

### **Crack minimization model for hot weather concreting**

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**Abstract:** This paper addresses fundamental issues of influence of elevated temperature and moderate wind speed on mass transport properties of concrete including moisture diffusivity  $D$  and convective moisture transfer coefficient  $h_f$ . Using a combined experimental-numerical approach, the influence of varying temperature  $T$  (in the range of  $35^{\circ}\text{C}$ - $70^{\circ}\text{C}$ ) and wind speed  $w$  (of maximum intensity  $22\text{ km/h}$ ) on moisture loss, moisture diffusivity, and convective transfer coefficient in concretes of three water-cement ratios is investigated. Based on this data, certain invariant functional forms are postulated for variables of interest including free shrinkage, moisture loss, average moisture diffusivity, wind speed, ambient temperature, and water-cement ratio, leading to the development of a minimum crack mix design model.