

The Improvement of the Mechanical Stability of Bituminized Waste Form

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Abstract

Bituminization exhibits a volume reduction and bituminized waste forms have a high leach resistance in comparison to cement-based wastes, however their mechanical stability is unacceptable. This paper reports a method of producing bituminized waste forms, having dimensional and mechanical stability like cement-based waste forms, as well as maintaining their own merits. The bitumen used in sample preparation is straight-run distillation bitumen of penetration 60/70. The waste used for the experiment was bottom ash generated from a hazardous wastes incinerator. An addition 1~5 wt% of sulfur was unable to increase the mechanical stability. Bitumen waste forms with ash contents of 40, 50, and 60 wt%, adding of spent PE(spent agricultural polyethylene film) by 5, 4, 3 wt% or more, respectively, resulted in maintaining dimensional and mechanical stability. The compressive strength of waste forms containing ash content of 40 wt% and waste PE 20 wt% exhibited compressive strength of 3447 kPa (500 psi), and softening point of 135 °C.