COLD TEMPERATURE CONCRETE REPAIR GUIDELINES

BEST PRACTICES

Refer to the FAST-SET ADMIX USAGE CHART on the second page of this document!

Phoscrete MPC (Magnesium-Phosphate-Cement) concrete formulas set fast, even in cold temperatures.

PHOSCRETE FORMULA 1 [MALP-Series] concretes do not mix with water, but instead mix with a Liquid Activator and work in temperatures above as the activator's freezing point: -17°F (-27°C).

PHOSCRETE FORMULA 3 [MKP-Series] concretes mix with water and work in temperatures above the freezing point of water: 32°F (0°C).

Use **Phoscrete Fast-Set Admix** (accelerator) with Phoscrete concrete repairs to achieve traffic ready† strength one hour after the final bucket pour, even in sub-freezing temperatures.

Considerations for using Phoscrete Fast-Set Admix:

On the job site, many factors impact working and set times, including:

• Ambient temperature • Substrate temperature	• Liquid Activator temperature • Dry Mix temperature	• Volume of material placed

Most important is the temperature of the Dry Mix and the Liquid Activator (F1) or water (F3). When Phoscrete components are mixed at warmer than ambient temperature, less Fast-Set Admix is required.

The next important consideration is the temperature of the substrate. Frozen concrete acts as a heatsink, slowing the exothermic reaction between the Dry Mix and the Liquid Activator.

If the substrate is significantly colder (freezer floor) than Phoscrete's components, consider that the the cold substrate will slow the set time down.

In cold storage facilities and/or cold climates, heating the substrate allows the exothermic reaction to set faster. Use a blow torch and gently "kiss" the substrate surface prior to placement of Phoscrete to evaporate moisture and ice crystals and warm the surface. *Do not heat the substrate for an extended period to avoid loss of compressive strength!* Placed Phoscrete may also be gently heated to accelerate the set.

When Phoscrete Dry Mix and Liquid Activator (F1) or water (F3) are mixed, an exothermic reaction occurs, and the material gets very hot, reaching a temperature greater than 150°F (70°C). Large volumes of material placed in cold temperatures suggests using less Fast-Set Admix toward the end of the placement.

Note that the heat from Phoscrete's exothermic reaction may allow use of sealants below the low-end temperature of their recommended range. Be sure to keep sealants warmed prior to use.

Basic instructions for mixing Phoscrete in a bucket or pail using Fast-Set Admix:

- *Only apply Phoscrete MPC to clean, dry concrete substrates.*
- *Remove slurry from saw-cuts that may inhibit bond between Phoscrete and substrate.*
- *Empty the entire contents of Liquid Activator (F1) or Water (F2) into the bucket.* ***Always add liquid first!***
- *Add the appropriate number of level scoops of Fast-Set Admix into bucket.*
- *Next add appropriate measure of Endure Admix to the liquid (F1E and F3E).*
- *Finally, add the entire Dry Mix bag to the liquid, and mix for approximately 1 minute or until no dry material remains.* ***Do not over mix!***
- *Refer to the Phoscrete Full Installation Guides for complete mixing/finishing instructions.*

Fast-Set Admix Usage for Phoscrete MPC Concretes

Scoops are provided with all Phoscrete Admixtures. Be careful to use the correctly labeled scoop!

Phoscrete Fast-Set Admix Scoop Sizes

Packaging	Lbs	Kg	Fast-Set Scoop (1/4%)	
			grams	scoop label
F1/F3 HC Pail	9.7	4.4	**11**	**[A]** 10 cc (0.33 oz)
F1/F3 HC Pail	55	25	**62**	**[B]** 53 cc (1.8 oz)
F3-VO Bag	27	12.2	**32**	**[C]** 30 cc (1 oz)

This usage chart recommends the number of scoops of Fast Set Admix to use and time traffic opening. When material is warmed prior to placement, less Fast-Set Admix is needed.

Phoscrete Fast-Set Admix Usage Chart

	PHOSCRETE FORMULA 1 [MALP]			PHOSCRETE FORMULA 3 [MKP]		
Substrate Temperature	F1 Admix Scoops	F1 Set (Minutes)	Traffic Ready† (min)	F3 Admix Scoops	F3 Set (Minutes)	Traffic Ready† (min)
Below +15°F [Below -10°C]	8 – 10 Fast-Set	30	75+	F3 [MKP-Series] concrete is not recommended for use in temperatures below the freezing point of water unless water is heated, and dry mix and substrate are warmed.		
15°F to 25°F [-10° to -5°C]	6 – 8 Fast-Set	20	60			
25°F to 32°F [-5°C to 0°C)	4 - 6 Fast-Set	20	60			
32°F to 40°F [0°C to 5°C]	2 - 4 Fast-Set	17	60	6 - 10 Fast-Set	45	180-240+
40°F to 50°F [5°C to 10°C]	1 - 2 Fast-Set	15	60	4 – 6 Fast-Set	30	90-180
50°F to 70°F [10°C to 20°C]	None	10-15	30-60	2 – 4 Fast-Set	15-20	60-90

† *Phoscrete F1 [MALP Series] concretes typically achieve compressive strengths of 4,000 psi in less than 1 hour. Phoscrete F3 [MKP-Series] concretes typically achieve compressive strengths of 4,000 psi in less than 3 hours. FHWA advises >2,000 psi to open a repaired concrete road or bridge deck to heavy-duty rubber-tire traffic.*

Never add more than 10 scoops of Fast-Set Admix per Bag of Dry Mix!

Set Time is when Phoscrete is hardened to the point that a nail cannot be pressed into the material.

If you have questions, contact your local Phoscrete representative or call our corporate offices for application assistance.