CFBC Ash Hydration Studies

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ABSTRACT

Hydration studies on ashes from a full-scale 165 MW_e CFBC boiler have shown that the acetone technique to prevent hydration in stored samples is relatively effective, only allowing some slight degree of hydration over days, in the presence of excess water and the rate of reaction has been quantified. In the presence of large excesses of water sufficient to control temperature increases, the degree of bulk mixing has no effect on the hydration process, which is shown to be relatively slow at ambient conditions, taking hours to complete. Finally, the effect of salt addition on hydration has been shown to be negligible at the low levels typical of wastewater, but there are effects at ion concentrations typical of seawater and these effects have been examined. This work suggests that experience gained from lime hydration should be applied with caution to studies on hydration of CFBC ashes.