

CURING OF CONCRETE



WHY CURE CONCRETE?

Strength, solidity and durability are improved by curing the surface and surface zone of the concrete and keeping it at the right temperature and moisture conditions.



TEMPERATURE:

The strength development of concrete is determined by the rate of hydration which is in part controlled by the temperature. Higher temperatures will increase the strength of the concrete while lower temperatures mean it will take longer to gain strength and delay construction.

The temperature of placed and compacted concrete must not fall below 5°C:

- Temperatures <5°C slow the hydration process down.
- Temperatures <2°C will cause the concrete to freeze.
- Temperatures <0°C will cause the hydration process to stop and freeze.



TIP: To avoid thermal cracking reduce the temperature between the surface core and the outer surface of the concrete to an acceptable level while the concrete gains strength.



CURING DURING THE BLEEDING OF CONCRETE:

Water Curing:

- Use a high-pressure (atomised) mist or fog spray right up to the initial set.
- Spray continuously above the concrete surface, creating a 100% humidity zone which is in contact with the exposed concrete surface.



WARNING: The excessive use of water may prevent other trades from operating. Complications may occur if there is an excess amount of water.

Plastic Sheeting

- Applied with precision after the initial striking of concrete plastic sheeting is suitable for most elements.
- Ensure the plastic sheeting is in close contact with the concrete to ensure an effective outcome.



WARNING: Early application on flat slabs may damage surface finish.



MOISTURE:

Lack of moisture is mainly caused by sunshine, wind and humidity. Curing concrete protects it from shrinkage stresses. Plastic shrinkage cracks mean the evaporation rate exceeds the rate of bleeding. To achieve ultimate concrete strength maintain moisture for 28 days.



CURING CONCRETE. WHEN AND HOW?

Curing concrete is divided into two phases:

1. Cure prior to the initial set and apply continuously during the bleeding of the concrete.
2. Cure after the initial set and before the final surface finishing.



REMEMBER:

The bleeding of the concrete occurs up until the surface changes from shiny to matt. Once the concrete is matt surface finishing can begin and curing compounds can be applied.



CURING AFTER SETTING/FINAL SURFACE FINISHING:

Some cases require a continuation of curing methods:

- Leaving formwork in place:
 - i) Prevents evaporation from the concrete surface which remains in contact with the formwork.
 - ii) Other surfaces should be covered with plastic sheeting.
 - iii) Once removed the curing method must be implemented.
- Curing Compounds:
 - i) Used when concrete requires further treatment.
 - ii) Other surfaces should be covered with plastic sheeting.
 - iii) Membrane-forming liquids are sprayed onto the concrete surface to prevent the loss of moisture.



WARNING:

Some compounds will interfere with paints, plasters, emulsions, sealants, adhesives and renders.

