

Why you need to cure Concrete

Temperature and moisture loss are the main culprits behind the outcome of finished concrete. When using concrete, three things should be achieved:

1. Strength – Full potential of mix used
2. Looks – Homogenous appearance
3. Durability – Long lasting

Concrete poured in temps below 32 F may freeze. If this happens in the first 24 hrs, your concrete may not be salvageable. Concrete above 80 F will set very quickly. It may gain strength but it will lose durability. How the concrete is handled while it's fresh will determine whether it lasts 5 years or 20.

Curing works by preventing moisture loss and helping to maintain temperature (Higher than 32F and below 80F).

Moisture Loss:

Concrete is most vulnerable in the plastic state. The plastic state is when the fresh concrete is first poured and has a greenish tint. This can last from 1 to 3 days depending on weather and mix used. This is a critical point when you need to keep the outside from drying before the core has a chance to set. A load of concrete can only be in the mixer truck for about 2 hours from the time it's batched. The materials are mixed in the truck, but full hydration of the cement and bonding of the aggregates happen during the plastic state. While this reaction is happening, some water escapes and is pushed to the top. The condensation that hits the surface is referred to as bleed water. It's normal and necessary to have bleed water and is part of the set process, but without curing, it can evaporate too quickly and cause the slab to dry out. Dry concrete is essentially dead at that point. All reactions stop and there is no fix for it.

Temperature:

Temperature has a huge impact on the finished product. Measures are taken at the plant when concrete is first batched. During hot days concrete sets faster and can be take care of by using ice water and with the use of retarding admixes to slow set time. Curing during hot weather helps reduce bleed water evaporation. A common issue in hot weather is surface cracking due to bleed water evaporating too quickly. Using fibers may reduce the cracking, but is not a substitute for proper curing.

During cold weather, water and materials need to be heated and an accelerator may be added to speed up the set time. Cold weather concrete is batched using hot water and heated materials to make temp. Curing helps keep



heat from escaping with the bleed water and retaining high enough temps to set. Removing the fly ash during cold weather can help speed things up.

Hot or cold, concrete in the plastic state needs to be protected from wind. Curing can be done in one of three ways; covering with wet burlap or plastic sheeting, fogging, or with a chemical cure.

