

hot weather guidelines for tilt-up construction

Cure and bondbreaker application during hot weather conditions demands special consideration to ensure a successful result.

The cement hydration process is the key mechanism for concrete cure and maintaining the specified water cement ratio throughout the concrete slab, results in an evenly cured, durable concrete surface with a great finish.

Concreting in hot weather can be challenging as the external environment has a great effect on placing, finishing and curing the concrete.

casting:

When placing and finishing any horizontal concrete surface in hot conditions, care must be taken to prevent water evaporating out of the screeded surface too quickly to prevent plastic shrinkage cracking.

Losing bleed water too quickly means the surface of the concrete will “dry out” before it cures, causing a weak surface layer when trowelled. This may not hold up when another slab is cast on top of it and cause flaking and roughening of the surface when lifted.

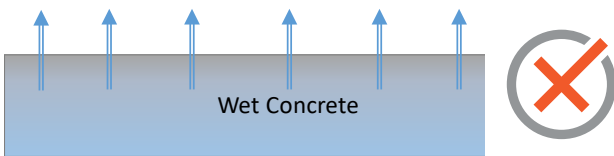


Figure 1: Losing bleed water too quickly in hot conditions may result in a poor quality concrete on the surface of the casting bed.

A poor surface will also be more porous and suck in a lot of bond-breaker when applied, causing further risk of slabs sticking together. Using an Aliphatic Alcohol such as Reid™ CURE 8 AA after bull floating, creates a fine mist over the surface of the concrete to prevent the concrete from bleeding out and drying too fast.

It also enables a good durable finish to prepare the surface well as a casting bed.

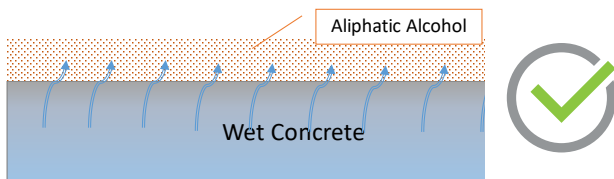


Figure 2: Slowing down the loss of bleed water from the surface using an aliphatic alcohol allows a better, more durable surface finish on the slab.

you've made your bed...

A hot casting bed is one of the biggest contributors to stuck slabs. When fresh, wet concrete hits a hot dry surface, the natural behaviour is for it lose moisture down into the bed (osmotic effect). It is the job of the bond breaker to create a non-permeable barrier against this water transfer to prevent slabs sticking.

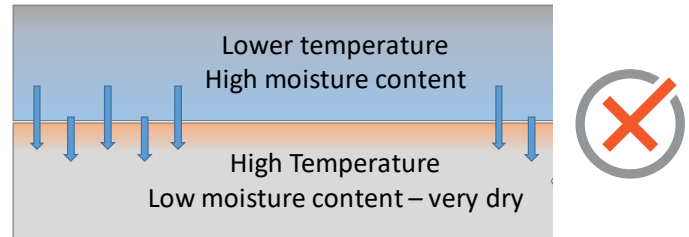


Figure 3: A hot dry casting surface sucks out moisture from the fresh concrete increasing the likelihood of sticking and quality issues on the “far face” of the slab when lifted.

The same logic applies when applying a coat of bond breaker to a hot, dry surface. The hot surface absorbs the bond breaker into the concrete causing an uneven surface layer. This does not provide an adequate barrier for the fresh concrete and results in the slab sticking.

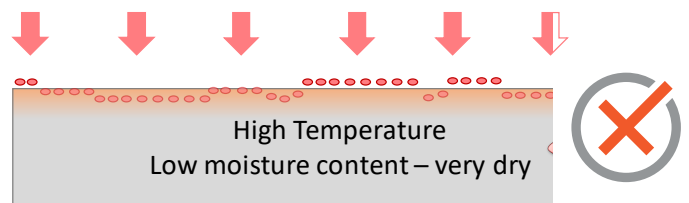


Figure 4: A hot dry surface also causes bondbreaker to be sucked into the surface of the concrete creating coverage issues and increasing the risk of sticking.

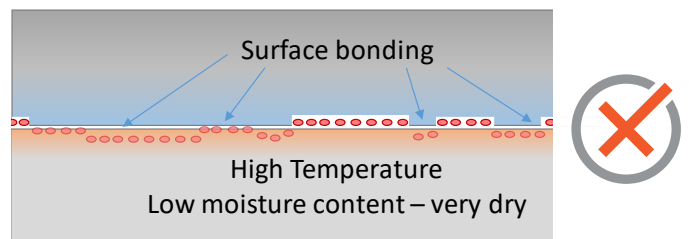


Figure 5: Patchy coverage of bondbreaker will cause sticking and quality issues with the new slab.

Note: Windy and dry conditions are just as risky as hot conditions. When spraying bondbreaker onto the surface, ensure that the spray is not blown away or evaporating before it reaches the surface. If in doubt, disperse the sprayed product with a mop or apply with a long nap roller.

Continued >

the cure

A smart way to cover off all the above issues is to take advantage of the double functionality of bondbreakers like Reid™ Silcoseal Select (Water Based) and Reid™ Seal and Tilt (Solvent based), as a curing agent as well as a bond breaker.

By applying an initial coat of bondbreaker shortly after the slab has been trowelled and saw cut, the bondbreaker forms a network structure, creating a film on the surface of the concrete which locks the moisture in and allows the concrete to cure to its full potential.

A second coat at right angles to the initial coat ensures that complete coverage has occurred.

If the concrete is older, has been exposed to prolonged hot conditions, and is very dry and porous, it is recommended to flood the slab with water first. Then remove the excess ponded water from the surface, before applying coats of bond breaker.

This helps the bond breaker remain on the surface and not get absorbed into the dry concrete and cause potential for the slabs to stick.

Check to see if the bondbreaker film forms an evenly dark colour over the concrete.

If the films looks patchy with lighter areas, this means that the coverage is not even and another coat of bondbreaker will need to be reapplied.

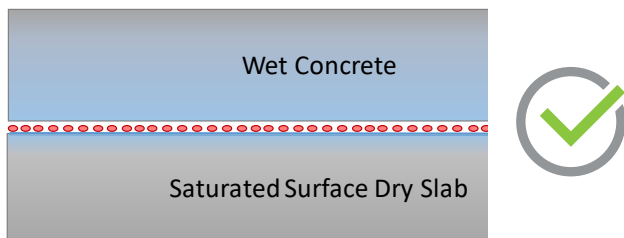


Figure 6: Saturating an old dry slab with water, before applying a coat of bond breaker ensures that there is an even film of bondbreaker on the surface.

silcoseal select: quick user guide

(Please read the Silcoseal Select data sheet for comprehensive application instructions.)

1. Mix Silcoseal Select in the drum & sprayer thoroughly before use.
2. Form up casting bed and remove all dust, saw cut residue, standing water and other contaminants from the casting surface.
3. Check the concrete slab is not too dry as this will “soak up” too much bondbreaker. If so, flood the bed with water for 10 minutes, then remove all ponded water. Slab surface may remain damp.
4. Apply first Silcoseal Select coat to the casting surface and allow to dry.
5. Apply second coat of Silcoseal select at right angles (90°) to the first, and allow to dry.
6. Conduct a “bead test” by sprinkling droplets of water onto the bondbreaker at different places on the casting bed. There is enough bondbreaker if the droplets form beads, like on a freshly waxed car bonnet (see below).

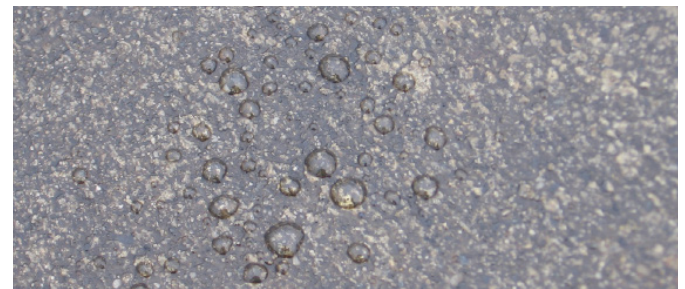


Figure 7: Performing the bead test on the concrete slab is a good indication of whether the bondbreaker coat has been applied correctly.

7. Check the bondbreaker coating feels like a “dry piece of soap”.
8. Apply coats of Silcoseal Select until the “bead test” works and a “soap-like” coating is felt all over the casting bed.
9. In cold weather, applying multiple light coats will speed up the overall drying time.