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Characterization of Compaction and Gas Transport Properties for Solid Waste Samples

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Compaction of waste at a landfill is the main factor that controls short-term density, hence, landfill space requirement. Conversely, it can lead to deteriorate the gas transport and hydraulic characteristics of waste due to change of pore structure and eventually, resulting on long time required for stabilization. The change of Initial moisture content of waste may control its dry density during compaction similar to soil. Hence, in this study, compaction characteristics of different waste materials were studied. Then, effect of different compaction level owing to alteration of initial water content during compaction on gas transport and hydraulic properties such as gas diffusivity (Dp/D0), air permeability (ka), and saturated hydraulic conductivity (ks) were studied. The result suggested that compaction characteristics of landfill waste fully mixed with soil is similar to soil and the variations of hydraulic conductivity of waste materials are similar to granular material. However, landfill waste exhibits higher water blockage effect and tortuous pore network compared to soil giving less gas transport parameters.

キーワード: Compaction characteristics, Gas diffusivity, Air permeability, Saturated hydraulic conductivity
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