

TEGRA AUSTRALIA

COLD WEATHER CONCRETING



Concreting during particularly cold weather conditions can cause problems with the placement and finishing of your concrete slab. Most of these are related to the reduction in the rate of cement hydration or setting times.

Lower temperatures will increase the time for bleed water to evaporate delaying the finishing operations. The temptation to finish concrete too early may result in:

- delamination or flaking
- weak surfaces
- dusty surfaces
- poor wear resistance

PLANNING AND PRECAUTIONS



It is important to plan ahead when considering placing concrete during cold weather conditions. Experienced concreters know that by taking a few simple precautions that these problems may be avoided.



1. Check the weather forecast, avoid days that forecast cloud and very low temperatures and days where there could be a sudden drop in temperature after placement.
2. Remove any frost from the re-enforcing steel, as the concrete comes into contact with the steel the frost will melt and weaken the concrete surrounding the steel.
3. Lower slump concrete will assist with setting times and the rate of strength gain.



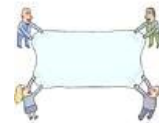
4. Don't try to place more concrete than you know you can successfully expect to finish, have sufficient labour and equipment on site to place the concrete.
5. Whilst it is important to vibrate, do not over-vibrate, 5 -15 seconds should give sufficient compaction.
6. If possible erect wind barriers, the surface concrete will cool quicker than the mass concrete underneath which may result in drying shrinkage cracking.
7. Do not add cement or sand to the surface to dry up bleed water, this will result in poor wear resistance.

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FREEZING

Freshly placed concrete is vulnerable to freezing conditions both before and after it has set. It is recommended that concrete be protected from freezing for at least 24 hours after placement. Overnight freezing will cause the expansion of the water in the concrete, which will result in not only flaking but also a reduction in the potential strength.



CURING

It is important to start curing as soon as practicable, whilst loss of moisture from the concrete due to evaporation will be greatly reduced during cold weather conditions, very cold air can be quite dry and it may still be necessary to cure concrete to ensure maximum potential durability.

1. Moist or water curing is rarely advisable for obvious reasons.
2. Covering of the concrete surface will reduce moisture loss and slow heat loss.
3. Any covering should be well secured to prevent lifting, particularly in windy conditions.
4. It is advantageous to leave formwork in position as this will accelerate the hardening process.
5. Curing should be left in place as long as practicable.
6. When curing and/or protective measures are removed care should be taken not to suddenly expose warm concrete to freezing conditions.

The temperature of surfaces should always be allowed to fall slowly to avoid thermal cracking due to a temperature differential between the surface and interior of the concrete slab, particularly larger/thicker slabs.