Drinking water standards, testing and treatment

Abstract

Fly ash is a fused residue of clay minerals present in coal. The high temperature generated when coal burns in thermal power plants, transforms the clay minerals in coal powder into a variety of fused fine particles of mainly aluminium silicate composition. Fly ash can be used in Portland cement concrete to enhance the performance of the concrete. Fly ash can be used for construction of road and embankment. This utilization has many advantages over conventional methods. Fly ash is most commonly used as a
pozzolan in PCC applications.

FLY ASH CONTRIBUTES TO CONCRETE DURABILITY AND STRENGTH

Durability is the ability to maintain integrity and strength over time. Strength is only a
measure of the ability to sustain loads at a given point in time. Two concrete mixes with equal cylinder breaks of 4,000 psi at 28 days can vary widely in their permeability, resistance to chemical attack, resistance to cracking and general deterioration over time all of which are important to durability. Cement normally gains the great majority of its strength within 28 days, thus the reasoning behind specifications normally requiring determination of 28-day strengths as a standard. As lime from cement hydration becomes available (cements tend to vary widely in their reactivity), it reacts with fly ash. Typically, concrete made with fly ash will be slightly lower in strength than straight cement concrete up to 28 days, equal strength at 28 days, and substantially higher strength within a year‘s time. Conversely, in straight cement concrete, this lime would remain intact and over time it would be susceptible to the effects of weathering and loss of strength and durability.