



PHOSCRETE FORMULA 3-FP

FAST POLISH CONCRETE

TECHNICAL DATA GUIDE

Phoscrete Formula 3-FP is a rapid hardening MKP (Magnesium Potassium Phosphate) concrete built for commercial floors. It bonds to clean, sound concrete without primer, so the crew can grind, place, polish, seal, and hand the floor back in a single shift.

DESCRIPTION

PHOSCRETE® FORMULA 3-FP™ (F3-FP), Fast Polish Concrete, is a two-part cementitious MPC (Magnesium-Phosphate-Cement) concrete. The Dry Mix of magnesium oxide, potassium phosphate, and aggregates is mixed with pre-measured F3-FP Activator. F3-FP forms both a chemical and a mechanical bond to clean, sound, cured concrete and to itself, so surface preparation is by grinding alone and no epoxy or cementitious primer is required. F3-FP is placed at a minimum thickness of ½ inch (1.25 cm) over the prepared slab. The surface can be ground and polished as soon as two [2] hours after initial set and sealed immediately with a Phoscrete approved seal coat. F3-FP meets ASTM C 928, Type R3.

PROVEN APPLICATIONS

- ▶ Interior commercial floor replacement and resurfacing
- ▶ Overlays over ground and profiled concrete slabs, ½ inch (1.25 cm) and thicker
- ▶ Polished concrete floors requiring a fast return to service
- ▶ Full and partial depth concrete floor repairs in occupied buildings
- ▶ Spall, gouge, and joint blowout repairs in interior slabs
- ▶ Grocery, warehouse, distribution, kitchen, and back-of-house floors
- ▶ Loading dock, service corridor, and entry floors subject to heavy traffic
- ▶ Commercial stairs, landings, ramps, and parking structure floors

ADVANTAGES

- ▶ No primer required. Eliminates the primer step, material cost, and cure time.
- ▶ Same-shift return to service. Polish at two [2] hours, seal, and open the floor.
- ▶ Labor and time saving material: fast setting, no need for aggregate extension, self-consolidating, easy clean up with water.
- ▶ Fast, easy, and accurate mixing in a bucket, mortar mixer, or pan mixer. Two pre-measured components: dry mix in a bag, liquid activator in a jug.
- ▶ Easy to apply and finish: cast, pour, or pump, then screed, float, and trowel.
- ▶ High early and ultimate compressive, bond, flexural, and tensile strengths.
- ▶ High abrasion resistance for heavy traffic commercial floors.
- ▶ Low shrinkage, bonds strong to cured concrete and to itself with no cold joints.
- ▶ Chemically stable and durable in service: freeze-thaw and salt scaling resistant, no added chlorides, and resistant to chloride penetration.
- ▶ Not a vapor barrier; allows on grade applications.
- ▶ All temperature use: heat/cool F3-FP Activator and use Phoscrete Fast-Set/Slow-Set admixtures to manage setting/working time.
- ▶ Environmentally friendly: no VOCs, no odor. Suitable for work inside occupied buildings.

Packaging

Large Bag Kit: [1] bag + [1] jug

Dry Mix: 50 lb. (22.5 kg)

Polyethylene -lined paper bag

F3-FP Activator: 106 fl. oz. (3.1 l)

LDPE 1-gallon jug

Yield: 5.1 bf, 0.43 ft³, 0.0121 m³

52 bags and jugs per full pallet.

Small Bag Kit: [1] bag + [1] jug

Dry Mix: 22 lb. (10 kg)

Polyethylene -lined paper bag

F3-FP Activator: 47 fl. oz. (1.4 l)

LDPE 1-gallon jug

Yield: 2.2 bf, 0.19 ft³, 0.0053 m³

96 bags and jugs per full pallet.

Mixing Ratio

Pre-measured, pre-extended.

Mix [1] jug into [1] bag.

Use color-matched bags and jugs.

Always add liquid first.

Do not extend with sand or aggregate.

Storage

Store in clean, dry conditions in unopened, original packaging.

Shelf Life (when properly stored)

Dry Mix: 24 months

Activator: 12 months

(when properly stored)

VOC Content

0 g/L: Less exempt solvents



LABORATORY TEST DATA

Fresh Properties					
Test	Specification	Description	Time	Test Results	
Set Time	ASTM C191	Time of Setting by Vicat Needles	Initial Final	20 min	27 min
	ASTM C403	Time of Setting by Penetration Resistance		18 min	24 min
Flow	ASTM C1437	Consistency (Flow %)	5 min	102%	
Density	ASTM C387	Density (Unit Weight) of Concrete		133.67 lb/ft³	2178 kg/m³
Air Content	ASTM C231	Air Content by Pressure Method		4.8%	
Strength Properties					
Test	Specification	Description	Time	Test Results	
				psi	MPa
Compressive Strength	ASTM C109	Compressive Strength of Hydraulic Cement Mortars Using 2-in. Cube Specimens	2 hours	4000	27.6
			3 hours	5000	34.5
			1 day	6400	44.1
			28 days	9000	62.1
Flexural Strength	ASTM C78	Flexural Strength of Concrete Using Simple Beam with Third-Point Loading	1 day	500	3.4
			28 days	600	4.1
Bond Strength	ASTM C882	Bond Strength by Slant Shear:	1 day	2800	19.3
	ASTM C1583	Direct Bond Strength by Pull Off	7 days	3000	20.7
			28 days	292	2.0
Tensile Strength	ASTM C496	Splitting Tensile Strength of Cylindrical Concrete Specimens	28 days	605	4.2
Modulus of Elasticity	ASTM C469	Static Modulus of Elasticity	28 days	4.3 E+06	3.0 E+04
Durability Properties					
Test	Specification	Description	Test	Test Results	
Free Shrinkage	ASTM C157	Length Change of Hardened Concrete (Std)	28 Days Wet Dry	+0.07%	-0.01%
Freeze Thaw	ASTM C666-A	Resistance of Concrete to Rapid Freezing and Thawing in a Saturated Condition (300 cycles)	Durability Factor	98.5%	
Scaling	ASTM C672	Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals (100 cycles) Results = Visual Material Loss lbs./ft²(%)	NaCl	Visual 0	0.0 lbs/ft²
Resistivity	AASHTO T358	Surface Resistivity (kΩ-cm)	28 days	56.8 kΩ-cm	
Chlorides	ASTM C1202	Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration (Coulombs)	28 days	610 C	
	AASHTO T260	Chloride Content (%)	28 days Acid Water	0.007%	0.006%
Abrasion	ASTM C779 Procedure B	Abrasion Resistance of Horizontal Concrete Surfaces	28 days	30 minutes	0.043 in
				60 minutes	0.060 in

Independent accredited laboratory test reports are available upon request.



GENERAL INSTALLATION GUIDELINES

- Refer to [Phoscrete Formula 3 \[MKP Series\] Full Installation Guide](#), for the most complete documentation on best installation practices, including recommended tools and mixing equipment.
- Surface preparation is by grinding. Grind the existing floor a minimum of ½ inch (1.25 cm) to remove the existing finish and expose clean, sound concrete. No epoxy or cementitious primer is used with F3-FP.
- Place F3-FP at a minimum thickness of ½ inch (1.25 cm) over the prepared slab.
- Control joints are required. Establish them either by forming the joints prior to placement or by saw-cutting after placement. Match the joint pattern and location of the existing slab and carry the joints through the full depth of the F3-FP.
- Grinding and polishing of the F3-FP surface may begin as soon as two [2] hours after initial set. A Phoscrete approved seal coat may be applied immediately following polishing.
- Cool Activator on ice to 40°F and/or use Slow-Set Admix in temperatures above 77°F (25°C) for additional working time.
- Warm Activator in hot water and/or mix longer when working in cold temperatures for faster set.
- Refer to [Phoscrete's Best Practices for Cold Temperature](#) and [Warm Temperature Guidelines](#) for details on mixing times and working with Phoscrete Admixtures (Fast-Set, Slow-Set).

SURFACE PREPARATION

- The concrete surface must be sound and fully cured.
- Remove loose, damaged, and contaminated concrete, such as oil, grease, and other bond-inhibiting materials.
- Surface must be dry, frost-free, with no standing water. Gently apply heat (torch) to eliminate surface moisture.
- Concrete profile should reach a minimum of CSP (Concrete Surface Profile) of 6 per ICRI Guidelines.
- For overlays and partial depth installations, the thickness of the placement must not be less than 0.5 in (1.25 cm). Grind the floor a minimum of ½ inch (1.25 cm) to reach that thickness. Saw-cut the perimeter of the work area square and to full depth. Do not feather finish.
- When saw-cutting or shot-blasting, remove surface dust and slurry with air or water (allow to dry prior to application).

MIXING

- Mix PHOSCRETE F3-FP at the placement site. Mix [1] jug of F3-FP Activator into [1] bag F3-FP Dry Mix. Match colored labels on bags and jugs to insure proper mixing ratio. Note: 22 lb. Kits of F3-FP pair with ½-gallon jugs. 50 lb. Kits pair with 1-gallon jugs.
- DO NOT MIX USING PARTIAL BAGS OR JUGS. Note: F3-FP Activator jugs contain liquids with different densities. Using a partial jug does not guarantee equal distribution of liquids.
- Use a five [5] gallon bucket or larger for mixing kit (Phoscrete's 8-gallon heavy-duty mixing bucket is highly recommended). Mix with a paddle (Phoscrete's urethane auger is highly recommended), and a dual or variable speed drill suitable for mixing (Bosch GBM-9-16 is highly recommended).
- First, empty the entire jug into a clean bucket. Next, add other Phoscrete admixtures (Fast-Set, Slow-Set, Fibers) as needed. Then quickly add Dry Mix into the bucket while slowly running the mixer.
- Mix with the drill at full speed for at least two [2] minutes, and until the material is fully wetted out and shows a uniform consistency. DO NOT UNDER MIX OR OVER MIX. Using a mixing paddle other than Phoscrete's urethane auger will require additional mixing time. In colder temperatures, mix longer.

APPLICATION

- A batch of Phoscrete F3-FP must be placed and finished within 15 - 25 minutes from mixing, temperature dependent.
- Phoscrete F3-FP is a thixotropic material: vibration and tapping with a trowel increases flow.
- Pour, place, and screed the material quickly to increase finishing time.
- Finish F3-FP with a trowel, float, or vibrating screed. Do not broom finish a surface that will be ground and polished.
- Fill the repair in lifts using concrete floats and margin trowels. Force the material against the edges of the repair. Phoscrete bonds to itself with no cold joints, whether wet or completely cured.
- Finish the repaired area using clean concrete floats and trowels. Plastic floats work best. Tap on surface with trowel to bring liquid to the surface for best finish. When installing in lifts, do not apply a final layer thinner than ½ inch (1.27 cm).
- On sloped surfaces, pour the material at the bottom of the slope and work your way up. Use a hand screed or float to move the material up the slope. When installing on steep inclines, use forms, or work in smaller increments (one kit at a time), and allow the material to set prior to the next pour.



APPLICATION *(continued from page 3)*

- Grinding and polishing may begin as soon as two [2] hours after initial set. Level any material finishing higher than the adjacent surface with a diamond grinder, then polish to the specified finish and apply a Phoscrete approved seal coat.
- When mixing multiple kits at once for large volume installations, use a pan mixer or a paddle-style mortar mixer.
- Control joints must be carried through the F3-FP. Either form the joints prior to placement or saw-cut them after placement, following the joint layout of the existing slab. When saw-cutting, cut through the full depth of the F3-FP and clean the joint of dust and slurry before installing any joint filler or sealant.
- Contact Phoscrete installation support to discuss your specific application and requirements.

CLEANING

- In-between batches, clean tools with a water dampened towel, and wipe off excess water prior to contact with Phoscrete.
- When the job is completed, clean the tools with water. Clean hands with soap and water.

LIMITATIONS

- Do not use any primer or admixtures other than those provided by Phoscrete.
- Use only a Phoscrete approved seal coat over F3-FP.
- Do not extend PHOSCRETE F3-FP with aggregate. Do not add sand and/or any type of cement.
- Do not mix partial units.
- Minimum application thickness: 0.5-inch (1.25 cm), no maximum thickness limitation.
- Minimum ambient temperature: 35°F (2°C)
- Proper application is the responsibility of the user. Field visits by Phoscrete personnel are for the purpose of making technical recommendations, not for supervising or providing quality control on the jobsite.

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HEALTH, SAFETY, AND ENVIRONMENTAL

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