) of concrete to reduce 1-2% air entrained. For best results, add Air-Minus at the beginning of the load cycle to prevent air from being entrained during mixing. Due to the high variability of causes of air entrained and entrapped in concrete, extensive testing is recommended to determine the best mix design for your specific materials. Contact your distributor or Fritz-Pak if you need technical assistance.

Job Site Corrections: If corrections need to be made on the job site because air content is too high, begin by adding two 1.1-lb (500 g) bags of Air-Minus per truckload. Recheck air content. If any change can be measured, continue to add Air-Minus until air content is in the desired range. If no change is measured after the first or second addition, Air-Minus may not be able to correct the problem.

COMPATIBILITY
Air-Minus is compatible with most admixtures. Adding salt, surfactants, superplasticizers, air entrainers or latex to the mix can cause increased foaming or reduce the effectiveness of Air-Minus. When used with other admixtures, each admixture must be dispensed separately into the mix.

continued...
## PROPERTIES

**Specific Gravity:** 1.35  
**Bulk Density:** 25.2 lb/cu. ft, (0.4 kg/liter)  
**Absolute Volume:** 0.0889 gal/lb (0.73 liter/kg)  
**Color and Odor:** Off-white powder with slight odor  
**Water Requirements:** None

## PACKAGING
- 1.1-lb (500-g) water soluble bag, 24 bags per case, 42 cases per pallet (item #95996)  
- 50-lb (22.7-kg) paper bag, 40 bags per pallet (item #95997)

## FAQs

Q. What is the mode of action of Air-Minus?  
A. Air-Minus reduces the water tension thus reducing the ability of water to form bubbles.  

Q. What happens to the air after I add Air-Minus?  
A. As concrete is exposed to the air, the entrained bubbles break and the air is released back to the atmosphere. That is why it is important to mix the concrete after Air-Minus has been added.  

Q. What is the main component of Air-Minus?  
A. It is a medium chain, branched glycol.  

Q. Is Air-Minus soluble in water?  
A. No.  

Q. Will Air-Minus effect the strength of the concrete?  
A. No. It may increase compressive strength.  

Q. When is the best time to add Air-Minus?  
A. Prior to mixing. This can prevent the formation of bubbles thus reducing entrained air.  

Q. Can you knock out all air content with Air-Minus?  
A. No. The lowest air content you can realistically expect is around 1.0%  

Q. Can loads containing Air-Minus be redosed?  
A. Yes. However, the air content may or may not decrease further.  

Q. Can Air-Minus counteract high dosages of air entraining admixtures?  
A. No. Air entraining admixtures are very strong materials. If concrete is accidentally dosed with high doses of air entrainers, Air-Minus may not effectively lower the air content.  

Q. Can Air-Minus be used with latex and other polymers?  
A. Yes.  

Q. Can Air-Minus be used to produce heavyweight concrete, such as for radiation shielding?  
A. Yes. It helps to maintain stable air contents and may be more effective than adding heavy weight aggregates or minerals.  

Q. Can Air-Minus be used in cement slurries and low viscosity grouts?  
A. Yes. Air-Minus is very effective in those products.  

Q. Can Air-Minus be used to counteract the air entraining effects of poly carboxylate superplasticizers or high dosages of conventional superplasticizers?  
A. Yes.

## PRECAUTIONS

Avoid contact with skin and eyes. Avoid inhaling dust. Flush exposed areas with plenty of water. Standard safety equipment; such as impervious gloves, safety glasses and coveralls, should be worn when handling. Consult the Material Safety Data Sheet for further information before using this product.

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.

## 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. 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.

U.S. Patents No. 4,961,790 and No. 5,120,367.  
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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>Not controlled under the HCS (United States)</td>
<td>Safety glasses, Respirator, Gloves</td>
</tr>
</tbody>
</table>

### Common Name/Trade Name

- **FRITZ-PAK**
- **AIR-MINUS**

### Supplier/Manufacturer

- **FRITZ-PAK CORPORATION**
- 4821 Eastover Circle
- Mesquite, TX 75149 U.S.A.
- Tel: 214-221-9494
- Fax: 214-349-3182

### Chemical Family

- Material Uses: Concrete Additive

---

## Section II. Composition and Information on Ingredients: Non-Hazardous

## Section III. Hazards Identification: Non-Hazardous

### Eye Contact

- Flush eyes with running water for at least 15 minutes, keeping eyelids open.

### Skin Contact

- Rinse with water for a few minutes.

### Inhalation

- Allow the individual to rest in a well-ventilated area.

### Ingestion

- DO NOT induce vomiting. Loosen tight clothing such as collar, tie or belt. Seek medical attention.

---

## Section IV. First Aid Measures

### Flammability of the Product

- Will burn with ignition.

### Fire Fighting Media and Instructions

- **SMALL FIRE:** Use DRY chemicals, CO₂, water spray or foam.
- **LARGE FIRE:** Use water spray, fog or foam. DO NOT use warm jet.

---

## Section V. Fire and Explosion Data

### Spills

- Use appropriate tools to put the spilled solid in a convenient waste disposal container.
- Finish cleaning by spreading water on the contaminated surface and dispose of it according to local and regional authority requirements.

---

## Section VI. Accidental Release Measures

### Precautions

- Keep away from heat. Keep away from sources of ignition. DO NOT breathe dust.

### Storage

- Keep container dry and tightly closed. Keep in a cool ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

---

## Section VII. Handling and Storage

### Engineering Controls

- Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep airborne contaminants below recommended exposure limit.

### Personal Protection

- Safety glasses. Dust respirator. Use a MSHA/NIOSH approved respirator or equivalent.

### In Case of Large Spill


---

*Continued on Next Page*
Section IX. Physical and Chemical Properties

| Physical state and appearance | Solid | Color     | Tan | Specific Gravity | 1.35 (Water = 1) |

Section X. Stability and Reactivity Data: The product is stable.

Section XI. Toxicological Information

Routes of Entry
- Ingestion
- Inhalation

Section XII. Ecological Information

Products of Biodegradation
Possible hazardous short-term degradation products are not likely.

Section XIII. Disposal Considerations

Waste Disposal
- Recycle, if possible. Consult your local or regional authorities.

Section XIV. Transport Information - Not a DOT controlled material (United States).

Section XV. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard</th>
<th>National Fire Protection Association (U. S. A.)</th>
<th>WHMIS (Canada) (Pictograms)</th>
<th>TDG (Canada) Pictograms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Protection</td>
<td>a</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
SLICK-PAK

The Patented Polymer-Based Concrete Pump Primer. Used worldwide, it is now the standard for priming concrete pumps. This product eliminates problems associated with the use of bentonite or similar materials for pump priming. It reduces wear on equipment when starting a job.

SLICK-PAK II

Similar in composition to Slick-Pak but with higher amounts of thickening and lubricating agents to help in pumping harsh mixes, lean concrete, lightweight concrete and flowable fill. It can be used as a fluid loss additive when grouting into sandy soils.

SLICK-PAK LIQUID

Our patented formula now comes in a liquid form! The liquid mixes into a solution more quickly than its powdered counterparts. Packaged in easy to handle 3-ounce bottles, and all cases come with a convenient carrying handle.
ADVANTAGES
• The original patented pump primer.
• No need for expensive ready-mixed priming grout.
• Eliminates the need for carrying bagged cement.
• Packaged in easy to handle 8 ounce bags.
• Increases ease and range of pumpability.
• Decreases wear on equipment.
• Easily introduced into pumping equipment.
• Decreases horsepower required for pumping.
• Reduces friction and line pressure.
• Packaged in water-soluble Fritz-Pak inner bags.

DESCRIPTION
Slick-Pak is a dry powdered pump primer and pumping aid packaged in a patented, ready-to-use, water-soluble bag. Slick-Pak is uniquely formulated to provide the concrete pumper with a cost-effective replacement for premium priced grout, primer slurries or bagged cement primers. Additionally, Slick-Pak functions as a concrete pumping aid by reducing line pressure, which enables the placement of hard to pump mixes and increasing the range of pumpability. Slick-Pak is also environmentally safe and compatible with all conventional concrete materials. Slick-Pak contains no bentonite, cementitious materials, soaps or air entraining agents.

DIRECTIONS FOR PUMP PRIMING
Use the following directions to prime one hundred feet of five inch pump line:
CASE 1 - FOR PUMPS WITH PRIMING PORTS:
1. Each 8-oz Slick-Pak is double bagged. Remove the outer bag and add the patented water-soluble Fritz-Pak inner bag to a five gallon bucket of water.
2. Stir or mix for 1-2 minutes.
3. Allow the mixture to set for at least five minutes. (Slick oily texture should develop.)
4. Remix for one minute and pour into the primer port just prior to pumping.

CASE 2 - FOR PUMPS TO BE PRIMED VIA HOPPER:
A. WITH INTAKE PORTS VERTICAL TO GROUND (gate, rock or swing tube type valves, etc...)
1. Mix Slick-Pak as described in CASE 1.
2. Center the pumping valve if possible.
3. Fill water in the hopper as normal for priming (i.e. to the bottom of the intake ports).
4. Pour the Slick-Pak slurry directly into the intake port just prior to pumping.

B. WITH INTAKE PORTS HORIZONTAL TO GROUND (ball valves, flapper valves, etc.)
1. Mix Slick-Pak as described in CASE 1.
2. Fill water in the hopper as normal for priming.
3. Pour Slick-Pak slurry directly into the intake port just prior to pumping.

CASE 3 - FOR PRIMING DIRECTLY IN THE HOPPER:
1. Remove the protective outer bag and place the 8-ounce water-soluble inner bag of Slick-Pak in the corner of the hopper.
2. Spray Slick-Pak with water until the bag dissolves and all material is washed down into the bottom of the hopper.
3. Fill water in the hopper as normal for priming (at least 10 to 15 gallons).

PUMP PRIMING NOTES
Remember, as with any pump priming material, the first few gallons of concrete will have a higher water content than the mix behind, which may affect certain pours, such as slabs and columns. To avoid potential problems discard the first few gallons.

When the concrete contains superplasticizers, we recommend doubling the amount of water used to prepare the Slick-Pak solution for pump priming.

USE AS A PUMPING AID
Slick-Pak is a lubricant agent for pipe and hose. It is compatible with all conventional concrete materials and can also be used as any standard concrete pumping aid. As a pumping aid, Slick-Pak should be added...
at a dosage of 1 to 3 bags per load of concrete. Slick-Pak may be added directly to the ready-mix concrete and should be mixed for 5 to 7 minutes to ensure that the material is uniformly dispersed. Slick-Pak will have no deleterious effects on the structural integrity of the concrete. Contact your local Fritz-Pak distributor with any questions concerning the usage of this product. It is recommended that testing be done to determine the suitability of Slick-Pak to your particular application.

PACKAGING
• 8-oz (227-g) water soluble bag, 60 bags per case, 42 cases per pallet (item #97134)

FAQ
Q. How does Slick-Pak work?
A. It contains water thickeners and lubricating agents. As it goes through the pipes and hoses it leaves a coat of water and lubricating agents and effectively wets all surfaces. As concrete comes behind the Slick-Pak it does not lose water and the lubrication allows it to slip through the pipe.

Q. What is the difference between Slick-Pak and Slick-Pak II?
A. Both products have water thickeners and lubricating agents. Slick-Pak has a higher proportion of lubricating agents, thus it is better used as a pump primer. Slick-Pak II has a higher proportion of thickeners, so is better suited as a pump aid, and is also an excellent pump primer.

Q. Does Slick-Pak have fluid loss properties?
A. Yes. The thickeners used in Slick-Pak work as fluid loss additives in the concrete.

Q. If I have a long run of hose or pipe, should I increase the Slick-Pak concentration to make it more effective?
A. No. A too-high concentration may thicken the concrete excessively and produce a plug in the line. It is better to increase the volume of Slick-Pak used to insure complete coverage and wetting of the line.

Q. What is the best way to prime horizontal lines?
A. Slick-Pak will tend to run on the lower part of the line, so we recommend using a rubber ball in front of the priming solution to avoid only wetting the bottom of the line.

Q. Why do I get plugs when priming for concrete containing superplasticizers?
A. Slick-Pak requires water to hydrate. When Slick-Pak is made with too little water it will absorb water from the concrete in order to hydrate. Concrete with superplasticizers tends to have a low water content, so if the Slick-Pak absorbs any water from the plasticized concrete, it will have a tendency to plug. For priming concrete with superplasticizers, we recommend increasing the amount of water used to prepare the priming solution.

Q. If I do not have a bucket available, can I prepare the priming solution in the hopper?
A. Yes. Most operators do it that way. Be sure that the bag dissolves completely by directing the water stream over it.

Q. How long in advance do I need to prepare my priming solution?
A. You need at least 5-10 minutes for the product to dissolve. Once it dissolves, it will stay stable for several hours. So you can prepare your priming solution way before the concrete arrives.

Q. Will Slick-Pak build-up in the pipes and hoses of the pump?
A. No.

Q. Can Slick-Pak be added directly into the Ready Mix truck?
A. Yes. It will make the concrete more pumpable.

Q. Does Slick-Pak contain bentonite clay?
A. No. Neither bentonite nor any other type of clay.

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.

WARNING
Do not use less than the recommended amounts of water to mix Slick-Pak.

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. 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. U.S. Patents No. 4,961,790 and No. 5,120,367, No. 5,443,636 and No. 5,587,012. © 2009 Fritz-Pak Corporation
Material Safety Data Sheet

**Section I. Chemical Product and Company Identification**

**Common Name / Trade Name**
SLICK-PAK

**Supplier/Manufacturer:**
FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U. S. A.
Tel: 214-221-9494
Fax: 214-349-3182

**Last Update:** 03/01/2008

**Section II. Composition and Information on Ingredients for Personal Protection**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soda Ash</td>
<td>497-19-8</td>
<td>Oral (LD50) mg/kg: Acute 5140 (Rat.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dermal (LD50) mg/kg: Acute: 4000 (Rabbit)</td>
</tr>
</tbody>
</table>

**Section III. Hazards Identification**

**Potential Acute Health And Chronic Effects**
Slightly dangerous in case of skin contact (irritant), eye contact (irritant), ingestion, inhalation. Corrosive to eyes and skin.

**Section IV. First Aid Measures**

**Eye Contact**
Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Seek medical attention.

**Skin Contact**
Remove contaminated clothes and place the individual under a shower. Wash the contaminated skin with running water and non-abrasive soap.

**Inhalation**
Allow the individual to rest in a well ventilated area. Seek immediate medical attention.

**Ingestion**
DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

**Section V. Fire and Explosion Data - Non-Flammable**

**Section VI. Accidental Release Measures**

**Small Spill**
Place the spilled solid in a convenient waste disposal container.

**Large Spill**
Corrosive solid. Using appropriate tools, collect the powdered material and dispose in an approved landfill.

**Section VII. Handling and Storage**

**Precautions**
Keep container dry. Keep away from heat. Keep away from sources of ignition. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes. Keep away from incompatibles such as acids.

**Storage**
Keep material dry. Keep in a cool place.

**Section VIII. Exposure Controls/Personal Protection**

**Engineering Controls**
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

**Personal Protection**
Splash goggles. Wear appropriate respirator when ventilation is inadequate.

Continued on Next Page
**Section IX. Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>Basic</td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in cold water, hot water.</td>
</tr>
</tbody>
</table>

**Section X. Stability and Reactivity Data**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with acids.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Slightly corrosive to corrosive in presence of aluminum.</td>
</tr>
</tbody>
</table>

**Section XI. Toxicological Information**

<table>
<thead>
<tr>
<th>Route of Entry</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
</tr>
</tbody>
</table>

**Toxicity to Animals**

- Acute oral toxicity (LD50): > 5000 mg/kg (Rat)
- Acute dermal toxicity (LD50): 4000 mg/kg (Rabbit)

**Chronic Effects on Humans**

Toxicity of the product to the reproductive system: Not available.

**Section XII. Ecological Information - Not Available**

**Section XIII. Disposal Considerations**

<table>
<thead>
<tr>
<th>Waste Disposal</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycle to process, if possible. Consult your local or regional authorities.</td>
<td></td>
</tr>
</tbody>
</table>

**Section XIV. Transport Information**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Classification</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Proper Shipping Name</td>
<td></td>
</tr>
<tr>
<td>DOT Identification Number</td>
<td></td>
</tr>
<tr>
<td>DOT (Pictograms)</td>
<td></td>
</tr>
</tbody>
</table>

**Section XV. Other Regulatory Information and Pictograms**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS (U. S. A.)</td>
<td>Health Hazard 1 National Fire Protection Association (U. S. A.) Health Hazard 20 Fire Hazard Specific Hazard</td>
</tr>
<tr>
<td></td>
<td>Fire Hazard 1</td>
</tr>
<tr>
<td></td>
<td>Reactivity 0</td>
</tr>
<tr>
<td></td>
<td>Personal Protection x</td>
</tr>
<tr>
<td>WHMIS (Canada) (Pictograms)</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>TDG (Canada) (Pictograms)</td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>

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## SLICK-PAK & SLICK-PAK II

### Effects on Concrete Test Results

### TEST DATA

**Location:** Mesquite, Texas  
**Design Requirements:** 4000 psi 28 days.

<table>
<thead>
<tr>
<th>MIX DESIGN (per Cubic Yard)</th>
<th>Control</th>
<th>SLICK-PAK</th>
<th>SLICK-PAK II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Lone Star Type I, lbs</td>
<td>564 lbs</td>
<td>564 lbs</td>
<td>564 lbs</td>
</tr>
<tr>
<td>Fine Aggregate, lbs</td>
<td>1259 lbs</td>
<td>1259 lbs</td>
<td>1259 lbs</td>
</tr>
<tr>
<td>¾&quot; Coarse Aggregate, lbs</td>
<td>1739 lbs</td>
<td>1739 lbs</td>
<td>1739 lbs</td>
</tr>
<tr>
<td>Admixtures SLICK-PAK</td>
<td>0</td>
<td>2 oz.</td>
<td>0</td>
</tr>
<tr>
<td>Admixtures SLICK-PAK II</td>
<td>0</td>
<td>0</td>
<td>2 oz.</td>
</tr>
<tr>
<td>Water-Cement Ratio</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Data</th>
<th>Control</th>
<th>SLICK-PAK</th>
<th>SLICK-PAK II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump, inches</td>
<td>4&quot;</td>
<td>4.5&quot;</td>
<td>4.25&quot;</td>
</tr>
<tr>
<td>Air, %</td>
<td>5.6%</td>
<td>5.6%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Air Temp., °F</td>
<td>75 °F</td>
<td>77 °F</td>
<td>75 °F</td>
</tr>
<tr>
<td>Concrete Temp., °F</td>
<td>76 °F</td>
<td>76 °F</td>
<td>76 °F</td>
</tr>
<tr>
<td>Misc. Data: Initial Set (hours:mins)</td>
<td>3:13</td>
<td>3:18</td>
<td>3:16</td>
</tr>
</tbody>
</table>

### Compressive Strength, psi

<table>
<thead>
<tr>
<th>Age</th>
<th>Control</th>
<th>SLICK-PAK</th>
<th>SLICK-PAK II</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 Hours</td>
<td>1500</td>
<td>1580</td>
<td>1510</td>
</tr>
<tr>
<td>3 Days</td>
<td>2290</td>
<td>2470</td>
<td>2600</td>
</tr>
<tr>
<td>7 Days</td>
<td>2860</td>
<td>3130</td>
<td>3120</td>
</tr>
<tr>
<td>28 Days</td>
<td>4290</td>
<td>4570</td>
<td>4520</td>
</tr>
</tbody>
</table>

**Conclusion:** The addition of Slick-Pak pump primer and pumping aid or Slick-Pak II pumping aid as an integral pumping aid has no detrimental effects on the workability, entrained air content, setting time or compressive strength of the concrete.

---

**Note:** Cylinders were tested according to ASTM C-39 by Fritz Industries R&D. Compressive strength results are averages of two or more breaks.

---

**Fritz-Pak Corporation**  
11220 Grader Street, Suite 600  
Dallas, Texas 75238, USA  
Tel: 214-221-9494  
Fax: 214-349-3182  
Toll Free: 1-888-746-4116  
www.fritzpak.com
ADVANTAGES
• Increases ease and range of pumpability.
• Decreases wear on equipment.
• Decreases horsepower required for pumping.
• Reduces friction and line pressure.
• Improves mobility and consolidation.
• Minimizes slump and air loss through pump lines.
• Slick-Pak II is packaged in ready-to-use water soluble Fritz-Pak inner bags for convenient use at the plant or job site.

DESCRIPTION
Slick-Pak II is a dry powdered concrete pumping aid packaged in a patented, ready-to-use, water soluble bag. Slick-Pak II is uniquely formulated to provide the concrete pumper with a cost effective method for improving the pumpability of hard to pump and/or harsh concrete and grout mixes. Additionally, Slick-Pak II reduces line pressure, improves flow properties and increases the rate and range of pumpability. Slick-Pak II does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures. In addition, Slick-Pak II contains no bentonite, cementitious materials, soaps or air entraining agents.

DIRECTIONS
AS A PUMPING AID
1. Determine the amount of Slick-Pak II required. See Recommend Dosage Rate.
2. Each Slick-Pak II is double bagged. Remove the protective outer bag and add the patented water soluble Fritz-Pak inner bag directly to the concrete or grout mix in the ready-mix truck. The entire inner bag will easily dissolve.
3. Mix at high speed for 7 to 10 minutes to insure that the Slick-Pak II is uniformly dispersed throughout the mix.
4. Additional Slick-Pak II may be added if necessary.

AS A CONCRETE PUMP PRIMER
Use one water soluble inner bag in 5-15 gallons (20-60 liters) of water to prime 100 ft of 5 inch pump line. Double the water if the concrete contains superplasticizers. Remove the protective outer bag and add the water soluble inner bag directly into water. Mix for 1-2 minutes and allow the mixture to set for at least 5 minutes. Pour into the priming port or hopper just prior to pumping. It is possible to mix the product directly in the hopper.

PUMP PRIMING NOTES
Remember, as with any pump priming material, the first few gallons of concrete will have a higher water content than the mix behind, which may affect certain pours, such as slabs and columns. To avoid potential problems discard the first few gallons.

When the concrete contains superplasticizers, we recommend doubling the amount of water used to prepare the Slick-Pak II solution for pump priming.

RECOMMENDED DOSAGE RATE
Use a dosage rate equal to 1.5 to 2.5 ounces per cubic yard (50-100 grams per cubic meter) of concrete or grout. Typically, one 8 ounce (227 gram) bag will treat 4-5 cubic yards (3-4 cubic meters). This dosage of Slick-Pak II is recommended to increase the pumpability of harsh mixes, hard to pump mixes and concrete mixes with a potential problem from gap-graded aggregates. Concrete temperature, ambient temperature or concrete mixes containing accelerators, retarders or special admixtures such as silicafume may require dosage rates outside of the recommended range. Contact your local Fritz-Pak representative or distributor with any questions concerning the usage of this product. It is recommended that testing be done to determine the suitability of Slick-Pak II to your particular application. As an additive to concrete, Slick-Pak II has no deleterious effects on the structural integrity of the concrete.

COMPATIBILITY
Slick-Pak II is compatible with all standard concrete materials as well as other concrete admixtures. When used with other admixtures, each one must be dispensed separately into the mix.
CONCRETE PUMPING AID & PUMP PRIMER

**PACKAGING**
- 8-oz (227-g) water soluble bag, 60 bags per case, 42 cases per pallet (item #97136)

**FAQs**

Q. How does Slick-Pak II work?
A. It contains water thickeners and lubricating agents. As Slick-Pak II goes through the pipes and hoses it leaves a coat of water and lubricating agents and effectively wets all surfaces. As the concrete comes behind the Slick-Pak II it does not lose water and the lubrication allows it to slip through the pipe.

Q. What is the difference between Slick-Pak and Slick-Pak II?
A. Both products have water thickeners and lubricating agents. Slick-Pak has a higher proportion of lubricating agents than Slick-Pak II, thus it is better used as a pump primer. Slick-Pak II has a higher proportion of thickeners, thus it is better suited as a pumping aid, as well as being an excellent pump primer.

Q. Does Slick-Pak II have fluid loss properties?
A. Yes. The thickeners used in Slick-Pak II work as fluid loss additives in the concrete.

Q. If I have a long run of hose or pipe, should I increase the Slick-Pak II concentration to make it more effective?
A. No. A too-high concentration may thicken the concrete excessively and produce a plug in the line. It is better to increase the volume of Slick-Pak II used to insure complete coverage and wetting of the line.

Q. What is the best way to prime horizontal lines?
A. Slick-Pak II will tend to run on the lower part of the line, it is recommended to use a rubber ball in front of the priming solution to avoid only wetting the bottom of the line.

Q. Why do I get plugs when priming for concrete with superplasticizers?
A. Slick-Pak II requires water to hydrate, so when Slick-Pak II is made with too little water it will absorb water from the concrete in order to hydrate. Concrete with superplasticizers tends to have a low water content, so if the Slick-Pak II absorbs any water from the plasticized concrete, it will have a tendency to plug. For priming for concrete with superplasticizers, we recommend increasing water content be used to prepare the priming solution.

Q. If I do not have a bucket available, can I prepare the priming solution in the hopper?
A. Yes. Most operators do it that way. Be sure that the bag dissolves completely by directing the water stream over it.

Q. How long in advance do I need to prepare my priming solution?
A. You need at least 5-10 minutes for the product to dissolve. Once it dissolves, it will stay stable for several hours, so you can prepare your priming solution well before the concrete arrives.

Q. Will it build-up in the pump pipes and hoses?
A. No.

Q. Can Slick-Pak II be added directly into the Ready Mix truck?
A. Yes. It will make the concrete more pumpable.

Q. Does Slick-Pak II contain bentonite clay?
A. No. Slick-Pak II does not contain bentonite or any other type of clay.

**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.

**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. 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.

U.S. Patents No. 4,961,790 and No. 5,120,367, No. 5,443,636 and No. 5,587,012.

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Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name / Trade Name
Fritz-Pak Slick-Pak II

Supplier/Manufacturer:
FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U. S. A.
Tel: 214-221-9494  Fax: 214-349-3182

Last Update: 03/01/2008

Section II. Composition and Information on Ingredients for Personal Protection

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soda Ash</td>
<td>497-19-8</td>
<td>Oral (LD50) mg/kg: Acute 5140 (Rat.) Dermal (LD50) mg/kg : Acute: 4000 (Rabbit)</td>
</tr>
</tbody>
</table>

Potential Acute Health And Chronic Effects
Slightly dangerous in case of skin contact (irritant), eye contact (irritant), ingestion, inhalation. Corrosive to eyes and skin.

Section III. Hazards Identification

Eye Contact
Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Seek medical attention.

Skin Contact
Remove contaminated clothes and place the individual under a shower. Wash the contaminated skin with running water and non-abrasive soap.

Inhalation
Allow the individual to rest in a well ventilated area. Seek immediate medical attention.

Ingestion
DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

Section IV. First Aid Measures

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

Small Spill
Place the spilled solid in a convenient waste disposal container.

Large Spill

Section VII. Handling and Storage

Precautions
Keep container dry. Keep away from heat. Keep away from sources of ignition. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes. Keep away from incompatibles such as acids.

Storage
Keep material dry. Keep in a cool place.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal Protection
Splash goggles. Wear appropriate respirator when ventilation is inadequate.

Continued on Next Page
Section IX. Physical and Chemical Properties

| Physical state and appearance | Solid. |
| pH (1% soln/water)            | Basic. |
| Dispersion Properties         | See solubility in water. |
| Solubility                    | Soluble in cold water, hot water. |

Section X. Stability and Reactivity Data

| Stability | The product is stable. |
| Incompatibility with various substances | Reactive with acids. |
| Corrosivity | Slightly corrosive to corrosive in presence of aluminum. |

Section XI. Toxicological Information

| Routes of Entry | Ingestion. Inhalation. |
| Toxicity to Animals | Acute oral toxicity (LD50): > 5000 mg/kg (Rat)  
Acute dermal toxicity (LD50): 4000 mg/kg (Rabbit) |
| Chronic Effects on Humans | Toxicity of the product to the reproductive system: Not available. |

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

| Waste Disposal | Recycle to process, if possible. Consult your local or regional authorities. |

Section XIV. Transport Information

| DOT Classification | Not Regulated |
| Proper Shipping Name | |
| DOT Identification Number | |
| DOT (Pictograms) | |

Section XV. Other Regulatory Information and Pictograms

| Federal and State Regulation | |
| Other Classifications | WHMIS (Canada) | WHIMS Class E |
| HMIS (U. S. A.) | Health Hazard 0 | National Fire Protection Association (U. S. A.) |
| | Fire Hazard 1 | |
| | Reactivity 0 | |
| | Personal Protection 0 | |
| WHMIS (Canada) (Pictograms) | Not Regulated |
| TDG (Canada) (Pictograms) | Not Regulated |

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
SLICK-PAK LIQUID

LIQUID PUMP PRIMER

ADVANTAGES
- The liquid mixes into a solution more quickly than its powdered counterparts.
- No need for expensive ready-mixed priming grout.
- Packaged in easy to handle 3-ounce bottles, and all cases come with a convenient carrying handle.
- Increases ease and range of pumpability.
- Decreases wear on equipment.
- Easily introduced into pumping equipment.
- Decreases horsepower required for pumping.
- Reduces friction and line pressure.

DESCRIPTION
Slick-Pak Liquid is a state-of-the-art liquid pump primer uniquely formulated to provide the concrete pumper with a cost-effective replacement for premium priced grout, primer slurries or bagged cement primers. Slick-Pak Liquid is environmentally safe and compatible with all conventional concrete materials. Slick-Pak Liquid contains no bentonite, cementitious materials, soaps or air entraining agents.

DIRECTIONS FOR PUMP PRIMING
Shake well before opening. Pour Slick-Pak Liquid into 5-10 gallons of water and mix for a few minutes. It is possible to mix the product directly in the hopper. When the water becomes thick, you may begin priming. It is recommended that testing be done to determine the suitability of Slick-Pak Liquid to your concrete applications.

FAQ
Q. What is Slick-Pak Liquid?
A. It is a specially formulated liquid emulsion of pump primers, pumping aids and water thickeners.

Q. How does Slick-Pak Liquid work?
A. It contains water thickeners and lubricating agents. As it goes through the pipes and hoses it leaves a coat of water and lubricating agents and effectively wets all surfaces. As concrete comes behind the Slick-Pak it does not lose water and the lubrication allows it to slip through the pipe.

Q. What is the difference between Slick-Pak Liquid and Slick-Pak I & II?
A. All 3 products have water thickeners and lubricating agents for priming the concrete pumps. The main difference is that in Slick-Pak Liquid the materials are partially hydrated and can become a solution and develop thickness faster than Slick-Pak or Slick-Pak II.

continued...

ADVANTAGES
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continued...
<table>
<thead>
<tr>
<th>Q.</th>
<th>Will Slick-Pak Liquid build-up in the pipes and hoses of the pump?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>No.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>How do I clean up spills of Slick-Pak Liquid?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>The best way to clean up is to absorb the material and then dispose in a regular trash container. Follow with water to ensure all slipperines is removed. You can use sand, dirt, cement, oil absorbers, paper towels, cloth towels, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Is Slick-Pak Liquid safe for the environment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Yes. For further information refer to the Material Safety Data Sheet (MSDS).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Does Slick-Pak Liquid contain bentonite clay?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>No. Neither bentonite nor any other type of clay.</td>
</tr>
</tbody>
</table>

**PRECAUTIONS**

All Fritz-Pak Concrete Admixtures should be stored in a dry location, protected from breakage, deterioration and contamination. **This product is subject to freezing.**

**WARNING**

Do not use less than the recommended amounts of water to mix Slick-Pak Liquid.

**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. 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.

U.S. Patents No. 4,961,790 and No. 5,120,367, No. 5,443,636 and No. 5,587,012.

© 2009 Fritz-Pak Corporation
1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: Slick-Pak Liquid
Synonyms: Polyacrylamide in water-in-oil emulsion
Chemical Family: Polyacrylamide
Molecular Formula: Mixture
Molecular Weight: Mixture

Fritz-Pak Corporation, 4821 Eastover Circle Mesquite, TX 75149 U.S.A.
For Product Information call 1-888-746-4116. For outside the USA, call 1-214-221-9494.

2. COMPOSITION/INFORMATION ON INGREDIENTS

OSHA REGULATED COMPONENTS

<table>
<thead>
<tr>
<th>Component / CAS No.</th>
<th>% (w/w)</th>
<th>OSHA (PEL):</th>
<th>ACGIH (TLV):</th>
<th>Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols (C10-16), ethoxylated 68002-97-1</td>
<td>0 - 2.7</td>
<td>Not established</td>
<td>Not established</td>
<td>-</td>
</tr>
<tr>
<td>Alcohols (C12-16), ethoxylated 68551-12-2</td>
<td>0 - 2.7</td>
<td>Not established</td>
<td>Not established</td>
<td>-</td>
</tr>
<tr>
<td>Alcohols, C12-14 secondary, ethoxylated 84133-50-6</td>
<td>0 - 2.7</td>
<td>Not established</td>
<td>Not established</td>
<td>-</td>
</tr>
<tr>
<td>C12-C14 Alcohol Ethoxylated 68439-50-9</td>
<td>0 - 2.7</td>
<td>Not established</td>
<td>Not established</td>
<td>-</td>
</tr>
<tr>
<td>Petroleum distillate hydrotreated light 64742-47-8</td>
<td>20.5 - 22.5</td>
<td>500 ppm 1200 mg/m³ (Supplier) 165 ppm (Supplier)</td>
<td>(skin)</td>
<td>-</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR:
Color: grayish-white
Appearance: emulsion
Odor: ammonia
STATEMENTS OF HAZARD:
WARNING! CAUSES SKIN IRRITATION
MAY CAUSE EYE IRRITATION

POTENTIAL HEALTH EFFECTS
EFFECTS OF EXPOSURE: Acute oral (rat) and dermal (rabbit) LD50 values are estimated to be greater than 5,000 mg/kg and greater than 2,000 mg/kg, respectively. The 4-hour inhalation LC50 (rat) value is estimated to be greater than 20 mg/L. Direct contact with this material can cause moderate skin and mild eye irritation. Refer to Section 11 for toxicology information on the regulated components of this product.

4. FIRST AID MEASURES

Ingestion:
If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Skin Contact:
Remove contaminated clothing and shoes without delay. Wash immediately with plenty of water. Do not reuse contaminated clothing without laundering. Get medical attention if pain or irritation persists after washing or if signs and symptoms of overexposure appear.

Eye Contact:
Rinse immediately with plenty of water for at least 15 minutes.

Inhalation:
Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

5. FIRE-FIGHTING MEASURES

Extinguishing Media:
Use water spray, alcohol foam, carbon dioxide or dry chemical to extinguish fires. Water stream may be ineffective.

Protective Equipment:
Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection).

Special Hazards:
Keep containers cool by spraying with water if exposed to fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.

Methods For Cleaning Up:
Product may cause a slip hazard. Spilled material should be absorbed onto an inert material and scooped up. Flush spill area with water. If slipperiness remains apply more dry-sweeping compound.
7. HANDLING AND STORAGE

HANDLING

Precautionary Measures: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Special Handling Statements: None

STORAGE

To avoid product degradation and equipment corrosion, do not use iron, copper or aluminum containers or equipment. Flashpoint determinations on materials of this type are required by certain regulations and scientific standards to be performed using a Pensky-Martens type closed cup test method. This method indicates a flash point greater than 93.3 C (200 F). Although there was no flashpoint detected below 93.3 C (200 F) by the Pensky-Martens Closed Tester method, some flammable vapors were evolved during the test as evidenced by the enlargement of the test flame; therefore, caution should be exercised during storage and handling.

Storage Temperature:
Room temperature
Reason: Integrity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:
Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.

Respiratory Protection:
Where exposures are below the established exposure limit, no respiratory protection is required. Where exposures exceed the established exposure limit, use respiratory protection recommended for the material and level of exposure.

Eye Protection:
Wear eye/face protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure.

Skin Protection:
Avoid skin contact. Wear impermeable gloves and suitable protective clothing.

Additional Advice:
Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: grayish-white
Appearance: emulsion
Odor: ammonia
Boiling Point: ~80.6 - 126.7 °C 177 - 260 °F
Melting Point: -18 °C -0 °F
Vapor Pressure: Not available
Specific Gravity/Density: ~1.0
Vapor Density: Not available
Percent Volatile (% by wt.): 64 - 65
pH: 6.0 - 8.0
Saturation In Air (% By Vol.): Not available
Evaporation Rate: Not available
Solubility In Water: Limited by viscosity
Volatile Organic Content: 22 % (g/g)
Flash Point: >93 °C 200 °F Closed Cup
Flammable Limits (% By Vol.): Not available
Autoignition Temperature: Not available
Decomposition Temperature: Not available
Partition coefficient: Not available
Odor Threshold: Not available

10. STABILITY AND REACTIVITY

Stability: Stable

Conditions To Avoid: Avoid contact with strong oxidizing agents.

Polymerization: Will not occur

Conditions To Avoid: None known

Materials To Avoid: Strong oxidizing agents.

Hazardous Decomposition Products:
- carbon dioxide
- carbon monoxide
- ammonia oxides of nitrogen

11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION.

Toxicological information on the regulated components of this product is as follows:

Petroleum distillates, hydrotreated light (CAS# 64742-47-8) has acute oral (rat) and dermal (rabbit) LD50 values of >5 g/kg and >3.16 g/kg, respectively. Prolonged or repeated skin contact tends to remove skin oils, possibly leading to irritation and dermatitis. Direct contact may cause eye irritation. Overexposure to high vapor concentrations, >~700 ppm, are irritating to the eyes and respiratory tract and may cause headaches, dizziness, drowsiness, and other central nervous system effects, including death. Aspiration of minute amounts during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death. In a 90-day oral gavage (rats) study at 100, 500, or 1000 mg/kg, no treatment-related mortalities were observed. There were no significant changes in body weights or food consumption in any dose groups. Increased liver weights were observed in male and female rats a 500 and 1000 mg/kg. Increased kidney weights were observed only in male rats at 500 and 1000 mg/kg. Testes weights were significantly elevated in male rats at 1000 mg/kg. Kidney effects, indicative of light hydrocarbon nephropathy, occurred in male rat kidneys at all dose levels. Histological findings of hepatocellular hypertrophy were seen in the livers of male rats at 1000 mg/kg and in female rats at 500 and 1000 mg/kg. All treatment-related effects were reversible within the 4-week recovery period. Observed kidney effects (including light hydrocarbon nephropathy and increased kidney weight) are a unique response by male rats to chronic hydrocarbon exposure, which the U.S. EPA has declared ‘not relevant to humans’. High-dose liver effects (including hepatocellular hypertrophy, or enlarged liver cells) are a direct consequence of the sustained high-fat ‘hydrocarbon diet’. The No Observed Adverse Effect Level (NOAEL) for this study was 1000 mg/kg.

Alcohols (C10-16), ethoxylated toxicological properties have not been fully investigated. Based on similar materials, the acute oral (rat) LD50 is estimated to range from 1600 - 2500 mg/kg and the acute dermal
LD50 value is estimated to be >2000 mg/kg. Similar materials produced severe eye irritation and moderate skin irritation in studies with rabbits.

C12-14 alcohol ethoxylated toxicological properties have not been fully investigated. The oral LD50 (rat) of this mixture is expected to be consistent with the chemical family of ethoxylated alcohol surfactants, and range from 1.6 to 2.5 g/kg. The acute dermal (rabbit) LD50 value is estimated to be > 2.0 g/kg. One expected component of this mixture was severely irritating to rabbit eyes (undiluted, Draize score = 60). This mixture is expected to be moderately irritating to skin, based on data reported for C9-C11 6EO: (primary irritation index) PII = 5.3/8.

Alcohols (C12-16), ethoxylated toxicological properties have not been fully investigated. Based on similar materials, the acute oral (rat) LD50 is estimated to range from 1600 - 2500 mg/kg and the acute dermal (rabbit) LD50 value is estimated to be >2000 mg/kg. Similar materials produced severe eye irritation and moderate skin irritation in studies with rabbits.

Secondary ethoxylated alcohols may cause moderate to severe eye and moderate skin irritation upon direct contact. May be absorbed through the skin in harmful amounts after prolonged or widespread exposure. Ingestion may cause irritation of the mouth and throat, abdominal discomfort, nausea, vomiting and diarrhea. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

California Proposition 65 Warning (applicable in California only) - This product contains (a) chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

12. ECOLOGICAL INFORMATION

This material is not classified as dangerous for the environment. Acute toxicity tests conducted on the polymer using environmentally representative water gave the following results:

ALGAE TEST RESULTS

Test: Acute Alga Toxicity, seawater (ISO 10253)
Duration: 72 hr
Species: Marine Algae (Skeletonema costatum)
~27 mg/l IC50

Test: Growth Inhibition (OECD 201)
Duration: 72 hr.
Species: Green Algae (Selenastrum capricornutum)
>100 mg/l IC50 Information based on a structurally similar material.

FISH TEST RESULTS

Test: Acute toxicity, freshwater (OECD 203)
Duration: 96 hr.
Species: Zebra Fish (Brachydanio rerio)
>100 mg/l LC50 Information based on a structurally similar material

INVERTEBRATE TEST RESULTS

Test: Acute Invertebrate Toxicity, seawater (PARCOM)
Duration: 10 day
Species: Marine Amphipod (Corophium volutator)
857 mg/l EC50
Test: Acute Invertebrate Toxicity, seawater (PARCOM)
Duration: 48 hr
Species: Marine Copepod (Acartia tonsa)
7.4 mg/l  EC50

Test: Acute Immobilization (OECD 202)
Duration: 48 hr
Species: Water Flea (Daphnia magna)
>100 mg/l  EC50  Information based on a structurally similar material

DEGRADATION

Test: CO2 Evolution: Modified Sturm (OECD 301B)
The polymeric ingredient is not readily biodegradable. The large polymer size is incompatible with transport across biological membranes and diffusion; the bioconcentration factor is therefore considered to be zero.

Test: Seawater Shake Flask Method (OECD 306)
Duration: 28 day
Procedure: Biodegradability in seawater
13 %

13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the Fritz-Pak product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA ‘listed hazardous waste’ or has any of the four RCRA ‘hazardous waste characteristics’. Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA ‘listed hazardous waste’; information contained in Section 15 of this MSDS is not intended to indicate if the product is a ‘listed hazardous waste.’ RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. Fritz-Pak encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. Fritz-Pak recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. Fritz-Pak has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT
Proper Shipping Name: Not applicable/Not regulated
Hazardous Substances: Not applicable
15. REGULATORY INFORMATION

INVENTORY INFORMATION

**United States (USA):** All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.

**Canada:** All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL.

**European Union (EU):** All components of this product are included on the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.

**Australia:** All components of this product are included in the Australian Inventory of Chemical Substances (AICS).

**China:** All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

**Japan:** All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese inventory.

**Korea:** All components of this product are included on the Korean (ECL) inventory or are not required to be listed on the Korean inventory.

**Philippines:** All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine inventory.

OTHER ENVIRONMENTAL INFORMATION

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

This product does not contain any components regulated under these sections of the EPA

PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA

*Acute*
16. OTHER INFORMATION

NFPA Hazard Rating (National Fire Protection Association)

Health:  2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

Fire:  1 - Materials that must be preheated before ignition can occur.

Reactivity:  0 - Materials that in themselves are normally stable, even under fire exposure conditions.

Reasons For Issue: Revised Section 9

This information is given without any warranty or representation. We do not assume any legal responsibility for same, nor do we give permission, inducement, or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation, and verification. Before using any product, read its label.
POOL PLASTER ADDITIVES

PLASTER DELAY-SET

A white powdered set retarder designed for use in pool plaster.

PLASTER FAST-SET

A white powdered non-chloride set accelerator for use in pool plaster.

PLASTER SUPREME

An additive for improved workability and crack reduction for pool plaster.
ADVANTAGES
• Plaster Delay-Set slows down the set time of pool plasters.
• It does not weaken the plaster.
• It does not contain chlorides, nitrates, nitrites, clay or other materials that may be hazardous to your workers or harmful to the plaster.
• It does not discolor plaster.
• English and Spanish usage directions on every bag.
• Very easy to store and carry.
• Easy and safe to handle by workers.
• Plaster Delay-Set is packaged in a patented water soluble Fritz-Pak inner bag for convenient use at the job site.

DESCRIPTION
Plaster Delay-Set is a dry powdered admixture packaged in a patented, ready-to-use, water soluble bag. Plaster Delay-Set is designed to slow down the set of plaster. It is invaluable in hot weather or when you have a shortage of workers, when you often need more time to work the plaster before it sets. It will not discolor or affect final strength of the plaster, it is very predictable in its use, and will not weaken the final strength of the plaster. Used as directed, one bag will retard the set of plaster for about one hour, depending on temperature. Up to three bags may be used. Contains no chlorides, nitrates, nitrites or clay.

DIRECTIONS
1. Determine the amount of Plaster Delay-Set required. See Recommended Dosage Rate.
2. Prepare pool plaster mix using all ingredients, including water. Begin mechanical mixing before adding Plaster Delay-Set.
3. Remove the protective outer bag, place the inner water-soluble bag and contents in the mixer.
4. Continue mixing for at least 5 minutes for complete dispersion of Plaster Delay-Set throughout the mix.

RECOMMENDED DOSAGE RATE
• When blending plaster at the job site: Use one 10-oz. (284 g) bag of Plaster Delay-Set for every four sacks of cement in the mix for a 1-hour set retardation.
• When using pre-blended plaster: Use one bag of Plaster Delay-Set for every 1000 pounds of plaster mix for about a 1-hour set retardation. If more delay is needed, up to three bags may be used.
• As an additive in the manufacture of dry plaster blends: Use 2.66 oz./cwt of cement for about 1 hour set retardation.

COMPATIBILITY
Plaster Delay-Set is compatible with most concrete admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

PACKAGING
• 10-oz (284-g) water soluble bag, 40 bags per case (item #95450)
• 50-lb paper bags available for addition to pre-packaged dry mixes (item #95451)

FAQs
Q. How will Plaster Delay-Set affect my plaster?
A. Plaster Delay-Set will slow down the set of plaster.

continued...
Q. What advantages are there for using a plaster set retarder?
A. Since Plaster Delay-Set slows down the set of plaster, it will give you better results at high temperatures because it gives you extra time to place and finish the plaster. It is also very convenient when you have a small crew, a hot shell, or a complex pool design.

Q. Can Plaster Delay-Set be used with regular gray portland cement?
A. Yes. It is equally effective in white or gray cement.

Q. What is the recommended dosage for Plaster Delay-Set?
A. One 10-oz bag for every 1000 lbs of plaster mix. This assumes a 60% sand/aggregate and 40% cement mix.

Q. Does Plaster Delayed Set affect the durability of plaster?
A. No.

Q. Can Plaster Delay-Set be redosed?
A. Yes, as long as the plaster has not started to set.

Q. Will Plaster Delay-Set discolor the concrete or plaster?
A. No, Plaster Delay-Set is white in color, and will not cause problems with integral colors in the mix.

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.

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. 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.

U.S. Patents No. 4,961,790 and No. 5,120,367.
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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/ Trade Name</th>
<th>Last Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRITZ-PAK PLASTER DELAY-SET</td>
<td>03/01/2008</td>
</tr>
</tbody>
</table>

**Supplier/ Manufacturer:**
FRITZ-PAK CORPORATION  
4821 Eastover Circle  
Mesquite, TX, 75149, U. S. A.  
Tel: 214-221-9494  
Fax: 214-349-3182

**Chemical Family:** Citric Acid  
**Material Uses:** Concrete Additive

## Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC$<em>{50}$/LD$</em>{50}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid Anhydrous</td>
<td>77-92-9</td>
<td>N/A</td>
<td>N/A</td>
<td>3 g/kg [rat]</td>
</tr>
</tbody>
</table>

## Section III. Hazards Identification

### Human Health Hazards
Causes irritation to skin and respiratory tract.

### HCS Risk Phrases
- NFPA: 2 1 0  
- HCS Class: Irritating substance  
- Protective Clothing:  
  - Splash goggles  
  - Dust Respirator  
  - Gloves  
  - Work uniform or laboratory coat

## Section IV. First Aid Measures

### Eye Contact
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

### Skin Contact
Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

### Inhalation
Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Get medical attention.

### Ingestion
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

## Section V. Fire and Explosion Data - Non-Flammable

### Extinguishing Media
Water spray dry chemical alcohol foam or carbon dioxide.

### Protection for Fire Fighters
Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

## Section VI. Accidental Release Measures

### Spills
Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. Ventilate area of leak or spill. Wear appropriate personal protective equipment such as impervious protective clothing, including boots, gloves, lab coat, respirator.

## Section VII. Handling and Storage

### Handling
Keep container tightly closed. Keep container dry.

### Storage
Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

*Continued on Next Page*
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid (powder)</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Melting Point</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>Density</td>
<td>1.542</td>
</tr>
<tr>
<td>Solubility</td>
<td>60 g/100 ml @ 20°C° (Anhydrous)</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Density</td>
<td>1.542</td>
</tr>
<tr>
<td>pH</td>
<td>2.2</td>
</tr>
<tr>
<td>Melting Point</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>Color</td>
<td>Off-white</td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

Stability  The product is stable.

Section XI. Toxicological Information

Eye Contact  May produce severe irritation
Acute Toxicity  ORAL (LD50): 3 g/kg [Rat].
Skin Irritation  May produce mild-severe irritation

Section XII. Ecological Information

Persistence/degradability  No information found.

Section XIII. Disposal Considerations

Waste Disposal  Waste should be managed in an appropriate and approved waste disposal facility. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section XIV. Transport Information - Non-Hazardous

DOT Classification  Not a DOT controlled material (United States)

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations  Not available

Other Classifications

<table>
<thead>
<tr>
<th>Classification</th>
<th>WHMIS (Canada)</th>
<th>DSCL (EEC)</th>
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</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>1</td>
<td>R41 Irritating to eyes.</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Personal Protection</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
ADVANTAGES
- Plaster Fast-Set accelerates the set time of plaster.
- Does not contain calcium chloride.
- Does not interfere with color.
- Does not promote steel corrosion.
- Can be easily stored for use as needed.
- Dosage can be increased for faster acceleration.
- Does not require heated warehousing.
- It can be used in all weather.
- It is suitable for all types of cement-based plasters.
- English and Spanish usage directions on every bag.
- Very easy to store and carry.
- Prepackaged doses in patented water-soluble Fritz-Pak bags are simple to use.
- Increases plaster workability.

DESCRIPTION
Plaster Fast-Set is a white, powdered, non-chloride set accelerator. It is ideal as a replacement for accelerators containing calcium chloride, which weakens plaster, causes corrosion and interferes with color. Plaster Fast-Set safely speeds up the set time and also greatly enhances plaster spreadability. It contains no nitrates, and is therefore not hazardous to workers, and requires no environmental reporting. One 5-lb bag of Plaster Fast-Set will reduce set times by up to three hours.

DIRECTIONS
1. Determine the amount of Plaster Fast-Set required. See Recommended Dosage Rate.
2. Prepare pool plaster mix using all ingredients, including water. Begin mechanical mixing before adding Plaster Fast-Set.
3. Remove the protective outer bag, place the inner water-soluble bag and contents in the plaster mix.
4. Continue mixing for at least 5 minutes for complete dispersion of the Plaster Fast-Set throughout the mix.

RECOMMENDED DOSAGE RATE
Dosage rate varies depending on temperature and the amount of acceleration desired. Increased dosages provide higher acceleration rates.

- When blending plaster at the job site: Use one bag per 4 bags of cement for temperatures above 45°F (7°C). Use 2-3 bags for temperatures below 45°F.
- When using pre-blended plaster: Use one bag per 1,000 lb of plaster for temperatures above 45°F. For temperatures below 45°F, use 2-3 bags.
- As an additive in the manufacture of dry plaster blends: Add at a rate of 1-3% by weight of cement.

COMPATIBILITY
Plaster Fast Set is compatible with most concrete admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

PACKAGING
- 5-lb (2.27-kg) water soluble bag, 8 bags per case (item # 98455)
- 50-lb paper bags available for addition to pre-packaged dry mixes (item #98449)
- 50-lb bucket (item # 98448)
## FAQs

| Q. | How will Plaster Fast-Set affect my plaster?  
|---|---
| A. | It will speed up the set time of plaster. |

| Q. | What advantages does using a plaster set accelerator have?  
|---|---
| A. | Since Plaster Fast-Set accelerates the set of plaster, it will give you better results at low temperature. It saves you time when you want to finish early, because of weather or scheduling issues, or to increase productivity. |

| Q. | Does Plaster Fast-Set contain any calcium chlorides?  
|---|---
| A. | No. |

| Q. | Will Plaster Fast-Set affect the color of the plaster?  
|---|---
| A. | No. Plaster Fast Set is white in color, and it will not harm integral colors in plaster. |

| Q. | What is the recommended dosage rate of Plaster Fast-Set?  
|---|---
| A. | A 5-lb bag should be added to 1000 lbs of plaster. |

| Q. | Can I increase the dosage of Plaster Fast-Set?  
|---|---
| A. | Yes. Up to three 5-lb bags per 1000 lbs of plaster may be used. Additional bags will not significantly reduce the set time. |

## 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.

## 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. 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.

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

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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

**Common Name/Trade Name**

FRITZ-PAK
PLASTER FAST-SET

**Last Update**

03/01/2008

**Supplier/Manufacturer:**

FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

**Chemical Family:**

Calcium Diformate

**Material Uses:**

Concrete Additive

## Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Diformate</td>
<td>544-17-2</td>
<td>&gt;90</td>
<td>N/A</td>
<td>2560 mg/kg [rat]</td>
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</tbody>
</table>

## Section III. Hazards Identification

### Human Health Hazards

Risk of serious damage to eyes.

### Section IV. First Aid Measures

**Eye Contact**

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.

**Skin Contact**

Immediately flush skin with plenty of water. Remove contaminated clothes and shoes. Get medical attention if irritation develops.

**Inhalation**

Remove victim from area of exposure if possible.

**Ingestion**

Make victim drink water. If large quantities of this material are swallowed, call a physician immediately.

## Section V. Fire and Explosion Data - Non-Flammable

**Extinguishing Media**

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, for or foam. Do not use jet water.

**Protection for Fire Fighters**

A self-contained breathing apparatus should be used to avoid inhalation of the product.

## Section VI. Accidental Release Measures

**Personal Precautions**

Avoid contact with skin and eyes. Do not breathe dust. Use suitable protective equipment (Section VIII).

**Environmental Precautions and Clean-Up Methods**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

## Section VII. Handling and Storage

**Handling**

Ventilation is normally required what handling or using this product. Take precautionary measures against electrostatic discharges.

**Storage**

Keep container tightly closed. Keep container dry.

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*Continued on Next Page*
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid (powder)</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Melting Point</td>
<td>&gt;380°C</td>
</tr>
<tr>
<td>Density</td>
<td>2 g/cm³ (20°C)</td>
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<tr>
<td>Solubility</td>
<td>Soluble in cold water</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Color</td>
<td>Off-white</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

Stability: The product is stable.

Section XI. Toxicological Information

Eye Contact: Risk of serious damage to eyes.
Acute Toxicity: ORAL (LD50): 2560mg/kg [Rat].
Skin Irritation: Non-irritant for skin.
Eye Irritation: Irritating to eyes.
Mutagenic effects: Ames Test: Negative

Section XII. Ecological Information

Persistence/degradability: The product is readily biodegradable.

Section XIII. Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state, and local environmental control regulations.

Section XIV. Transport Information - Non-Hazardous

DOT Classification: Not a DOT controlled material (United States)

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations: Not available

Other Classifications:
- WHMIS (Canada)
- DSCL (EEC)

HMIS (U.S.A.):
- Health Hazard: 2
- Fire Hazard: 1
- Reactivity: 0
- Personal Protection: a

WHMIS (Canada) (Pictograms):

TDG (Canada) (Pictograms):

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ADVANTAGES
• Plaster Supreme improves workability, making plaster smooth and easy to spread.
• Greatly reduces cracks.
• Slows evaporation, increases water retention.
• Will not affect set times.
• Will not discolor white plasters, and helps colors mix evenly in colored plasters.
• Contains no clay, only 10 oz required to treat a standard plaster batch.
• Easy and safe to handle by workers.
• English and Spanish usage directions on every bag.
• Very easy to store and ship.
• Prepackaged doses in patented water-soluble bags are simple to use.

DESCRIPTION
Plaster Supreme is a white, dry powdered admixture packaged in a patented, ready-to-use, water soluble bag. It is intended for use in pool plasters, to create a smooth, easily-spread plaster that reduces water loss and subsequent cracking. Plaster Supreme is a chemically active agent that improves the water retention of cement-based plasters, grouts and mortars. In pool plaster, this reduces water loss from evaporation, thus eliminating the need for constant re-wetting in warm conditions. It also reduces water loss to the concrete shell. This allows for better cement hydration and a more even finish. Plaster Supreme also contains pumping additives that make the plaster more workable and easier to trowel. Unlike clay-based additives, Plaster Supreme will not leave residues that can promote discoloration or increased plaster cracking.

DIRECTIONS
1. Determine the amount of Plaster Supreme required. See Recommended Dosage Rate.
2. Prepare pool plaster mix using all ingredients, including water. Begin mechanical mixing before adding Plaster Supreme.
3. Remove the protective outer bag, place the inner water-soluble bag and contents in the plaster mix.
4. Continue mixing for at least 5 minutes for complete dispersion of the Plaster Supreme throughout the mix.

RECOMMENDED DOSAGE RATE
• When blending plaster at the job site: Use one 10-oz bag of Plaster Supreme for every four sacks of cement (94-lb sacks) in the mix.
• When using pre-blended plaster: Add one 10-oz bag for every 1000 lbs of plaster.
• As an additive in the manufacture of dry plaster blends: Add at a rate of 0.166 lbs/100 lbs of cement or at the rate of 0.0604 lbs/100 lbs of total blend.

COMPATIBILITY
Plaster Supreme is compatible with most concrete admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

PACKAGING
• 10-oz (284-g) water soluble bag, 40 bags per case (item #98421)
• 50-lb paper bags available for addition to pre-packaged dry mixes (item #98422)

continued...
Plaster Supreme makes finishing easy

FAQs
Q. How will Plaster Supreme affect my plaster?
A. It will improve workability, reduce cracks, and increase water retention to reduce evaporation.

Q. How does Plaster Supreme work?
A. Mainly, Plaster Supreme increases the level of entrained air in the plaster, making it easier to pump and spread. It also increases the plaster’s ability to withstand cracking. Additionally the water retention agent will insure that the water does not evaporate from the plaster, thus creating a better environment for curing.

Q. Does Plaster Supreme have any effect on plaster coloring?
A. No.

Q. Does Plaster Supreme affect the durability of plaster?
A. Yes. Plaster Supreme increases durability.

Q. Does Plaster Supreme have a water reducer in the formulation?
A. Yes, plaster made with Plaster Supreme will require slightly less water, thus creating a stronger cement paste within the plaster.

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.

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. 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.

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

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### Material Safety Data Sheet

#### Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>FRITZ-PAK</th>
<th>PLASTER SUPREME</th>
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<tbody>
<tr>
<td>Supplier/Manufacturer</td>
<td>FRITZ-PAK CORPORATION</td>
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</tr>
<tr>
<td></td>
<td>4821 Eastover Circle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mesquite, TX, 75149, U. S. A.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tel: 214-221-9494</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fax: 214-349-3182</td>
<td></td>
</tr>
<tr>
<td>Last Update</td>
<td>03/01/2008</td>
<td></td>
</tr>
</tbody>
</table>

#### Chemical Family
- Material Uses: Pool Plaster Additive

#### NFPA
- 1
- 2
- 0

#### HCS Risk Phrases
- Not controlled under the HCS (United States)

#### Protective Clothing
- Safety glasses
- Respirator
- Protective gloves

### Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
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</thead>
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<tr>
<td>Abiatic Acid Sodium Salt</td>
<td>65997-01-5</td>
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<td>Carbonic Acid Calcium Salt</td>
<td>471-34-1</td>
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<td>N/A</td>
<td>N/A</td>
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</tbody>
</table>

### Section III. Hazards Identification: Non-Hazardous

#### Potential Acute Health and Chronic Effects
- May cause skin and eye irritation. May cause allergic respiratory and skin reactions.

### Section IV. First Aid Measures

| Eye Contact                   | Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. If easy to do, remove contact lenses. Get medical attention. |
| Skin Contact                  | Immediately flush with running water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse. |
| Inhalation                    | Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. |
| Ingestion                     | Seek medical attention. |

### Section V. Fire and Explosion Data - Non-Flammable

| Extinguishing Media           | Water spray, dry chemical |
| Special Fire-Fighting Procedures | Wear a self-contained breathing apparatus and protective clothing |
| Hazardous Combustion Products | Carbon dioxide, carbon monoxide, oxides of sodium |
| Unusual Fire and Explosion Hazards | None |

### Section VI. Accidental Release Measures

| Small Spill                   | Use appropriate tools to put the spilled solid in a convenient waste disposal container. |
| Large Spill                   | Use a shovel to put material into a convenient waste disposal container and dispose of it in an appropriate landfill. |

---

Continued on Next Page
Section IX. Physical and Chemical Properties

Physical state and appearance: Solid (powder)

Odor: Slight

Specific Gravity: N/A

Volatility: N/A

Solubility in Water: Appreciable

Color: Tan

pH: 9.1

Section X. Stability and Reactivity Data

Stability: The product is stable.

Incompatibility: Material reacts with strong oxidizing agents

Section XI. Toxicological Information - Not Available

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

Waste Disposal: Discharge, treatment, or disposal may be subject to national, state or local laws. Incinerate.

Section XIV. Transport Information

DOT Classification: Not a DOT controlled Material (United States)

DOT Pictograms:

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations: Not available

Other Classifications:

| WHMIS (Canada) | N/A |
| DSCL (EEC)     | N/A |

HMIS (U. S. A.):

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
<td>a</td>
</tr>
</tbody>
</table>

National Fire Protection Association (U. S. A.):

<table>
<thead>
<tr>
<th>Health</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Specific Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

WHMIS (Canada) (Pictograms):

TDG (Canada) Pictograms:

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
SPECIALTY ITEMS

CONTROL FINISH

Slab and flatwork finishing aid.

COUNTER-FLO

Concrete Countertop Admixture that makes concrete more fluid with less water. A proprietary blend of water reducers and mineral admixtures especially designed for production of concrete countertops and statuary.

FILL FLOW

For production of Flowable Fill or Controlled Low Strength Materials.

HYDROCIZER

Anti-Washout Admixture, for placing concrete underwater, or on porous or wet substrates.

NS-7

For production of Non-Shrink Grout.

RESCUE-PAK

Six of our most effective admixtures for emergency use, packaged in a heavy-duty water-tight carrying case. Change the slump, retard the set, increase the air content or increase the pumpability of your mix at the job site in just five minutes. Designed to be carried on trucks in case of unexpected need, the Rescue-Pak includes a waterproof field guide for use, and product bulletins and MSDS’s to comply with job site safety regulations.

SILICAFUME

For production of High Strength Concrete, Corrosion-Resistant Concrete, Abrasion-Resistant Concrete, and Low Permeability Concrete. Used to make sewer and manhole repair products. Reduces rebound in shotcrete application.

SUPER SLUMP BUSTER

Reduces slump of concrete. This viscosity-modifying admixture thickens the water in concrete, thus increasing the support capabilities of the aggregates. Recommended for slip-forming or concrete placed on slopes.

WATER CONDITIONER

Reduces or eliminates false-set in mobile mixers or continuous mixers.
ADVANTAGES
- Avoids retempering slab surface with water.
- Eliminates or reduces plastic shrinkage cracks,
dusting, crazing and crusting.
- Greatly improves application of color hardeners
  and stamping.
- Greatly enhances the speed and ease of
  finishing concrete slabs.
- Keeps surface moist in windy conditions.
- Excellent in hot or dry weather.
- Improves durability of concrete surface.
- May be used in power trowels.
- New smaller inner twin packs
  fit into wide and
  narrow mouth sprayers.

DESCRIPTION
Fritz-Pak Control Finish is a dry powdered finishing aid, packaged in an easy-to-use water soluble pack that allows for easy preparation of solutions at the jobsite. Control Finish improves concrete surface finishing characteristics without re-tempering with water, thus avoiding many common surface problems such as plastic shrinkage cracks, dusting, cracking and crazing. Sprayed on lightly and troweled in, Control Finish produces a high quality surface that is easy to finish and extremely durable. Makes stamping and addition of color hardeners much easier. Packaged in two twin inner packs in each printed bag.

DIRECTIONS
1. Determine the amount of Control Finish required and the area you want to cover (see also Coverage). Dosage Rate: Mix 1 inner pack with 1.5 gallons (5.7 liters) of water or 2 inner packs with 3 gallons (11.4 liters) of water. For a stronger solution, both packs may be used in as little as 1.5 gallons of water. You may want a stronger solution on very windy or hot days.
2. Each Control Finish package is double bagged. Remove the protective outer bag and add one or both of the entire Fritz-Pak inner packs to water in a spraying can or power trowel tank. The bags will easily dissolve with agitation.
3. Mix or shake for 3-5 minutes to uniformly dissolve. Periodic remixing may be required.
4. Prior to troweling, mist Control Finish evenly on concrete surface. Only a light application is necessary.

COVERAGE
The contents of one full bag of Control Finish make a solution that will cover approximately 1,000 square feet (100 square meters).

PACKAGING
- 18 oz (511 g) in two inner water soluble packs (9 oz each), packaged in one outer printed bag, 30 bags per case, 32 cases per pallet (item #97000)
- 50-lb (22.7-kg) paper bag, 40 bags per pallet (item #97010)

FAQs
Q. Will Control Finish affect concrete colors?
A. Control Finish has recently been reformulated to avoid using dark colored material. If applied lightly and evenly, there should be no effect on concrete color.

continued...
Q. Can Control Finish be used with color hardener?
A. Yes, it is particularly suited to help in the application.

Q. Can Control Finish be reapplied?
A. Yes, you can rewet as needed as you move through the finishing area.

Q. Will it retard the set of concrete?
A. Not if applied correctly. If excess amounts are sprayed, and accumulate on the surface, some surface retardation may be seen.

PRECAUTIONS
Avoid heavy or uneven applications which may slightly discolor and retard the concrete surface. 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.

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. 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.

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

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Material Safety Data Sheet

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/0</td>
<td>HCS CLASS: Irritating substance.</td>
<td>Splash Goggles, Respirator, Gloves</td>
</tr>
</tbody>
</table>

**Section I. Chemical Product and Company Identification**

**Common Name/Trade Name**
- FRITZ-PAK CONTROL FINISH

**Supplier/Manufacturer**
- FRITZ-PAK CORPORATION
  - 4821 Eastover Circle
  - Mesquite, TX 75149 U.S.A.
  - Tel: 214-221-9494
  - Fax: 214-349-3182

**Chemical Family**
- Sulfonated Organic Polymer

**Last Update:** 03/01/2008

**Section II. Composition and Information on Ingredients**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Section III. Hazards Identification**

**Potential Acute Health Effects**
- May irritate skin. Mildly irritating to the eyes.

**Section IV. First Aid Measures**

**Eye Contact**
- IMMEDIATELY flush eyes with running water.

**Skin Contact**
- Rinse with water.

**Inhalation**
- May be irritating to respiratory tract. Treat as a nuisance dust.

**Ingestion**
- Have conscious person drink several glasses of water or milk. Seek medical attention.

**Section V. Fire and Explosion Data - Non-Flammable**

**Section VI. Accidental Release Measures**

**Small Spill**
- Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill**
- Use a shovel to put the material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.

**Section VII. Handling and Storage**

**Precautions**
- DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.

**Storage**
- Keep Container dry. Keep in a cool place.

**Section VIII. Exposure Controls/Personal Protection**

**Engineering Controls**
- Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep airborne contaminants below recommended exposure limit.

**Personal Protection**
- Splash Goggles, Dust respirator.

Continued on Next Page
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid</td>
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<tr>
<td>pH (1% soln/water)</td>
<td>10 [Basic]</td>
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<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>3% (v/v)</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>The product is much more soluble in water.</td>
</tr>
<tr>
<td>Odor</td>
<td>Smoky. Sweet.</td>
</tr>
<tr>
<td>Color</td>
<td>Brown (Light)</td>
</tr>
</tbody>
</table>

| Solubility                      | Easily soluble in cold water, hot water, methanol. |
|                                 | Very slightly soluble in diethyl ether. |
|                                 | Insoluble in n-octanol.                   |

Section X. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>Incompatibility with various</td>
<td>Reactive with oxidizing agents.</td>
</tr>
<tr>
<td>substances</td>
<td></td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
</tbody>
</table>

Section XI. Toxicological Information

| Route of Entry                  | Eye contact. Inhalation. Ingestion.      |

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

| Waste Disposal                  | Landfill                                |

Section XIV. Transport Information - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>Other Classifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHMIS (Canada)</td>
<td>Not controlled under WHIMS (Canada).</td>
</tr>
<tr>
<td>DSCL (EEC)</td>
<td>R36/38 - Irritating to eyes and skin.</td>
</tr>
<tr>
<td>HMIS (U. S. A.)</td>
<td></td>
</tr>
<tr>
<td>Health Hazard</td>
<td>1</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
</tr>
<tr>
<td>Personal Protection</td>
<td>e</td>
</tr>
</tbody>
</table>

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ADVANTAGES
• Counter-Flo makes concrete more fluid with less water.
• Strengthens concrete.
• Reduces water.
• Reduces cracking.
• Smoother finish.
• Makes concrete easier to place.
• Comes in an 8-lb reclosable plastic container.
• 2-oz. measuring scoop included for easy dosing.
• Specially designed for concrete countertops and statuary.

DESCRIPTION
Fritz-Pak Counter-Flo Concrete Countertop Admixture is a mixture of water reducers and mineral admixtures specifically designed for use in the production of concrete countertops and concrete statuary. It makes concrete more flowable for easy placement without adding additional water, allowing you to reduce the water:cement ratio in your mix. By lowering water content you achieve higher compressive and structural strength, thus allowing faster demolding and a faster cure. Lower water content will also provide a denser and less permeable concrete, making the concrete less prone to staining. Use of Counter-Flo allows you to place a relatively wetter concrete, reducing the amount of air bubbles, so concrete will yield a better pattern definition.

DIRECTIONS AND DOSAGE
Preferably, Counter-Flo should be added to the dry concrete or mix materials before adding water. Blend thoroughly within the dry materials and proceed mixing the concrete normally, but using about 20% less water. If added to wet concrete, sprinkle over all the concrete to avoid areas of high concentration, then mix well for 5 minutes to allow the active ingredient to hydrate and disperse within the concrete.

• For pre-bagged concrete: Use 1 level scoop (2-oz volume) per 80-lb bag of concrete. For higher water reduction you may increase the dosage rate, but do not exceed 3 scoops per bag of concrete.

• For site-made concrete: Determine the total amount of cement in your mix and add 1 level scoop (2-oz volume) for each 20 lbs (9 kg) of cement.

• For modified pre-bagged concrete: Add enough Counter-Flo for the pre-bagged concrete and then add Counter-Flo for the additional cementitious material added. Add one level scoop for each bag of pre-bagged concrete and 1 additional level scoop for every 20 lbs of cementitious materials. Cementitious materials include fly-ash, silica fume, slag or calcined clay; include them as part of the cement weight in order to determine the number of scoops to use.

NOTES
Good Practices. Always follow good concreting practices when using Counter-Flo. We recommend the practices of the American Concrete Institute, (ACI), the American Society of Concrete Contractors (ASCC) or the Portland Cement Association (PCA).

continued...
Pigments. If pigments are used in your mix; add Counter-Flo before or at the same time as pigments are added. Counter-Flo will help disperse the pigments within the mix.

Timing and Re-Dosing. Counter-Flo will gradually lose its effect within about 45 minutes of adding water (faster in warm climates >80°F). If effects wear off, fresh unplaced concrete may be re-dosed to regain flow properties.

PACKAGING
• 8-lb (3.63-kg) re-closable plastic container with a 2-oz. measuring scoop, 4 containers per case, 36 cases per pallet (item #99614)
• 8-lb (3.63-kg) re-closable plastic container with a 2-oz. measuring scoop, 1 container per case, 120 cases per pallet (item #99615)

COMPATIBILITY
Counter-Flo is compatible with most concrete and cement admixtures. If adding other admixtures, they should be added separately into the mix. Testing of compatibility with other admixtures is required prior to production use. Counter-Flo does not contain calcium chloride, nitrates or other potentially corrosive materials.

FAQs
Q. What does Counter-Flo do to concrete?
A. It makes it easier to place, reduces water, increases strength, and reduces shrinkage cracks to produce a smoother finish.

Q. Will it change the set time?
A. No, it will not appreciably speed or slow the set.

Q. Will Counter-Flo change the strength of the concrete?
A. Yes, it will increase strength and durability.

Q. Does concrete made with Counter-Flo require special curing?
A. No, cure as you normally would. (We recommend following the American Concrete Institute guidelines.)

Q. Will Counter-Flo affect my colored concrete?
A. No, Counter-Flo is a white powdered material and will not affect concrete color.

STORAGE AND HANDLING
Keep the unused powder dry. Close container tightly when not in use. Store in a dry location, protected from breakage, deterioration and contamination. Avoid keeping the container open in areas of high humidity. If the material absorbs moisture and becomes lumpy (not free-flowing), discontinue its use. Counter-Flo is not subject to damage from freezing temperatures.

WARRANTY
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Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name/Trade Name: COUNTER-FLO

Supplier/Manufacturer: FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U. S. A.
Tel: 214-221-9494
Fax: 214-349-3182

Chemical Family: Sulfonated Organic Polymer

NFPA
1
1
0
HCS Class: Irritating substance

Protective Clothing
Splash goggles
Respirator
Gloves

Last Update: 03/01/2008

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Section III. Hazards Identification

Potential Acute Health and Chronic Effects
May irritate skin. Mildly irritating to eyes.

Section IV. First Aid Measures

Eye Contact
IMMEDIATELY flush eyes with running water.
Skin Contact
Rinse with water.
Inhalation
May be irritating to the respiratory tract. Treat as nuisance dust.
Ingestion
Have conscious person drink several glasses of water or milk. Seek medical attention.

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

Small Spill
Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill
Use a shovel to put material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.

Section VII. Handling and Storage

Precautions
DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.
Storage
Keep container dry. Keep in a cool place.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection
Splash goggles. Dust respirator.

Continued on Next Page
### Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
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<td>Physical state and appearance</td>
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</tr>
<tr>
<td>Odor</td>
<td>Smoky. Sweet.</td>
</tr>
<tr>
<td>pH (1% soln)</td>
<td>10</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>3% (v/v)</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff</td>
<td>Only soluble or dispersed in water.</td>
</tr>
<tr>
<td>pH (1% soln)</td>
<td>10</td>
</tr>
<tr>
<td>Color</td>
<td>Brown (Light).</td>
</tr>
</tbody>
</table>

### Section X. Stability and Reactivity Data

- **Stability**: The product is stable.
- **Incompatibility with various substances**: Slightly reactive to reactive with oxidizing agents.
- **Corrosivity**: Non-corrosive in presence of glass.

### Section XI. Toxicological Information

- **Routes of Entry**: Ingestion. Inhalation

### Section XII. Ecological Information - Not Available

### Section XIII. Disposal Considerations

- **Waste Disposal**: Landfill

### Section XIV. Transport Information - Non-Hazardous

### Section XV. Other Regulatory Information and Pictograms

- **Federal and State Regulations**: Not available
- **Other Classifications**
  - **WHMIS (Canada)**: Not controlled under WHMIS (Canada)
  - **DSCL (EEC)**: R36/38– Irritating to eyes and skin.
- **HMIS (U. S. A.)**
  - Health Hazard: 2
  - Fire Hazard: 0
  - Reactivity: 0
  - Personal Protection: e
- **WHMIS (Canada) (Pictograms)**: Not controlled under WHMIS (Canada)
- **TDG (Canada) Pictograms**: Not available

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ADVANTAGES
• Patented water-soluble Fritz-Pak bag readily breaks down even in very fluid mixes.
• Easy handling and storage because Fill Flow is a dry powder, not a liquid.
• No problems with leakage, heat damage, or freezing.
• Produces an extremely fluid material with minimal shrinkage or segregation.
• Controlled Low Strength Material (CLSM) can be placed directly from the ready mix truck.
• Eliminates the need for compaction of layered backfill.
• Produces very stable air content.
• Significantly faster and less labor intensive than compacted soil fill.

DESCRIPTION
Fritz-Pak Fill Flow is a dry powdered surfactant packaged in a patented, ready-to-use, water soluble bag. Fill Flow produces controlled low strength material (CLSM), also referred to as flowable fill, controlled density fill (CDF), lean mix backfill, unshrinkable fill and flowable mortar. Fill Flow is environmentally safe and compatible with all conventional CLSM materials.

DIRECTIONS
1. Use one 1-lb (454 g) bag to produce 1 cubic yard of controlled low strength material (CLSM).
2. Fill Flow should be added to the drum with the primary mix water.
3. Remove the outer bag. Add the inner bag to the central mixer or ready mix truck drum.
4. After all ingredients are added, the drum should be turned at mixing speed for 5-7 minutes.

RECOMMENDED DOSAGE RATE
Use one 1-lb (454 g) bag for 1 cubic yard of CLSM. Fill Flow will increase the material volume 20% - 35%. Allow for approximately 50% water reduction in the CLSM mix.

COMPATIBILITY
Fill Flow is compatible with all conventional CLSM materials. Fill Flow contains no calcium chloride or other corrosive agents. Superplasticizers, water reducers and dispersants may reduce the effectiveness of Fill Flow.

PACKAGING
• 1-lb water soluble bag, 24 bags per case, 30 cases per pallet (item #95669)
• 50-lb paper bag, 40 bags per pallet (item #95670)

FAQs
Q. What kind of admixture is Fill Flow?
A. It is a very high strength surfactant that causes air bubbles to form in high mineral concentration solutions, such as cement pastes.

Q. How does Fill Flow work?
A. It creates billions of air bubbles that serve as “ball bearings” within the flowable-fill and increase the flow properties.

Q. What kind of unit weight can I expect with Fill Flow?
A. Unit weight is dependent on mix design and size of sands. Typically you should expect a unit weight of 90-120 lbs/cu.ft.

Q. What is the recommended addition procedure for Fill Flow?
A. It should be added at the jobsite. Fill Flow will increase the volume and flowing properties of the flowable fill. If added at the plant, the possibility of spills during transport are increased.
Q. Compared with flowable fill without any admixtures, do I need more or less water to produce flowable fill with Fill Flow?
A. You will need less water. Typically you will only use 25-30 gallons of water per cubic yard of flowable fill.

Q. Since I am increasing the air content of the flowable fill with Fill-Flow, will I also experience a reduction in strength of the flowable fill?
A. No. You are increasing the air content, but you are also reducing the water content. As you reduce the water:cement ratio, the cement paste increases enough strength to compensate for the increased air content.

Q. Can Fill Flow be used in mixes containing other cementitious materials, besides cement, such as fly ash or granulated blast furnace slag?
A. Yes.

Q. What standards does Fill Flow meet?
A. Currently there are no national standards for additives for flowable fill. Most states have specifications for the flowable fill produced, not necessarily for the type of admixture used to produce it.

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.

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

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Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name
Trade Name
FILL FLOW

Supplier/Manufacturer:
Fritz-Pak Corporation
4821 Eastover Circle
Mesquite, TX, 75149, U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

Chemical Family
Sulfonated Organic Polymer

Material Uses
Concrete Additive

Section II. Composition and Information on Ingredients - Non-Hazardous

Section III. Hazards Identification

Potential Acute Health and Effects
Crystalline Silica — less than 1%, 20 mppcf.

Section IV. First Aid Measures

Eye Contact
NO known EFFECT on eye contact, rinse with water for a few minutes.

Skin Contact
NO known EFFECT on skin contact, rinse with water for a few minutes.

Inhalation
Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Ingestion
Remove dentures if any. Have conscious person drink several glasses of water or milk. NEVER give an unconscious person anything to ingest. Seek medical attention.

Section V. Fire and Explosion Data - Non-Flammable

Flammability of the Product
Non-flammable.

Products of Combustion
Not applicable.

Fire Fighting Media and Instructions
Not applicable.

Section VI. Accidental Release Measures

Small Spill
Non-toxic, vacuum clean spillage. Wet sweep or wash away.

Section VII. Handling and Storage

Storage
No specific storage is required.

Section VIII. Exposure Controls/Personal Protection - Non-Hazardous

Section IX. Physical and Chemical Properties

Physical state and appearance
Solid

Solubility
Partially soluble in cold water.

Odor
Amine like.

Color
Tan

Section X. Stability and Reactivity Data

Stability
The product is stable.

Incompatibility with various substances
Slightly reactive to reactive with oxidizing agents.
Non-reactive with reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

Corrosivity
Not considered to be corrosive for metals and glass to our database.

Continued on Next Page
### Section XI. Toxicological Information

**Routes of Entry**
- Ingestion.

### Section XII. Ecological Information

**Products of Biodegradation**
- Possibly hazardous short term degradation products are not likely.

**Toxicity of the Products of Biodegradation**
- The product itself and its products of degradation are not toxic.

### Section XIII. Disposal Considerations

**Waste Disposal**
- Non-toxic, vacuum clean spillage.

### Section XIV. Transport Information - Non-Hazardous

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
ADVANTAGES
• Concrete can be exposed to water without excessive washout.
• Eliminates time and expense of dewatering hydraulic structures prior to placement.
• Eliminates the need for pumps or tremmies when direct placement is possible.
• Self-leveling and self-consolidating.
• Allows direct underwater concrete placement in repair locations.
• Effective in fresh and salt water environments.
• Improves concrete workability with no loss in strength.
• Higher strengths may be achieved more economically using standard mix designs.
• Improves cohesiveness and reduces concrete segregation and water dilution.
• Lower permeability.
• Higher durability.
• Addition of high-range water reducer is not required.
• Improved bond strength to steel and existing concrete.
• No need for admixture dispensers because Hydrocizer is packaged in patented water soluble Fritz-Pak inner bags for convenient use at the plant or job site.

DESCRIPTION
Fritz-Pak Hydrocizer is a dry powdered admixture, packaged in a ready-to-use water soluble bag. Hydrocizer is a polymeric fluid loss additive combined with a premium superplasticizer formulated to physically bind with the water in the concrete and provide maximum water reduction for controlled slump while producing stronger more durable concrete. The special combination yields an admixture suitable for concrete placement in fresh water as well as marine environments. When used as an anti-washout admixture, Hydrocizer allows placement of concrete in underwater applications without segregation, reduces water requirements, increases concrete compressive strength, reduces permeability and increases durability. Hydrocizer is recommended for all types of underwater concrete where performance with decreased segregation, lower water-cement ratio, and improved slump characteristics are desired. Hydrocizer does not contain calcium chloride or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
1. Determine the amount of Hydrocizer needed. See Recommended Dosage Rate.
2. Remove the protective outer bag.
3. Place the entire water-soluble inner bag into the concrete mix in the drum, where it will easily dissolve. Hydrocizer can be added at the plant or job site.
4. Mix at high speed for 5-7 minutes. Mixing time is very important to allow anti-washout materials to dissolve and become active.
5. Discharge material from the truck within 30 minutes after adding Hydrocizer.

Best results are achieved with concrete mixes that have a low water:cement ratio or a low slump of 2-3" (5-8 cm). Rounded coarse and fine aggregates are preferred to ensure better flowability and self-consolidation. The addition of Fritz-Pak Silica Fume is also useful to further increase compressive strength, bond strength and abrasion and washout resistance.

RECOMMENDED DOSAGE RATE
One 1.75-lb (1.1-kg) bag of Hydrocizer is recommended for each cubic yard (meter) of 4000 psi (275 kg/cm2) concrete to achieve anti-washout stability and yield a slight increase in slump. Concrete temperature, ambient temperature or concrete mixes containing 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 and applications for this product. We recommend that testing be done to determine the suitability of Hydrocizer to your mix designs.

COMPATIBILITY
Hydrocizer is compatible with most air-entraining admixtures as well as other conventional admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

PACKAGING
• 1.75-lb water soluble bag, 24 bags per case, 25 cases per pallet (item #97090)
• 1.1-kg water soluble bags, 20 per case, 25 cases per pallet (item #97093)
• 50-lb (22.7 kg) paper bag, 40 bags per pallet (item #97091) continued...
## FAQs

**Q.** What is Hydrocizer?
**A.** It is a blend of water retention agents and superplasticizers. The water retention agents hold the concrete together and the superplasticizer reduces the amount of water in the mix.

**Q.** Does the superplasticizer in Hydrocizer change the set time?
**A.** No. It is a non-retarding superplasticizer.

**Q.** What standards does Hydrocizer meet?
**A.** There are no ASTM standards for additives for underwater concreting, rather there are standards for the concrete used in underwater concreting. Hydrocizer can be used to develop mixes that meet standards and requirements for underwater concreting.

**Q.** Can Hydrocizer be used in saltwater?
**A.** Yes. The superplasticizer in Hydrocizer is tolerant of high salt concentrations.

## 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.

## 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. 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.

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

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Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Common Name/Trade Name: HYDROCIZER
Supplier/Manufacturer: FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U.S.A.
Tel: 214-221-9494
Fax: 214-349-3182

Chemical Family: Sulfonated Organic Polymer

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>Trace</td>
<td>1.0 ppm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Section III. Hazards Identification - None

Potential Acute Health Effects: May irritate skin. Mildly irritating to eyes.
Potential Chronic Health Effects: Non-irritant for skin.

Section IV. First Aid Measures

Eye Contact: IMMEDIATELY flush eyes with running water.
Skin Contact: Wash with disinfectant soap and cover the contaminated skin with an anti-bacterial cream.
Inhalation: May be irritating to the respiratory tract. Treat as nuisance dust.
Ingestion: Have conscious person drink several glasses of water or milk. Seek medical attention. DO NOT induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill: Use a shovel to put the material into a convenient waste disposal container. Dispose of it in an approved chemical waste landfill.

Section VII. Handling and Storage

Precautions: DO NOT breathe dust, fume or mist, use ventilation to keep exposure to airborne contaminants below exposure limit.
Storage: Keep container dry. Keep in a cool place.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection: Splash goggles. Dust respirator.
Personal Protection in Case of a Large Spill: Splash goggles. Dust respirator. Boots. Gloves. Full suit. A self-contained breathing apparatus should be used to avoid inhalation of this product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Continued on Next Page
### Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
<th>pH (1% soln)</th>
<th>10</th>
<th>Odor</th>
<th>Smoky, Sweet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity</td>
<td>0.8 (Water = 1)</td>
<td>Volatility</td>
<td>3% (v/v)</td>
<td>Color</td>
<td>Brown (Light)</td>
</tr>
</tbody>
</table>

### Section X. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompatibility with various substances</td>
<td>Slightly reactive to reactive with oxidizing agents.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
</tbody>
</table>

### Section XI. Toxicological Information

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Ingestion, Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxic Effects on Humans</td>
<td>Very dangerous. In case of skin contact (irritant), eye contact (irritant), ingestion, inhalation.</td>
</tr>
<tr>
<td>Special Remarks on Chronic Effects on Humans</td>
<td>Material may contain trace quantities of formaldehyde. 0007 Animal embryotoxic.</td>
</tr>
<tr>
<td>Special Remarks on other Toxic Effects on Humans</td>
<td>Material is irritating to mucus membranes and upper respiratory track.</td>
</tr>
</tbody>
</table>

### Section XII. Ecological Information - Not Available

### Section XIII. Disposal Considerations

| Waste Disposal | Landfill |

### Section XIV. Transport Information - Non-Hazardous

<table>
<thead>
<tr>
<th>DOT Classification</th>
<th>Not a DOT controlled material (United States)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>Hydrocizer 1</td>
</tr>
<tr>
<td>Packing Group</td>
<td>NONE</td>
</tr>
<tr>
<td>Hazardous Substances</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

| Reportable Quantity | Not available. |

| DOT Pictogram | |

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard</th>
<th>2</th>
<th>National Fire Protection Association (U. S. A.)</th>
<th>Health</th>
<th>Fire Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fire Hazard</td>
<td>0</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Reactivity</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Personal Protection</td>
<td>e</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WHMIS (Canada) (Pictograms)

| Not controlled under WHMIS (Canada) |

### TDG (Canada) Pictograms

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ADVANTAGES
• Increased compressive, shear and bond strength.
• Increased water retention.
• Reduced water requirements.
• Extended working life.
• Higher strengths may be achieved more economically.
• Easily adaptable to leaner mixes.
• Improves grout workability with no loss in strength.
• Expansion provides better contact with surrounding surfaces.
• Improves water-tightness by reducing cracks and cold joints.
• Improves cohesiveness and decreases bleeding and segregation.
• Reduced time and labor costs for placement.
• Allows ease of placement in difficult areas such as high density steel reinforcement.

DESCRIPTION
Fritz-Pak NS-7 is a ready-to-use dry powdered admixture for portland cement grouts. NS-7 is formulated to produce a more uniform and workable non-shrink grout with less water, improved flowability and extended set times. As a non-shrink additive, NS-7 will allow slow, controlled, in-place expansion prior to hardening. As a grout fluidifier, NS-7 will greatly enhance flowability allowing ease of placement with extended handling and set times. NS-7 also significantly reduces water requirements, 10 to 20 percent, yielding increased compressive and flexural strengths. NS-7 is recommended for all types of high-lift portland cement grouting applications where improved non-shrink performance with increased flowability is desired. NS-7 does not contain calcium chloride, nitrites, nitrates or other potentially corrosive materials and is compatible with all standard grout additives.

DIRECTIONS
NS-7 should be added in powdered form to the grout mix at the job site, rather than the plant, to ensure no reduction in expansive action and to provide maximum flowability.
1. NS-7 should be used in grouts containing at least six sacks of Type I or Type II portland cement. NS-7 may be added before or after adding water into the mix. If using the 1-lb water soluble bags to prepare the grout, one bag per sack of cement is the recommended dosage.
2. Each NS-7 bag is double-bagged. Remove the protective outer plastic bag and introduce the entire inner water soluble bag and its contents into the mix.
3. Mix thoroughly for at least 5 minutes after adding water.

RECOMMENDED DOSAGE RATE
One pound of Fritz-Pak NS-7 is recommended for each 100 pounds of cementitious material (1% bwc) to provide proper expansion and fluidifying characteristics. Grout temperature, ambient temperatures or grout 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. We recommend that testing be done to determine the suitability of NS-7 to your grout mixes.

COMPATIBILITY
NS-7 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.

PACKAGING
• 42-lb (19-kg) paper bag, 60 bags per pallet (item #97080)
• 1-lb (454-g) water soluble bag, 30 bags per case, 42 cases per pallet (item #97081)
## FAQs

<table>
<thead>
<tr>
<th>Q.</th>
<th>How does NS-7 work and produce a non-shrink grout?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>It contains an ingredient that generates gas and produces expansion. Expansion occurs before set in order to fill all voids and cavities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Is the expansion destructive?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>No. Since the expansion is made by gas, it will not be strong enough to break any forms.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Is there any expansion after setting?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>No.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>What type of gas is generated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Hydrogen.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Are there any special guidelines for the application of non-shrink grouts made with NS-7?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Generation of gas starts within 5 minutes of adding water and will continue for approximately 1 ½ hours. The sooner the grout is placed, the greater the expansion it will give. The grout should not sit more than 1 ½ hours before it is used.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Does NS-7 work with calcium aluminate cements?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Yes. It is also effective with fast set cements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Does NS-7 contain a water reducer?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Yes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>For grouts made with NS-7, do I follow standard concrete testing procedures?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>No. Compressive strength needs to be tested using restrained cylinders or molds. If not done this way, compression strengths will be lower. See ASTM C 1107 for further reference.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>Can I use NS-7 for block fill material?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Yes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.</th>
<th>What are the standards for NS-7?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>NS-7 is used to produce non-shrink grouts.</td>
</tr>
</tbody>
</table>

It is the grout produced that needs to conform to the specifications. With NS-7 you can produce grouts that conform to ASTM C 1107, Grade “A” Pre-Hardening Volume-Adjusting.

<table>
<thead>
<tr>
<th>Q.</th>
<th>What are the best applications for NS-7?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>NS-7 is used to prepare non-shrink grouts used in block filling, hollow core filling, ICF grouting, back filling in tunnels, back filling of pipes and in general for filling voids were low to moderate strengths are required.</td>
</tr>
</tbody>
</table>

### PRECAUTIONS

NS-7 is not recommended as a non-shrink additive for conventional concrete applications. 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.

### 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. 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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Section I. Chemical Product and Company Identification

Common Name: NS-7  
Trade Name: FRITZ-PAK CORPORATION  
Supplier/Manufacturer: 4821 Eastover Circle, Mesquite, TX, 75149, U. S. A.  
Tel: 214-221-9494  
Fax: 214-349-3182  
Last Update: 03/01/2008

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>1-3</td>
<td>TWA: 10 (ppm)</td>
<td>N. A.</td>
</tr>
</tbody>
</table>

Section III. Hazards Identification

Potential Health Effects: Slightly dangerous in case of inhalation. Very slightly dangerous in case of skin contact (irritant, permeator), eye contact (irritant), ingestion.

Section IV. First Aid Measures

Eye Contact: Rinse with water for a few minutes
Skin Contact: No known effect on skin contact. Rinse with water for a few minutes.
Inhalation: Allow the individual to rest in a well ventilated area. Seek immediate medical attention
Ingestion: Have conscious person drink several glasses of water or milk. INDUCE VOMITING by sticking finger in throat. Seek medical attention.

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

All Spills: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Section VII. Handling and Storage

Precautions: DO NOT breath dust. In case of insufficient ventilation wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Keep away from incompatibles such as oxidizing agents.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls: If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection: Safety glasses. Dust respirator. Be sure to use MSHA/NIOSH approved respirator or equivalent.

Continued on Next Page
**Section IX. Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (1% soln)</td>
<td>4.5 (Acidic)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Weighted average: 2.43 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>2.5% (v/v)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Partially soluble in water.</td>
</tr>
</tbody>
</table>

**Section X. Stability and Reactivity Data**

| Stability                     | The product is stable. |
| Incompatibility with various substances | Slightly reactive to reactive with oxidizing agents. |
|                               | Very slightly reactive with moisture. |

**Section XI. Toxicological Information**

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Ingestion. Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to Animals</td>
<td>Acute oral toxicity (LD50): 3160 mg/kg (Rat).</td>
</tr>
<tr>
<td>Special Remarks on other Toxic Effects on Humans</td>
<td>Material is irritating to mucus membranes and upper respiratory track.</td>
</tr>
</tbody>
</table>

**Section XII. Ecological Information - Not Available**

| Products of Biodegradation | Possibly hazardous short term degradation products are not likely. |

**Section XIII. Disposal Considerations**


**Section XIV. Transport Information - Non-Hazardous**

| DOT Classification | Not a DOT controlled material (United States) |

**Section XV. Other Regulatory Information and Pictograms**

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>National Fire Protection Association (U. S. A.)</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Hazard</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific Hazard</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reactivity</th>
<th>Specific Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
ADMIXTURES TO SOLVE COMMON PROBLEMS ON THE JOB

• Supercizer 5
• Slick-Pak II
• Super Air Plus
• Mini Delayed Set
• Super Slump Buster
• Standard Delayed Set

Rescue-Pak contains 6 of our most effective admixtures proven to solve problems in the field

ADVANTAGES
• Rescue-Pak improves your bottom line by saving loads of concrete at the job site which would otherwise be rejected.
• Our admixtures are packaged in patented water-soluble bags for convenient use at the plant, on the road or at the job site.
• Heavy-duty, watertight carrying case.
• Handy waterproof field guide and usage directions.
• Product Bulletins and Material Safety Data Sheets included to comply with jobsite safety regulations.
• All our products meet or exceed applicable ASTM standards.

SUPERCIZER 5
Use Supercizer 5 to increase slump of concrete by 6” or for a 25% water reduction. Supercizer 5 is formulated to produce stronger, more durable concrete.
Supercizer 5 meets ASTM C-494 Type F, AASHTO M-194 & CRD C-97.
Refer to Supercizer 5 Product Bulletin for more information.

SLICK-PAK II
Slick-Pak II increases the ease and range of pumpability, while decreasing wear on equipment, horsepower required for pumping, and friction and line pressure. Slick-Pak II minimizes slump and air loss through pump lines, and does not affect ultimate strengths of concrete.
Refer to Slick-Pak II Product Bulletin for more information.

SUPER AIR PLUS
Use Super Air Plus when the level of entrained air is below job requirements. Super Air Plus will increase the content of entrained air in concrete by 0.75 to 2%.
Refer to Super Air Plus Product Bulletin for more information.

SUPER SLUMP BUSTER
Use Super Slump Buster when low slump is required for proper placing. Super Slump Buster permits controlled slump reduction, allowing placements on inclines or curbs, while minimizing segregation.

continued...
Super Slump Buster improves finishing characteristics without changing the water-cement ratio. Refer to Super Slump Buster Product Bulletin for more information.

**STANDARD DELAYED SET**

Use Standard Delayed Set to retard the set of fresh concrete, in cases when the ready-mix truck has a long distance haul, the truck or other equipment breaks down, or when the temperature at the job site is too high.

Standard Delayed Set meets ASTM C-494 Type D, AASHTO M-194 & CRD C-87.

Refer to Standard Delayed Set Product Bulletin for more information.

**MINI DELAYED SET**

Use Mini Delayed Set for wash water stabilization, when no washout is allowed at the job site. Use it to retard the set of concrete whenever an unexpected delay occurs. One bag of Mini Delayed Set retards one yard of concrete for one hour.

Mini Delayed Set meets ASTM C-494 Type D, AASHTO M-194 & CRD C-87.

Refer to Mini Delayed Set Product Bulletin for more information.

**FAQs**

Q. How do I buy replacement bags?
A. All the admixtures are available in case quantities. Call you local Fritz-Pak distributor.

Q. What is the Rescue-Pak designed for?
A. Rescue-Pak is designed for on-the-jobsite corrections. It has proven to effectively solve unexpected concrete problems.

Q. What type of products are in the Rescue-Pak?
A. Air-Entrainer, Retarder, Superplastizer, Pump Primer/Pump Aid, and slump reducer. Consult the technical bulletins to review individual products.

Q. What kind of shelf life can I expect?
A. If stored in a dry place, it should be good for two or more years. If the powder is still flowable (not hard), the product is good.

Q. What is the cost of Rescue-Pak?
A. Can you afford a lost or rejected load?

**PACKAGING**

- 24 bagged products per case, 30 cases per pallet (item #99000)

**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. 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.

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

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CONTRACTOR-PAK

ADMIxTURES FOR CONTRACTORS

• Supercizer 5
• Slick-Pak II
• Control Finish
• Mini Delayed Set
• Super Slump Buster
• Standard Delayed Set

ADVANTAGES
- Contractor-Pak provides the concrete contractor with exactly the admixtures he needs to do his job on a daily basis.
- Our admixtures are packaged in patented water-soluble bags for convenient use at the plant, on the road or at the job site.
- Heavy-duty, watertight carrying case.
- Handy waterproof field guide and usage directions.
- Product Bulletins and Material Safety Data Sheets included to comply with jobsite safety regulations.
- All our products meet or exceed applicable ASTM standards.

SUPERCIZER 5
Use Supercizer 5 to increase slump of concrete by 6” or for a 25% water reduction. Supercizer 5 is formulated to produce stronger, more durable concrete.

Supercizer 5 meets ASTM C-494 Type F, AASHTO M-194 & CRD C-97. Refer to Supercizer 5 Product Bulletin for more information.

SLICK-PAK II
Slick-Pak II increases the ease and range of pumpability, while decreasing wear on equipment, horsepower required for pumping, and friction and line pressure. Slick-Pak II minimizes slump and air loss through pump lines, and does not affect ultimate strengths of concrete.

Refer to Slick-Pak II Product Bulletin for more information.

CONTROL FINISH
Control Finish improves concrete surface finishing characteristics without re-tempering with water, thus avoiding many common surface problems such as plastic shrinkage cracks, dusting, cracking and crazing. Sprayed on lightly and troweled in, Control Finish produces a high quality surface that is easy to finish and extremely durable. Makes stamping and addition of color hardeners much easier.

The contents of one full bag of Control Finish make a solution that will cover approximately 1,000 square feet (100 square meters).
SUPER SLUMP BUSTER
Use Super Slump Buster when low slump is required for proper placing. Super Slump Buster permits controlled slump reduction, allowing placements on inclines or curbs, while minimizing segregation.

Super Slump Buster improves finishing characteristics without changing the water-cement ratio. Refer to Super Slump Buster Product Bulletin for more information.

STANDARD DELAYED SET
Use Standard Delayed Set to retard the set of fresh concrete, in cases when the ready-mix truck has a long distance haul, the truck or other equipment breaks down, or when the temperature at the job site is too high.

Standard Delayed Set meets ASTM C-494 Type D, AASHTO M-194 & CRD C-87. Refer to Standard Delayed Set Product Bulletin for more information.

MINI DELAYED SET
Use Mini Delayed Set for wash water stabilization, when no washout is allowed at the job site. Use it to retard the set of concrete whenever an unexpected delay occurs. One bag of Mini Delayed Set retards one yard of concrete for one hour.

Mini Delayed Set meets ASTM C-494 Type D, AASHTO M-194 & CRD C-87. Refer to Mini Delayed Set Product Bulletin for more information.

FAQs
Q. How do I buy replacement bags?
A. All the admixtures are available in case quantities. Call your local Fritz-Pak distributor.

Q. What is Contractor-Pak designed for?
A. Contractor-Pak is designed to provide the concrete contractor with the most common admixtures he would use regularly on the job.

Q. What type of products are in the Contractor-Pak?
A. Finishing Aid, Retarder, Superplastizer, Pump Primer/Pump Aid, and slump reducer. Consult the technical bulletins to review individual products.

Q. What kind of shelf life can I expect?
A. If stored in a dry place, it should be good for two or more years. If the powder is still flowable (not hard), the product is good.

PACKAGING
• 24 bagged products per case, 30 cases per pallet (item #99001)

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. 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.

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

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ADVANTAGES
• Lowers concrete permeability.
• Significantly increases concrete durability.
• Increases ultimate strength gain.
• Beneficial in all types of high strength concrete applications.
• Improves bond strength to steel.
• Significantly reduces alkali-silica reactivity.
• Provides excellent resistance to sulfate or seawater attack.
• Reduces steel corrosion.
• Improves freeze/thaw durability of concrete.

DESCRIPTION
Fritz-Pak Silica Fume is a finely-divided mineral admixture, available in both uncompacted and compacted forms. It is a pozzolanic material which is composed of highly refined silicon dioxide in the non-crystalline form. Silica Fume will chemically react with the calcium hydroxide released by the hydration of portland cement to form compounds possessing superior cementitious properties. This ultra-fine material will better fill voids between cement particles and result in a very dense concrete with higher compressive strengths and extremely low permeability. Silica Fume is recommended for all types of concrete where improved concrete performance with reduced permeability is required to reduce the effect of corrosive chemicals, such as deicing salts, on structural steel. Silica Fume is also recommended where higher density and ultimate strengths are desired. Silica Fume does not contain calcium chloride, nitrates, nitrites or other potentially corrosive materials and is compatible with all standard concrete admixtures.

DIRECTIONS
1. Determine the amount of Silica Fume required. See Recommended Dosage Rate.
2. Add Silica Fume prior to, during or after the normal batching sequence. Trial batches will determine the optimum batching sequence.
3. Mix at high speed for 5 to 7 minutes to insure that the Silica Fume is uniformly dispersed throughout the mix.

RECOMMENDED DOSAGE RATE
Silica Fume is recommended for use as an addition to cement at a dosage rate of 5 to 30% based on the total weight of cement. Permeability and strength requirements will determine the required dosage rate. Typically, Silica Fume concrete will have increased water requirements for a given slump. Fritz-Pak Supercizers are recommended to help control water:cement ratios and provide improved workability. Silica Fume should be included in calculation of total cementitious materials for admixture dosage determination. Concrete temperature, ambient temperature or concrete mixes containing accelerators, retarders, or special admixtures may require dosage rates outside the recommended range. Contact your Fritz-Pak distributor with any questions concerning the dosage rates and for any information concerning the placing, finishing and curing of Silica Fume concrete. It is recommended that testing be done to determine the suitability of Silica Fume to your mix designs.

COMPATIBILITY
Silica Fume is compatible with most air-entraining admixtures, calcium chloride and other admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

APPLICABLE STANDARDS

PACKAGING
Fritz-Pak Silica Fume (Compacted)
• 50-lb (22.7-kg) paper bag, 40 bags per pallet (item #95800)
• Bulk (item #95902)
• 25-lb (11.35-kg) repulpable bag (item #95800R)

Fritz-Pak Silica Fume (Uncompacted)
• 50-lb (22.7-kg) paper bag, 40 bags per pallet (item #95905)
• Bulk (item #95903)
• 25-lb (11.35 kg) repulpable bag (item #95905R)

FAQs
Q. What is Silica Fume?
A. It is a by-product in the production of certain types of steel.

Q. What is special about Silica Fume?
A. The particles are much smaller than cement. They are over 90% silicon and can react with the calcium hydroxide in cement. When...
they react they are able to fill and seal the space between particles of cement.

Q. What are the primary properties imparted by Silica Fume in concrete?
A. Low permeability, high compressive strength and high abrasion resistance. The low permeability is desirable in concretes that have steel and are exposed to de-icing salts or saltwater such as in bridge decks and marine docks.

Q. Do I just need to add Silica Fume to concrete to make it stronger?
A. No. Silica Fume needs to react in a low water:cement ratio environment to be able to develop high strength and low permeability. Silica Fume should be used along with a water reducer for best performance.

Q. Are there any other applications for Silica Fume?
A. Yes. In shotcrete it is used to reduce the rebound of material and to impart high strength.

Q. How is color affected when using Silica Fume?
A. Silica Fume is dark gray in color. Concrete with Silica Fume will be darker in color.

Q. Are there any special requirements for placing, finishing and curing concrete with Silica Fume?
A. Yes. Since Silica Fume concrete has a low water cement:ratio it is important to prevent drying and moist curing is very important. For additional information contact Fritz-Pak.
Section I. Chemical Product and Company Identification

Common Name/Trade Name: SILICAFUME COMPACTED, SILICAFUME UNCOMPACTED

Supplier/Manufacturer: FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U. S. A.
Tel: 214-221-9494
Fax: 214-349-3182

Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>No hazardous ingredient.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section III. Hazards Identification - Non-Hazardous

Eye Contact: Flush with water and carefully rinse under eyelids. If irritation persists, consult a physician.

Skin Contact: No known EFFECT according to our database.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Ingestion: If victim is conscious, give large quantity of water. Get medical attention.

Section IV. First Aid Measures

Section V. Fire and Explosion Data - Non-Flammable

Section VI. Accidental Release Measures

All Spills: Due to its small particle size, high efficiency vacuum cleaning is recommended to recover spilled material.

Section VII. Handling and Storage

Precautions: Prevent airborne emissions.

Storage: Keep container dry.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.


Continued on Next Page
Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (1% soln)</td>
<td>6 to 9</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.20 to 2.50 (Water = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>N/A</td>
</tr>
<tr>
<td>Melting point</td>
<td>2300ºC</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Odor</th>
<th>No odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Grey to white</td>
</tr>
</tbody>
</table>

Section X. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompatibility</td>
<td>Silica fume is soluble in hydrofluoric acid.</td>
</tr>
<tr>
<td>Hazardous Decomposition</td>
<td>None. Silica fume is inert under normal conditions of temperature and pressure.</td>
</tr>
</tbody>
</table>

Section XI. Toxicological Information

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Ingestion. Inhalation. Eye contact.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms of Exposure</td>
<td>Coughing, sneezing, eye irritation.</td>
</tr>
<tr>
<td>Acute and Chronic Toxicity</td>
<td>Airborne dust generated by the use or handling of this product may result in respiratory and/or eye irritation. Avoid prolonged exposure to concentrations above recommended exposure limit, UNLESS protective equipment is used. Prolonged skin exposure may cause drying of exposed skin.</td>
</tr>
</tbody>
</table>

Section XII. Ecological Information - Not Available

Section XIII. Disposal Considerations

| Waste Disposal                | Dispose in accordance with Federal, State and Local regulations. |

Section XIV. Transport Information - Non-Hazardous

Section XV. Other Regulatory Information and Pictograms

<table>
<thead>
<tr>
<th>Federal and State Regulations</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Classifications</td>
<td>NMFC CLASSIFICATION 105260-LTL-50</td>
</tr>
<tr>
<td>WHMIS (Canada)</td>
<td>N/A</td>
</tr>
<tr>
<td>HMIS (U. S. A.)</td>
<td>Health Hazard N/A Fire Hazard N/A Reactivity N/A Personal Protection N/A</td>
</tr>
<tr>
<td>National Fire Protection Association (U. S. A.)</td>
<td>N/A</td>
</tr>
<tr>
<td>WHMIS (Canada) (Pictograms)</td>
<td>Not controlled under WHMIS (Canada)</td>
</tr>
<tr>
<td>TDG (Canada) Pictograms</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fritz-Pak Corporation assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.
ADVANTAGES
• Permits controlled slump reduction.
• Allows concrete placement on inclines.
• Excellent for forming curbs.
• Permits placing different flows from the same load.
• Minimizes segregation.
• Does not change water-cement ratio.
• Allows for maximum truck utilization.
• Faster discharge of concrete from trucks.
• Improves finishing characteristics.
• Easier placement of concrete in slip-form machines.

DESCRIPTION
Super Slump Buster is a dry powdered slump reducing admixture packaged in a patented, ready-to-use, water soluble bag. Super Slump Buster is uniquely formulated to provide the ready mix producer with an economical solution to a concrete mix with too high a slump for proper placement. Super Slump Buster is also environmentally safe and compatible with all conventional materials. It contains no cementitious materials, soaps or air entraining agents, and does not affect air content, strengths or water:cement ratio. Super Slump Buster is a viscosity modifier.

DIRECTIONS
1. Determine the amount of Super Slump Buster required. See Recommended Dosage Rate.
2. Add the required amount of Super Slump Buster to the mixed concrete at the job site.
3. Mix at full speed for 7-10 minutes to insure that the Super Slump Buster is uniformly dispersed throughout the mix. For better results let the mix rest 4-5 minutes for slump to be reduced.

RECOMMENDED DOSAGE RATE
Super Slump Buster should be dosed at the rate of one 8-oz (227-g) water-soluble inner bag per 4 yards for each 2-3 inches of slump reduction required. Lean mixes or gap graded concrete will require higher dosages of Super Slump Buster. Poorly designed concrete mixes with excessive water content might not experience corrected slump.

COMPATIBILITY
Super Slump Buster is compatible with all air-entraining admixtures as well as other conventional admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

PACKAGING
• 8-oz (227-g) water-soluble bag, 60 bags per case, 42 cases per pallet (item #97180)

FAQs
Q. What is Super Slump Buster?
A. It is a water thickener.

Q. How does Super Slump Buster work?
A. As the water thickens, it is able to maintain particles in suspension better than just plain water. So the thickened water holds the cement, the cement paste holds the sand, and the sand holds the aggregates, thus reducing slump.

Q. Does Super Slump Buster work the same in all mixes?
A. No. In mixes with low cement content, Super Slump Buster is less effective. Also gap-graded mixes slump differently than properly graded mixes. Reverse mixes (i.e. low aggregate, high sand content) also slump differently.

continued...
Q. Does Super Slump Buster increase the strength of concrete?
A. No. Whatever amount of water was used in the mix does not change, so strength is not increased.

Q. What standards does Super Slump Buster meet?
A. Super Slump Buster falls in the category of Viscosity Modifying Admixtures (VMA). At present there are no ASTM standards for this group of materials.

Q. Does Super Slump Buster affect set time?
A. No.

Q. Does it affect air entrainment?
A. No.

Q. Using Super Slump Buster will tighten up a wet load

Q. What are the best applications for Super Slump Buster?
A. Super Slump Buster is most commonly used in slipforming or curb mixes. Normally these mixes require a low slump. Low slump concrete is difficult to batch because just a small amount of excess water can increase the slump. So adding Super Slump Buster can easily correct the slump.

Q. What is the mixing procedure of Super Slump Buster when adding to the concrete?
A. We recommend 5 minutes of mixing at high speed to insure good dispersion throughout the concrete and then an additional 5 minutes at slow speed to allow for Super Slump Buster to develop its full thickening properties.

Q. How long has Super Slump Buster been in the market?
A. Super Slump Buster has been sold since 1994.

Q. Can I use Super Slump Buster to pour concrete on an incline?
A. Yes.

Q. Can I pour concrete for flatwork first and then add Super Slump Buster to the same load to pour a curb of slip forming?
A. Yes.

Q. What is the maximum reduction in slump I can achieve using Super Slump Buster?
A. 3-4 inches.

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. Super Slump Buster affects slump; it is not a strength enhancer.

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. 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.

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

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Material Safety Data Sheet

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>HCS Class: Irritating substance</td>
<td>Splash goggles, Respirator, Gloves</td>
</tr>
</tbody>
</table>

**Section I. Chemical Product and Company Identification**

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>Last Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPER SLUMP BUSTER</td>
<td>03/01/2008</td>
</tr>
</tbody>
</table>

Supplier/Manufacturer:
FRITZ-PAK CORPORATION
4821 Eastover Circle
Mesquite, TX, 75149, U. S. A.
Tel: 214-221-9494
Fax: 214-349-3182

**Section II. Composition and Information on Ingredients:**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>LC₅₀/LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soda Ash</td>
<td>497-19-8</td>
<td>Oral (LD₅₀) mg/kg: Acute: 5140 (Rat). Dermal (LD₅₀) mg/kg: Acute: 4000 (Rabbit).</td>
</tr>
</tbody>
</table>

**Section III. Hazards Identification**

Potential Acute Health and Chronic Effects:
Slightly dangerous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Corrosive to eyes and skin.

**Section IV. First Aid Measures**

Eye Contact:
Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Seek medical attention.

Skin Contact:
Remove contaminated clothes and place the victim under a shower. Wash the contaminated skin with running water and non-abrasive soap.

Inhalation:
Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Ingestion:
DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

**Section V. Fire and Explosion Data - Non-Flammable**

**Section VI. Accidental Release Measures**

Small Spill:
Place the spilled solid in a convenient waste disposal container.

Large Spill:

**Section VII. Handling and Storage**

Precautions:
Keep container dry. Keep away from heat. Keep away from sources of ignition. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes. Keep away from incompatibles as acids.

Storage:
Keep material dry. Keep in a cool place.

**Section VIII. Exposure Controls/Personal Protection**

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal Protection:
Splash goggles. Wear appropriate respirator when ventilation is inadequate.
### Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (1% soln)</td>
<td>Basic</td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See Solubility in Water.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in cold water, hot water.</td>
</tr>
</tbody>
</table>

### Section X. Stability and Reactivity Data

| Stability                      | The product is stable. |
| Incompatibility with various substances | Reactive with acids. |
| Corrosivity                    | Slightly corrosive to corrosive in presence of aluminum. |

### Section XI. Toxicological Information

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Ingestion. Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to Animals</td>
<td>Acute oral toxicity (LD50): &gt;5000 mg/kg (Rat).</td>
</tr>
<tr>
<td></td>
<td>Acute dermal toxicity (LD50): &gt;4000 mg/kg (Rabbit).</td>
</tr>
<tr>
<td>Chronic Effects on Humans</td>
<td>Toxicity of the product to the reproductive system: Not available.</td>
</tr>
</tbody>
</table>

### Section XII. Ecological Information - Not Available

### Section XIII. Disposal Considerations

| Waste Disposal | Recycle to process if possible. Consult your local or regional authorities. |

### Section XIV. Transport Information - Not Regulated

### Section XV. Other Regulatory Information and Pictograms

| Federal and State Regulations | Not available |
| Other Classifications | WHMIS (Canada) WHMIS CLASS E: |

<table>
<thead>
<tr>
<th>HMIS (U. S. A.)</th>
<th>Health Hazard 2</th>
<th>National Fire Protection Association (U. S. A.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Hazard</td>
<td>0</td>
<td>Reactivity 0</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td>Personal Protection 0</td>
</tr>
</tbody>
</table>

| WHMIS (Canada) (Pictograms) | Not regulated. |
| TDG (Canada) Pictograms    | Not regulated. |

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WATER CONDITIONER

FOR THE REDUCTION OF FALSE-SET PROBLEMS IN VOLUMETRIC MIXERS

ADVANTAGES
- Fritz-Pak Water Conditioner reduces false-set problems in volumetric mixers.
- Does not delay set of concrete.
- Very easy to store and ship.
- Prepackaged doses in patented water-soluble Fritz-Pak bags are simple to use.

DESCRIPTION
Water Conditioner is a dry powdered admixture packaged in a patented, ready-to-use, water soluble bag. It is intended for use in volumetric concrete mixers to prevent false-set problems. False-set is a term used to describe the stiffening of the concrete within one minute after water is added. It is not a “hard set”. It happens more frequently in volumetric mixers because mixing times are not long enough and don’t go past the false-set condition.

DIRECTIONS
1. Determine the amount of Water Conditioner required. See Recommended Dosage Rate.
2. Remove the protective outer bag, add the inner water-soluble bag and contents into water tank and let dissolve for at least 5 minutes.
3. Add water to concrete mix as per your mix design. Unused water may be left in the tank.

RECOMMENDED DOSAGE RATE
One 4-oz bag of Water Conditioner will treat 400 gallons (1,500 liters) of water.

COMPATIBILITY
Water Conditioner is compatible with most concrete admixtures. When used with other admixtures, each one must be dispensed separately into the mix.

PACKAGING
- 4 oz (113 gram) water soluble bag, 100 bags per case (item #98420)

FAQs
Q. Why does false set occur in volumetric mixers but not in regular ready mix concrete?
A. False set is a rapid hardening of the concrete shortly after adding water. This false set is not a hard set and in regular ready mix concrete, the extended mixing simply breaks up this false set.

Q. Why does false set occur?
A. In the manufacture of cement, gypsum is added to control the set. The gypsum is normally added in the final milling process. If in the final milling the temperature of the cement gets too hot, the gypsum will dehydrate forming anhydrate or hemihydrate (plaster of Paris). When water is added the plaster of Paris hardens very fast and gives the appearance of a false set.

Q. Why doesn’t false set happen all the time?
A. False set is more common in the summer time and when cement plants are working at full capacity.

Q. Why it is important to control the false set in volumetric mixers?
A. Because when the false set appears, it is very difficult for the contractor to work the concrete. If excess water or superplasticizer is added to the concrete to reduce the effects, this can cause a weaker concrete or increased cost of admixtures.

Q. Will the Water Conditioner affect the true set of concrete?
A. No.

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.

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. 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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# Material Safety Data Sheet

## Section I. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HCS Risk Phrases</th>
<th>Protective Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HCS Class: Irritating substance</td>
<td>Splash goggles, Respirator, Gloves</td>
</tr>
</tbody>
</table>

**Common Name/Trade Name**: WATER CONDITIONER  
**Supplier/Manufacturer**: FRITZ-PAK CORPORATION  
4821 Eastover Circle  
Mesquite, TX, 75149, U. S. A.  
Tel: 214-221-9494  
Fax: 214-349-3182

<table>
<thead>
<tr>
<th>Chemical Family</th>
<th>Material Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymer</td>
<td>Gypsum Retarder</td>
</tr>
</tbody>
</table>

**Last Update**: 03/01/2008

## Section II. Composition and Information on Ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>TLV/PEL</th>
<th>LC50/LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca-salt of Amino acid</td>
<td></td>
<td>&gt;90</td>
<td></td>
<td>LD 50 (mg/kg): &gt; 2000</td>
</tr>
</tbody>
</table>

## Section III. Hazards Identification

**Human Health Hazards**: Irritating for eyes and skin.

### Eye Contact
Wash with plenty of water for 10 minutes. Seek medical advice immediately.

### Skin Contact
Take off immediately all contaminated clothing. Wash with plenty of water. Seek medical advice.

### Inhalation
Go out for fresh air. Seek medical advice.

### Ingestion
Wash mouth with plenty of water. Seek medical advice immediately.

## Section IV. First Aid Measures

### Section V. Fire and Explosion Data - Non-Flammable

**Extinguishing Media Suitable**: Foam, powder extinguisher, water, CO2.

## Section VI. Accidental Release Measures

### Personal Precautions
Avoid eye and skin contact, wear personal protection equipment, avoid dusting, remove ignition sources.

### Precautions for environmental protection
Prevent pollution of sewers and waters.

### Steps for cleaning
Mechanical sweep up and dispose according to local regulations.

## Section VII. Handling and Storage

### Handling
Wear personal protection equipment. Avoid dusting and ignition sources.

### Storage
Keep dry and cool in well-ventilated areas. Keep containers tightly closed.

## Section VIII. Exposure Controls/Personal Protection

**Engineering Measures**
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

*Continued on Next Page*
### Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Solid (powder)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>&gt;200 °C</td>
</tr>
<tr>
<td>Bulk density</td>
<td>380 (approx)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Easy soluble</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive Hazard</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Odor</td>
<td>Noticeable</td>
</tr>
<tr>
<td>Color</td>
<td>Light brown</td>
</tr>
<tr>
<td>pH</td>
<td>12-13</td>
</tr>
</tbody>
</table>

### Section X. Stability and Reactivity Data

**Stability**
The product is stable.

### Section XI. Toxicological Information

**Acute Toxicity**
ORAL (LD50): >2000mg/kg [Rat].

### Section XII. Ecological Information

**Persistence/degradability**
The product is readily biodegradable.

### Section XIII. Disposal Considerations

**Waste Disposal**
Waste must be disposed of in accordance with federal, state, and local environmental control regulations.

### Section XV. Other Regulatory Information and Pictograms

**Federal and State Regulations**
Not available

**Other Classifications**
- WHMIS (Canada): Not controlled under WHMIS (Canada)
- DSCL (EEC): R36/38– Irritating to eyes and skin.

**HMIS (U. S. A.)**
- Health Hazard 2
- Fire Hazard 0
- Reactivity 0
- Personal Protection e

**WHMIS (Canada) (Pictograms)**
Not controlled under WHMIS (Canada)

**TDG (Canada) Pictograms**
- Not applicable

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