

Incorporation of Municipal Solid Waste Incineration Fly Ash and Bottom Ash in Non-structural Concrete

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Incorporation of solid waste materials such as municipal solid waste incineration (MSWI) fly ash and bottom ash into concrete is a prospective solution for future disposal of municipal solid waste. The chemical compositions and particle characteristics of MSWI fly and bottom ashes have been investigated by X-ray diffraction (XRD), inductively coupled plasma (ICP) emission spectrometry, scanning electron microscopy (SEM) and laser particle size analyzer in this paper. The compressive strength of concrete has been investigated in order to develop optimum mix design for non-structural concrete incorporating MSWI fly/bottom ash. The leaching of heavy metals and dioxin/furan level of concrete with MSWI fly/bottom ash have been studied and assessed by the criteria of US Environmental Protection Agency (EPA) and other organizations for the purpose of safe application. Test results show that cement can be used to solidify and stabilize the heavy metals and dioxin/furan in MSWI fly/bottom ash effectively.