Finite Element Modeling of the Mechanical Behavior of Municipal Solid Waste Incineration Bottom Ash with the Mohr-Coulomb Model

Authors : Le Ngoc Hung, Abriak Nor Edine, Binetruy Christophe, Benzerzour Mahfoud, Shahrour Isam, Patrice Rivard

Abstract : Bottom ash from Municipal Solid Waste Incineration (MSWI) can be viewed as a typical granular material because these industrial by-products result from the incineration of various domestic wastes. MSWI bottom ashes are mainly used in road engineering in substitution of the traditional natural aggregates. As the characterization of their mechanical behavior is essential in order to use them, specific studies have been led over the past few years. In the first part of this paper, the mechanical behavior of MSWI bottom ash is studied with triaxial tests. After analysis of the experiment results, the simulation of triaxial tests is carried out by using the software package CESAR-LCPC. As the first approach in modeling of this new class material, the Mohr-Coulomb model was chosen to describe the evolution of material under the influence of external mechanical actions.

Keywords : bottom ash, granular material, triaxial test, mechanical behavior, simulation, Mohr-Coulomb model, CESAR-LCPC
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020