

TL - Termite Resistance of PREPRUFE® & BITUTHENE® waterproofing membranes

Technical Letter

PREPRUFE® & BITUTHENE® membranes are composite waterproofing membranes comprising of High Density Polyethylene (HDPE). HDPE was chosen for its excellent mechanical properties and long term durability.

A number of studies have been conducted on long term durability of HDPE and it has been shown that HDPE is one of the most inert materials used for the geomembrane systems.

In addition to the long term durability studies of HDPE for its mechanical properties, a number of studies have been conducted on HDPE or HDPE composite membranes to evaluate its termite resistance.

In a 2015–2016 EPA conducted a study¹, titled Rice Husk: A sustainable building material for Philippines, investigated by, Kawai Tam, Michael Rust and Suveen Mathaudhu at the University of California Riverside. The study was to determine the termite resistivity by subjecting the material to a force feeding experiment with 50 worker termites. Percent weight loss of the material and termite mortality rates were calculated as a result of forced feeding.

Pure HDPE had low mortality rate (32%) and near zero percent weight loss. This means the termites do not feed on HDPE and may have been cannibalizing to stay alive.

In an additional study by Shang et al. (2012)², the authors used pure HDPE as a control for their plastic wood composites. Pure HDPE showed no mass loss, low mortality rate and no visible sign of damage by the termites.

Based on these studies as well as many other literature articles on the termite resistance of HDPE, it is well documented that pure HDPE is resistant to the damage by termites and termites do not feed on the HDPE.

1. Final Report: Rice Husk: A Sustainable Building Material for the Philippines https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract_id/10532/report/F

2. Shang et al. (2012). High-density polyethylene-based composites with pressure-treated wood fibers, "BioResources 7(4), 5181–5189"

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