

# Influence of activated sewage sludge, parcel packaging plastic and face mask on hydraulic properties as landfill barrier

## Abstract

This study aims to investigate the hydraulic properties of activated sewage sludge (ASS), parcel packaging plastic (PPP) and face mask waste (FM) as an alternative to the landfill barrier. The performance of ASS alone or mixed with plastic waste as a landfill liner or landfill cover is investigated by analysing the falling head test. The experiment showed that ASS alone gains the lowest permeability ( $\approx 2 \times 10^{-5}$  cm/s), followed by the mixture of ASS:PPP and ASS:FM. The chemical characterization of ASS supports the finding on the hydraulic properties performance of ASS, which had almost similar properties to the clay liner, a conventional landfill barrier material. The experiment proves that the proposed materials are unable to meet the properties of the bottom liner, however, it can instead be used as the daily cover or final cover material of solid waste at landfill. The use of waste material can help manage the waste, thus reducing the environmental burden of this waste.

## Keywords

Face Mask; Hydraulic Conductivity; Landfill Barrier; Permeability; Plastic Waste