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HOT WEATHER CONCRETING

Concreting during particularly hot and dry weather conditions can cause problems with the placement and finishing of your concrete slab. High air temperature particularly when combined with low relative humidity and dry winds can affect the quality of the concrete in a number of ways.

The main problems arising when concreting during hot weather is the **early loss of water** from the concrete and **rapid drying**, this leads to early setting. These resultant conditions will lead to:

- strength reduction
- crazing or cracking
- shrinkage cracks
- finishing difficulties

PLANNING AND PRECAUTIONS

It is important to plan ahead when considering placing concrete during these hot 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 high relative humidity and hot drying winds.
2. Thoroughly wet the ground or place moisture barrier such as plastic under the slab to avoid moisture loss into the ground.
3. Cool the reinforcing steel as this may accentuate temperature rise in the concrete promoting rapid drying and thermal shock which causes cracking as the concrete cools.

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 quickly place the concrete.
5. Discharge the concrete from the agitator quickly, excessive agitation will induce temperature rise.
6. Whilst it is important to vibrate, do not over-vibrate, 5 -15 seconds should give sufficient compaction.
7. If possible erect wind barriers and shade to reduce direct effects of wind and sunlight.
The evaporation rate of moisture from freshly placed concrete increases four times when wind speed reaches only 16km/h on a hot day.

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CURING

It is important to start curing as soon as practicable, there are a few methods to prevent premature moisture loss and rapid drying:

1. The loss of moisture due to evaporation can be minimized by using spray-on curing compounds such as MasterKure 3 during the finishing process. It is important to follow the manufacturer's instructions to achieve maximum effectiveness.
2. The use of wet coverings such as hessian until final finishing will reduce moisture loss.
3. Once final finish is achieved the use of a fine spray or fog which ensures the surface is kept continuously moist also helps reduce the concrete temperature as well as supplying additional moisture.

4. Ponding is an effective curing technique where damming and flooding of the concrete surface again reduces the concrete temperature as well as supplying additional moisture.
5. Plastic sheeting forms an effective barrier against moisture loss and minimizes drying. It should be well secured to prevent lifting, particularly in windy conditions.
6. Leave formwork in place to prevent moisture loss from the sides of the slab.
7. Curing should be left in place as long as practicable.
Keeping concrete moist is the most effective way of increasing its ultimate strength and durability.

DO NOTS!

1. If using a fine spray or fog when curing the concrete slab do not allow the slab to dry off and re-wet. This will cause the temperature of the surface of the concrete to rise and fall, cracking can, and does, result.

2. When placing concrete in hot weather, it is sometimes tempting to ask for water to be added to the mix. Excessive water added to the mix can destroy the quality of placed concrete. Diluted concrete will settle more than usual, and the water content bleeds to the top and evaporates quickly. Cracking can, and does, result.

Whilst not recommended, concrete placed in hot dry weather can be of the highest quality. The best results will be obtained by correct preparation, taking proper precautions and curing techniques.