NCON-PGR_2022_220

Thermal Investigation of the Plastic Brick Made Up from Plastic Waste

Nuranis Yasira, Mohammad Aidil Shafiq, Nurfatin Husna *and* ***Fatin Zafirah****

Faculty of Civil Engineering, Engineering Environment and Energy,University Malaysia Pahang, 26300, Gambang, Pahang, Malaysia

**Corresponding author*:fatinzafirah@ump.edu.my

Abstract

The study intends to investigate the practicability of reusing plastic waste as an alternative to traditional bricks as eco-bricks. The study compares the thermal performance of buildings made of traditional bricks and buildings made of plastic waste. The researchers created three sample bricks digitally, each with 5%,10%, and 15% HDPE in a plastic brick. The energy performance of the brick-filled plastic bottle walls was then measured on-site using a chamber. It was tested using a thermocouple connected to a data logger T08 software, to assist in building environmental analysis and to compare the efficiency of three materials: plastic brick, standard brick, and concrete brick. The findings revealed that building with plastic waste bottles has some environmental advantages over standard brick. It reduces heat gain and improves thermal comfort. More research and experiments are encouraged as the plastic contaminant problem becomes more important in modern societies and threatens the ecological balance.

Keywords: Environment; Construction; Technology; Energy; Plastic waste; Thermal performance.