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Gas transmissivity at the interface of a geomembrane and the geotextile cover of a partially hydrated geosynthetic clay liner

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Source: GEOSYNTHETICS INTERNATIONAL **Volume:** 14 **Issue:** 5 **Pages:** 316-319 **Published:** OCT 2007

Times Cited: 5 **References:** 22 [Citation Map](#)

Abstract: The migration of gas through a geomembrane overlying a geosynthetic clay liner in a composite landfill cover is primarily a result of the flow through defects in the geomembrane. The nature of the contact conditions between the GCL and the geomembrane is of paramount importance if the leakage rate of a GCL/ GM composite barrier with a defect in the geomembrane needs to be assessed effectively. The present paper reports on interface gas transmissivity measured in a specially made cell. It was found that the gas transmissivity ranged between $2 \times 10(7) \text{ m}(2)/\text{s}$ and $4.5 \times 10(-7) \text{ m}(2)/\text{s}$ for the range of moisture content and differential gas pressure investigated. This corresponded to a reduction of approximately 40% in the gas transmissivity when the moisture content increased from essentially dry to 120%.

Document Type: Article

Language: English

Author Keywords: geosynthetics; gas; geosynthetic clay liners; geomembranes; interface flow; transmissivity

KeyWords Plus: WET-DRY CYCLES; COMPOSITE LINER; PERMEABILITY; FLOW; GCLS; EXCHANGE; BENEATH; LEAKAGE

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Publisher: THOMAS TELFORD PUBLISHING, THOMAS TELFORD HOUSE, 1 HERON QUAY, LONDON E14 4JD, ENGLAND

Cited by: 5

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ISSN: 1072-6349

DOI: 10.1680/gein.2007.14.5.316

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