# Swell Characteristics of Soils Blended with Fluidized Bed Combustion Bed Ash

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ABSTRACT:

There is a level of confusion that exists regarding the mineral ettringite and its role in the swelling and heaving of soils blended with fluidized bed combustion (FBC) bed ash. Ettringite in its pure form is a hydrous calcium sulfoaluminate mineral with the formula $Ca_6Al_2(SO_4)_3(OH)_{12}•26H_2O$. Ettringite is actually a strong cement agent. For example, gypsum (calcium sulfate dehydrate) is milled in with ordinary Portland cement clinker to prevent flash set induced by the Tricalcium aluminate phase to form ettringite, which moderates the set and is responsible for some of the important early strength of Portland cement based concrete. Calcium sulfoaluminate cement, or CSA, develops essentially all of their strength from ettringite. Ettringite by and of itself is not expansive and the presence of ettringite in any soil or concrete is not, in itself, evidence of swelling. This paper will review the swelling mechanisms that result when blending soil with FBC spent bed material as a source for soil stabilization.

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