



Position Paper: Minimum Time of Set for Rapid Setting Concrete Repair Materials

Initial and Final set times are typically required for approved use by state and federal concrete materials authorities for both full panel concrete pours (Ready Mix) and Rapid Setting Concrete Repair (RSCR) materials.

Between the minimum initial set time and maximum final set time, the second limit is generally regarded as most important for RSCR materials; they must set quickly and gain strength fast - by definition.

Phoscrete HC is a MALP concrete, a **Very** Rapid Setting Concrete Repair material that sets and hardens very quickly, achieving >5000 psi compressive strength as soon as 30 minutes after its dry component touches the liquid component (liquid activator).

In standard ambient temperature conditions, the initial set time of Phoscrete HC is 6 minutes and up. Phoscrete HC's half-cubic foot kits can be mixed in one minute and placed and finished in another minute (*watch [Mixing Phoscrete HC at 80°F video](#)*). Managing Phoscrete's set is quite easy for an experienced and crew.

Supercooling Phoscrete Activator extends working time well beyond the MDOT-SHA specification of 10 minutes (*watch [Mixing Phoscrete HC at 80°F using SUPERCOOLED Activator video](#)*) to see a full kit of Phoscrete achieve initial set at 14 minutes.

Even for large concrete repairs, the minimum set time is not relevant for Phoscrete HC. MALP concrete completely bonds to itself (wet, cured, or in-between). Conventional concrete repair materials generally must be placed and finished in one pour, Phoscrete can be applied in lifts to form a monolithic block with no cold joints or delamination.

Regarding hardened properties, Phoscrete typically exceeds most state DOT QPL requirements for 28 day after only one hour.

Because it is so fast to mix, place and finish, lane closure time is reduced when crews apply Phoscrete. Less time in traffic increases worker safety. Less time in traffic jams benefits the driving public. Less time to complete long-lasting concrete repairs is a valuable industry innovation.

Therefore, disallowing very rapid setting MALP concrete as an approved RSCR material because set time is too fast, can be regarded as a disservice to both repair crews and the driving public.



If a contractor or state maintenance crew determines Phoscrete is not a good fit for their project, *they will not purchase it*. On the other hand, they should not be *prohibited* from using Phoscrete if they appreciate its advantages.

In addition to **safety** and **value** received from rapid placement and fast traffic re-opening, MALP concretes offer additional significant advantages over traditional RSCR technologies based on Portland cement.

Consider these SPEED advantages:

- Ready for traffic, joint sealant, coating one hour after the final pour.
- Allows more sf of concrete demolition/site preparation in a work shift.
- Saves significant cost of traffic control by completing expansion joint nosing and header in one lane closure.

Consider these CLIMATE advantages:

- Works fast even in sub-freezing temperatures
- Extend the season for concrete repair through the winter.
- Can be applied in hot temperatures simply by supercooling the liquid activator

Consider these LONGEVITY advantages:

- No cold joints
- No shrinkage cracking

Consider these CORROSION advantages:

- Does not require sandblasting rebar; stops rust on contact.
- Prevents future corrosion; stops "the halo effect."

Consider these USER advantages:

- Eco-friendly, no-odor, no VOCs.
- Tools clean up easy with water

In conclusion, innovative technologies like Phoscrete add considerable value and safety to a time-sensitive and dangerous workplace. When a MALP RSCR material meets or exceeds all other standard specifications for an authority's approved product list, said approval should not be withheld for faster than specified minimum initial set time for all the reasons stated above.

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