



*“Gheorghe Asachi” Technical University of Iasi, Romania*



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## **ANALYSIS OF STRENGTH OF CEMENT-SOLIDIFIED LEACHATE SLUDGE IN LANDFILLS**

**Shuxiang Song<sup>1</sup>, Chao Zheng<sup>1</sup>, Nan Zhang<sup>1</sup>, Shihua Liang<sup>2\*</sup>**

<sup>1</sup>*Guangzhou Grantop Environment Service Co., Ltd, Guangzhou, Guangdong Province, 510000, China*

<sup>2</sup>*School of Civil and Transportation Engineering, Guangdong University of Technology, Guangzhou 510006, China*

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### **Abstract**

In this study, leachate sludge from landfills was used as the research object. Ordinary silicate cement and sulphate aluminate cement were selected as curing agents to investigate the effect of various cement types and cement blending amounts and different waste incineration bottom slag blending amounts on the curing of leachate sludge. The curing effect of the two kinds of cement on sludge was studied through indoor macroscopic and microscopic tests. Results show that the effect of ordinary Portland cement solidified leachate sludge is not ideal, and severe settlement deformation occurs. The early strength of leachate sludge after solidification by sulphate aluminate cement is not obviously improved. The strength decreases first and then improves with the increase of cement content. At the later stage of curing, the strengths of the samples with different water-cement ratios increase with higher cement content. The engineering properties of the samples with different cement contents meet the requirements of the landfill after a curing period of 28 days. Thus, using sulphate aluminate cement to solidify landfill leachate sludge is feasible. The curing effect of the bottom slag as an auxiliary curing agent is important to consider, and the best effect of stimulating the hydration reaction can only be achieved when the bottom slag is mixed at a high level, with the peak lateral limit strength being reached at 20% of the bottom slag.

*Key words:* leachate sludge, ordinary Portland cement, sulphate aluminate cement, unconfined compressive strength, waste incineration bottom ash

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\* Author to whom all correspondence should be addressed: e-mail: shihua\_l@gdut.edu.cn