

# Effect on Water Reduction, Air Entrainment and Setting Time by Daracel<sup>®</sup> Accelerator

## Water Reduction

Daracel<sup>®</sup> meets the requirements of ASTM C494, Type E, accelerating and water-reducing admixture. Over the range of 750–1100 mL/100 kg (12–16 oz/100 lbs) of cement addition rate, Daracel will provide 5–10% water reduction, depending on the temperature, cement factor, cement composition, etc. This water reduction, in combination with the chemical control of the cement hydration, produces strength increases in cold-weather concrete as high as 165% in the early life of the concrete and up to 125% at 28 days. While higher dosages such as 1500–2100 mL/100 kg (24–32 oz/100 lbs) of cement do not substantially increase water reduction, some increase may be obtained. Significant increases in high-early strengths are gained at the 1500–2100 mL/100 kg (24–32 oz/100 lbs) dosage rate due to increased rate of cement hydration.

## Air Entrainment

Daracel does entrain some incremental air. On the average, and over the recommended addition rate range, this value will be close to 1.5%. When added in conjunction with an air-entraining admixture, the two appear to act synergistically to produce more than the anticipated amount of air. Therefore, it is recommended that the normally used addition rate of the air-entraining admixture be reduced approximately 25% when used in concrete that is admixed with Daracel. With increasing addition rates of Daracel, the amount of air-entraining admixture may need to be proportionally reduced.

## Setting Time

Above 10 °C (50 °F) concrete temperature, Daracel, used at a dosage rate of 750–1100 mL/ 100 kg (12–16 oz/100 lbs) of cement will produce approximately 25–40% set acceleration. Addition rates in excess of this range may give some increase in acceleration; however, the degree of set acceleration is not directly proportional to the addition rate.

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