

1.0 Introduction

Fly ash is a by-product of coal based thermal power stations. In power stations, pulverized powdered coal is fed into boiler furnace, after burning, the light and fine particles fly along with hot flue gases which are passed through Electrostatic Precipitators (ESP). In ESP these particles are arrested and taken out pneumatically to a storage silos. The particles collected in ESP are called fly ash. The large particles of the residue fall down at the bottom of the furnace and is known as Bottom ash.

The unutilized fly ash and bottom ash or both, mixed together in suitable proportion of water to make it in slurry form and transported (sluiced) for deposition in large ash ponds wherein excess water gets drained away. This deposited ash in ponds is called as Pond Ash. Fly ash and bottom ash or both mixed in any proportion and deposited in dry form in the shape of a mound is termed as Mound Ash.

The chemical and mineralogical properties of fly ash depend on the characteristics and composition of coal fed in to boiler furnace. Basically it contains large parts of Silica (SiO_2), Alumina (Al_2O_3), Iron Oxide (Fe_2O_3) and small quantities of other oxides like CaO, MgO, MnO, Na_2O , K_2O , SO_3 in the form of minerals such as magnetite, hematite, quartz, mulitte and free calcium oxide etc. Carbon & combustible materials also remain left (in very small quantity) and is called unburnt carbon. Unburnt carbon in fly ash is much less than in bottom ash whereas pond ash contains more unburnt carbon than fly ash.