

## HOT WEATHER CONCRETE

### WHAT is Hot Weather?

Hot weather may be defined as any period of high temperature, in which special precautions need to be taken to ensure proper handling, placing, finishing and curing of concrete. Hot weather problems are most frequently encountered in the summer, but the associated climatic factors of high winds, low relative humidity, and solar radiation can occur at any time, especially in arid or tropical climates. Hot weather conditions can produce a rapid rate of evaporation of moisture from the surface of the concrete and accelerated setting time, among other problems. Generally, high relative humidity tends to reduce the effects of high temperature.

### WHY Consider Hot Weather?

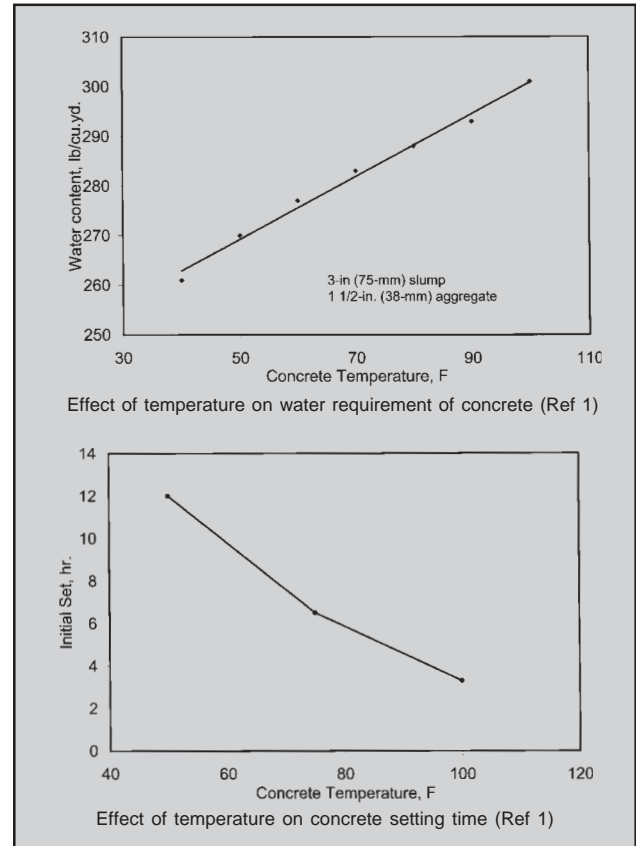
It is important that hot weather be taken into account when planning concrete projects because of the potential effects on fresh and recently placed concrete. High temperatures alone cause increased water demand, which, in turn, will raise the water-cement ratio and result in lower potential strength. Higher temperatures tend to accelerate slump loss and can cause loss of entrained air. Temperature also has a major effect on the setting time of concrete: concrete placed under high temperatures will set quicker and can, therefore, require more rapid finishing. Concrete that is cured at high temperatures at an early age will not be as strong at 28 days as the same concrete cured at temperatures in the range of 70°F (20°C).

High temperatures, high wind velocity, and low relative humidity can affect fresh concrete in two important ways: the high rate of evaporation may induce early plastic shrinkage or drying shrinkage cracking, and the evaporation rate can remove surface water necessary for hydration unless proper curing methods are employed. Thermal cracking may result from rapid drops in the temperature of the concrete, such as when concrete slabs or walls are placed on a hot day followed by a cool night. High temperature also accelerates cement hydration and contributes to the potential for thermal cracking in massive concrete structures.

### HOW to Concrete in Hot Weather

The key to successful hot weather concreting is:

1. recognition of the factors that affect concrete; and
2. planning to minimize their effects.



Use proven local recommendations for adjusting concrete proportions, such as the use of water reducing and set retarding admixtures. Modifying the mixture

**NOTE:**  
Please refer  
to page 169  
for more  
informations