



# ChemMasters®

## ChemSpeed™ 75 ES

Extended Set Concrete Repair  
Mortar with Corrosion Inhibitor  
Suitable for Horizontal and Vertical/  
Overhead Form & Pour

SPECIALTY CONSTRUCTION PRODUCTS

### P R O D U C T      D A T A

#### DESCRIPTION

**ChemSpeed 75 ES** is a one component, high performance structural repair mortar with added migrating corrosion inhibitor. At the minimum water level, **ChemSpeed 75 ES** can be used as a horizontal patching mortar with superior finishing and placement characteristics. At the maximum water level it is an easily pumpable and highly flowable mortar with extended set times for form and pour applications. Within that water range, **ChemSpeed 75 ES** is extremely accommodating to user preferences and application requirements for flow and finish ability, or for use as a "summer grade" repair mortar with extended set times. **ChemSpeed 75 ES** may be placed neat, or extended up to 60% with 3/8" pea gravel for deeper repairs.

#### USES

- Structural filling holes subject to heavy traffic including concrete decks, bridges and roadways
- Full-depth patching of horizontal concrete
- As a flowable and pumpable mortar for form & pour repairs to columns, spans, barriers, etc.

#### ADVANTAGES

- Reaches initial set in 60 to 90 minutes at 72°F (22°C) at maximum water level, 40 to 50 minutes at minimum water level
- Able to be finished earlier with better results when used as a horizontal patching mortar
- Extremely versatile, for fast turnaround, use for horizontal repairs or as a form and pour mortar to repair vertical columns and overhead beams.
- Contains migrating corrosion inhibitor for superior protection of structural rebar
- Superior flow and pumpability in form and pour applications
- Repairs from 0.50 inch (1.3 cm) to full depth
- Non-shrink with exceptional bond strength
- May be placed at temperatures down to 20°F (-6.7°C) if ACI 306 cold weather concreting standards are followed
- Resists freeze-thaw cycles and deicing chemicals.
- May be extended for economical placement at depths greater than 1.5 inches (4 cm)

#### Packaging

| Container           | lbs / kg    | Pallet | Item#      |
|---------------------|-------------|--------|------------|
| Moisture proof bags | 50 / 22.7   | 60     | F2037.50   |
| Super sack          | 3000 / 1361 | 1      | F2037.3000 |

#### Estimating Guide

|                    |  |
|--------------------|--|
| Yield per bag      | 0.42 ft <sup>3</sup> (0.012 m <sup>3</sup> ) |
| With 60% extension | 0.60 ft <sup>3</sup> (0.017 m <sup>3</sup> ) |

#### DIRECTIONS

*For horizontal patching repairs at depths greater than 1.5 in (3.8 cm), an aggregate extension is required.*

#### SURFACE PREPARATION:

**Horizontal Repairs:** Saw cut edges of area to be repaired to a minimum depth of one inch. Square cut sides for optimum performance and appearance. Do not cut the reinforcement.

**Form & Pour Repairs:** Erect forms around area to be repaired to a minimum depth of one inch. Remove all unsound concrete to be replaced along with all contaminants including dust, dirt, oil, grease and asphalt. Any exposed reinforcing steel should be cleaned to bright metal. Consult project engineer to determine if use of a bonding agent similar to **Polyweld EPX<sup>ci</sup>** is recommended. If a bonding agent is not specified, saturate prepared area with clean, potable water. Remove any puddles or standing water immediately before placing mortar so that concrete is in a saturated surface-dry (SSD) condition.

#### MIXING

**Mortar Mixer:** Use a paddle type mortar mixer equipped with rubber tipped blades for blending **ChemSpeed 75 ES**. Start the mortar mixer. Before beginning first batch, pre-wet the blades and bucket with clean water, then pour out the water. Pour 2 quarts (1.9 liters) of clean, potable water per bag into the mortar mixer first, then add **ChemSpeed 75 ES** and mix 3 to 5 minutes until mixture is thoroughly wetted out and uniform in texture. If needed, slowly add additional water (not to exceed 2.5 quarts or 2.4 liters in total) to achieve desired placement and finishing characteristics for horizontal patching.



ChemMasters®

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**Single Bags:** Single bags of **ChemSpeed 75 ES** may be mixed using a heavy duty ½” drill and paddle mixer.

For patches from 0.5 to 1 inch deep, **ChemSpeed 75 ES** may be used neat. For deeper repairs, add up to 30 pounds (13.6 kg) of clean, hard, SSD 3/8 inch (0.95 cm) pea gravel per bag to the mixing water prior to adding the **ChemSpeed 75 ES**. Mix mortar for 3 minutes. Mortar should be uniform in texture with pea gravel evenly dispersed. Do not mix more mortar than can be placed and finished in 30 minutes.

**APPLICATION:**

The application range for **ChemSpeed 75 ES** is from 20° to 85°F (-7° to 29°C). Follow ACI recommended concreting practices for hot and cold weather.

**Horizontal Repairs:** After removing all standing water from the area to be patched, thoroughly scrub in a thin layer or bond coat onto the surface with a stiff bristled broom or brush. Do not dilute the bond coat. Do not apply more bond coat than can be covered with mortar before the bond coat dries. Do not re-temper the bond coat. After the bond coat, immediately place **ChemSpeed 75 ES** mortar into prepared area. Carefully tamp and compact mortar under reinforcing steel, into corners and around edges, filling voids and eliminating air pockets. **ChemSpeed 75 ES** should be placed at full depth rather than in lifts or layers. Screed to grade. **ChemSpeed 75 ES** is designed to have a float or broom texture.

**Form & Pour:** After removing all standing water from the repair area, **ChemSpeed 75 ES** may be placed into forms, ensuring all voids are completely filled. Gently tamp or vibrate form exterior for best results.

**Curing:** If **ChemSpeed 75 ES** will not be top-coated, wet cure for a minimum of 1 day followed by an application of a curing compound that meets ASTM C309 or ASTM C1315. **ChemMasters** produces a wide range of curing compounds and curing & sealing products that meet these specifications. If **ChemSpeed 75 ES** is to be top-coated with an epoxy or

methyl methacrylate coating, allow **ChemSpeed 75 ES** to cure for 8 hours at 72°F (22°C) before priming or coating. If the **ChemSpeed 75 ES** is to be coated with a polyester or vinyl ester coating, allow 24 hours of cure at 72°F (22°C) prior to priming. Ensure that the **ChemSpeed 75 ES** is prepared per the coating surface preparation instructions prior to coating application. **ChemMasters** produces a wide range of polymer coatings and toppings for floors. Contact your **ChemMasters**' representative for additional information.

**LIMITATIONS**

- At temperatures over 90°F (32°C), cool the mixing water and bags to extend working time. Cover with wet burlap after placement to cool surface until final set is achieved.
- In cold weather, below 50°F (10°C), warm the material and water to result in a 70°F (21°C) mixed temperature and preheat the area to be patched.
- Cover patches with insulating materials in cold ambient temperatures below 40°F (5°C).
- Do not featheredge. Minimum depth is 0.5” (1.3cm).

**STORAGE**

Cover unopened bags and store on pallet in a cool, dry area. Shelf life of properly stored material is 18 months from date of manufacture.

**Precautions:**

**DANGER:** Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. May cause respiratory irritation. Suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure if inhaled. See Safety Data Sheet for hazard information.

**Keep out of reach of children.**

Proper application is the responsibility of the user. ChemMasters can only make technical recommendations and cannot provide quality control on the jobsite. ChemMasters can only make technical recommendations.

# ChemSpeed 75 ES TECHNICAL DATA

ASTM C928, R3 Standard Specification for Packaged, Dry,  
Rapid Hardening, Cementitious Materials for Concrete Repairs.

| Test Formulation     |   |
|----------------------|---|
| Material             | ChemSpeed 75 ES   |
| Mixing Conditions    | 73°F @ 50% relative humidity                                  |
| Batch Dates:         | September 2015  |
| Water Addition Rate: | 2.0 to 2.5 quarts per 50 lbs of ChemSpeed 75ES                |
| Curing:              | Air Cure, 50 % relative humidity @ 73°F                       |
| Where Extended:      | 50 lbs <b>ChemSpeed 75 ES</b> with 30 lbs 3/8" ssd pea gravel |

| Test Results (Plastic)         |  |
|--------------------------------|--|
| ASTM C109 Flow                 | @ 5 minutes: 102%<br>@ 15 minutes: 93%   |
| ASTM C1611 Slump Flow Extended | 23 in                                    |
| ASTM C191 Set Time (Vicat)     | Initial: 48 minutes<br>Final: 58 minutes |

| Test Results (Chemical)  |                |
|--|----------------|
| *AASHTO T105: Sulfate Sulfate Content (SO <sub>3</sub> )<br>Sulfate Content (SO <sub>4</sub> ) | 1.57%<br>1.88% |
| *ASTM C1218: Water Soluble Chloride  | 0.003%         |

\* Material extracted from cast cylinder cured 28 days before testing.

| Test Results (Hardened)<br>ASTM C109 Compressive Strength (psi)<br>Average of three 2 inch cubes |       |        |
|--|-------|--------|
| 1 day  | 7 day | 28 day |
| 6,420  | 9,880 | 13,110 |

Compressive Strength of Hydraulic Cement Mortars

| ASTM C157 Length Change (%)<br>Average of three 3x3x11 1/4" specimens<br>Compared to initial readings at 24 hours Air Cure<br>Length Change of Hardened Hydraulic Cement Mortar & Concrete |        |        |
|--|--------|--------|
| 1 day  | 7 day  | 28 day |
| -0.018   | -0.063 | -0.116 |

| ASTM C157 Length Change (%)<br>Average of three 3x3x11 1/4" specimens<br>Compared to initial readings at 3 hours Water Cure<br>Length Change of Hardened Hydraulic Cement Mortar & Concrete |       |        |
|---|-------|--------|
| 1 day   | 7 day | 28 day |
| 0.004   | 0.010 | 0.019  |

| ASTM C348 Flexural Strength (psi)<br>Average of three 40 x 40 x 160 mm specimens |       |        |
|--|-------|--------|
| 1 day  | 7 day | 28 day |
| 1,044  | 1,557 | 1,638  |

Flexural Strength of Hydraulic Cement Mortars

| ASTM C469 Compressive Modulus of Elasticity (psi)<br>Average of three 4 x 8" cylinders |                        |                        |
|--|------------------------|------------------------|
| 1 day  | 7 day                  | 28 day                 |
| 3.56 x 10 <sup>6</sup>   | 3.91 x 10 <sup>6</sup> | 4.71 x 10 <sup>6</sup> |

Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression

| ASTM C496 Splitting Tensile Strength (psi)<br>Average of three 3 x 6" cylinders |       |        |
|---|-------|--------|
| 1 day   | 7 day | 28 day |
| 298   | 542   | 666    |

Splitting Tensile Strength of Cylindrical Concrete Specimens

| ASTM C39 Compressive Strength (psi)<br>Average of three 3 x 6" cylinders |       |        |
|--|-------|--------|
| 1 day  | 7 day | 28 day |
| 2,880  | 5,570 | 7,960  |

Compressive Strength of Cylindrical Concrete Specimens

| ASTM C531 Linear Shrinkage and Coefficient of Thermal Expansion<br>Average of four 1 x 1 x 10" specimens |         |                                  |
|--|---------|----------------------------------|
| 7 day  | 28 day  | Coefficient of Thermal Expansion |
| -0.030%  | -0.041% | 6.6 x 10 <sup>-6</sup> in/in/°F  |

Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes

# ChemSpeed 75 ES

## TECHNICAL DATA (continued)

### ASTM C666 Freeze Thaw Resistance : Procedure A Average of three 3 x 3 x 11 1/4" specimens Air cured until 28 days before testing @ 300 cycles

| Durability Factor                                    | Mass Loss | Surface Condition |
|--|-----------|-------------------|
| 97.1   | 0.6%      | Slight scaling    |
| Resistance of Concrete to Rapid Freezing and Thawing |           |                   |

### ASTM C1202 Rapid Chloride Permeability (coulombs) Average of two 2x4" specimens

|  |
|--|
| 28 day   |
| <800 Very Low  |
| Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration |

### ASTM C672 Salt Scaling (lbs/ft<sup>2</sup>) Average of two 8 x 10 x 4" specimens

| Scaling Loss @ 25 Cycles   | Scaling Loss @ 50 Cycles                             |
|--|--|
| 0.0 lbs/ft <sup>2</sup><br>(Rating 0.0 = No Scaling)                 | 0.0 lbs/ft <sup>2</sup><br>(Rating 0.0 = No Scaling) |
| Scaling Resistance of Concrete Surfaces Exposed to deicing Chemicals |  |

### ASTM C882 Slant Shear Bond Strength (psi) Average of three 3 x 6" composite specimens cast per ASTM C928

| 1 day   | 7 day | 28 day |
|---|-------|--------|
| 2,218   | 3,354 | 3,408  |
| Bond Strength; of Epoxy-Resin Systems Used With Concrete by Slant Shear |       |        |

### ASTM C1583 Direct Bond Strength (psi) Average of three 2" diameter cores Material applied at a 2" thickness over 4,500 psi sandblasted concrete

| 1 day  | 7 day | 28 day |
|--|-------|--------|
| 156  | 215   | 363    |
| Tensile Strength of Concrete Surfaces & the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method) |       |        |

### M-DOT Direct Shear Bonding Strength (psi) Average of three bonded specimens Bonded 1" thick over 4" concrete cube Direct Tensile Strength

| 1 day                     | 7 day | 28 day |
|---------------------------|-------|--------|
| 227                       | 310   | 401    |
| Direct Shear Bonding Test |       |        |

#### This Product is Formulated and Labeled for Industrial and Commercial Use Only

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