



# Low-P™ Cement

Rapid Set® Low-Permeability Cement

FOR BRIDGE DECK OVERLAYS & REPAIRS



### Highlights:

- *Low permeability – improved resistance to attack from chlorides and de-icing salts*
- *Excellent freeze-thaw resistance – achieves a durability factor of 99 after 300 cycles (ASTM C666)*
- *Fast setting – minimizes downtime and is ready for traffic in 1 to 3 hours*
- *Single component cement – just add water and aggregates*
- *Provides corrosion protection*
- *High sulfate resistance*
- *Easy to place, high slump, non-segregating formula*
- *Hydraulic cement based formula – provides excellent long life durability*

### Rapid Set® Low-P™ Cement

*Advanced cement technology providing low-permeability, corrosion resistance, and very high early strength for fast and ultra-durable concrete repairs and overlays.*

### DESCRIPTION

Rapid Set® Low-P™ Cement is a low permeability, corrosion resistant, fast setting hydraulic cement based on advanced cement technology. When mixed with water and aggregates, Rapid Set® Low-P™ Cement produces concrete mixtures with unparalleled performance and ease of use. The finished Rapid Set® Low-P™ Cement concrete exhibits exceptional long-life durability in harsh freeze-thaw conditions.

### APPLICATIONS

Rapid Set® Low-P™ Cement is ideal for fast-track bridge deck overlays, elevated deck repairs, pavement repairs and general concrete projects where low chloride ion permeability, corrosion resistance, and fast strength gain are desired. Rapid Set® Low-P™ Concrete is a high value alternative to

latex modified concrete (LMC), microsilica, low slump, and silica fume concrete.

### SURFACE PREPARATION

Concrete bonding surfaces should be clean, sound, and free from any materials that may inhibit bond such as oil, asphalt, curing compounds, acids, dirt and loose debris. Complete surface preparation in accordance with project specifications. Immediately prior to placement of Rapid Set® Low-P™ Cement concrete the repair surface should be thoroughly saturated with water for a period of no less than 1 hour. Standing water and puddles should be removed from the surface. Scrub coats or brush-in coats are not required.

Please refer to the Rapid Set® Low-P™ Cement Technical Guide for surface preparation recommendations.

### FIELD TESTS

Conduct field tests panels at the jobsite using the prepared bonding surface and the Rapid Set® Low-P™ Cement concrete to determine actual field performance and suitability for your intended use.



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## MIX & PLACE

Low-P™ Cement concrete mixtures may be batched using volumetric mixer equipment or drum/mortar mixers. The working time is approximately 15-20 minutes. This time can be extended to one hour or more by using citric acid retarder. Roller and truss screeds can be used for small overlay placements. Self propelled screed/finishing equipment should be used for all large applications. Patching and small overlay work may require additional internal vibration. Straight edges or bull floats can be

used directly behind screed/finisher equipment to assure closure of concrete surface. Surface retardants or water misting should be used to reduce evaporation. Broom or tine the concrete as soon as the surface can hold the finish. For more information, please refer to Rapid Set® Low-P™ Cement Technical Guide.

## CURE

For overlays, the surface should be covered promptly after final finishing with a single, clean layer of wet burlap followed by a layer of clear polyethylene film. Patches can be water cured by maintaining a moist sheen on the surface. The curing should continue until the concrete has reached the strength desired. Depending on temperatures and specified strength, this will usually be within 1-3 hours after the final finishing. During this period apply more water, as needed, to keep the entire concrete surface continuously wet.

## TEMPERATURE

Low-P™ Cement concrete may be applied in a wide range of temperatures. Contact CTS Cement for cold and hot weather placement recommendations.

## YIELD & PACKAGING

Low-P™ Cement is available nationwide in 2000-lb super sacks and in bulk. When used in a typical mix design, 2000-lb will yield about 3 to 3.5 cubic yards of concrete.

## MANUFACTURER

CTS Cement Manufacturing Corp.  
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## LIMITED WARRANTY

CTS Cement Manufacturing Corp. warrants its material to be of good quality, and, at its sole option, within one year of sale, will replace defective materials or refund the purchase price thereof and such replacement or refund shall be the limit of CTS's responsibility. Except for the foregoing, all warranties, express or implied including merchantability and fitness for a particular purpose are excluded. CTS shall not be liable for any consequential, incidental, or special damages arising directly or indirectly from the use of the material.

## CAUTION

Rapid Set® Low-P™ Cement may contain hazardous ingredients. Please read the Rapid Set® Low-P™ Cement MSDS prior to handling this product.  
[http://www.ctscement.com/lowp\\_msdms.asp](http://www.ctscement.com/lowp_msdms.asp)

Visit [www.rapidset.com](http://www.rapidset.com) for the most current technical information about Rapid Set® Low-P™ Cement and learn more about the advanced product uses and performance - low permeability, fast setting, corrosion and freeze-thaw resistant, hydraulic cement for bridge overlays, concrete pavement patching and repairs, and ultra-durable concrete projects.

LOW-P™ CONCRETE MIX DESIGNS		
	Mix #1	Mix #2
Low-P™ Cement	572 lbs	658 lbs
Coarse Aggregate 1/2" (AASHTO M 80)	1500 lbs	1450 lbs
Fine Aggregate (ASTM C33)	1600 lbs	1600 lbs
Citric Acid (retarder)*	2 lbs	2.4 lbs
Water (AASHTO T 26)	256 lbs	296 lbs
Mix Design Physical Characteristics		
ASTM C191 Set Time (Mod)		
Initial Set	30 minute	30 minute
Final Set	40 minute	40 minute
ASTM C143 Slump of Concrete	7 to 9 inch	7 to 9 inch
ASTM C39 Compressive Strength		
3.0 hours	4000 psi	4500 psi
6.0 hours	5000 psi	6000 psi
1 day	6000 psi	7000 psi
7 day	7000 psi	8000 psi
28 day	8000 psi	9000 psi
ASTM C882 Bond Strength		
24 hour	NA	1200 psi
7 day	NA	1900 psi
28 day	NA	2200 psi
ASTM C1202 Chloride Penetration		
28 day	750 coulomb	750 coulomb
ASTM C157 Shrinkage		
7 day	0.003%	0.003%
28 day	0.023%	0.023%
ASTM C666 Freeze-Thaw		
300 cycles (Durability Factor)	99	105.1
ASTM C1404 Tensile Bond Strength		
24 hour	200 psi	250 psi
UNIT WEIGHT	150 pcf	150 pcf
Specific Gravity of Low-P Cement is 2.86		
* Citric Acid can be used to extend the setting time of Low-P concrete. Please contact CTS Cement for dosage recommendations.		
Note: Performance will vary based on actual aggregate properties and project variables. Complete trial batches to verify performance.		
Results were produced by H. H. Holmes Testing Laboratories, and the Missouri Department of Transportation		