

ORIGINAL RESEARCH**PAVING BLOCK FROM RESIDUE OF PS/LDPE/PP PLASTIC PYROLYSIS MIXED WITH PALM OIL BOTTOM ASH (POBA)**Heriyanti¹ | Lenny Marlinda*² | Sutrisno¹ | Rahmi¹ | Ratri Hanifah³¹Dept. of Chemistry, University of Jambi, Jambi, Indonesia²Dept. of Industrial Chemistry, University of Jambi, Jambi, Indonesia³Dept. of Chemical Engineering, University of Jambi, Jambi, Indonesia**Correspondence**

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Abstract

The residue of plastic mixture pyrolysis can be used for making paving blocks. Fibers in plastics can be used as an adhesive against other materials and can increase the strength of paving blocks. Palm oil bottom ash (POBA) was added to replace the role of cement, which has the same content as cement, i.e., silica (Si). This study aimed to see the effect of palm oil bottom ash and sand added to the residue of plastic mixture pyrolysis (i.e., PS/LDPE/PP) on the quality of paving blocks. The paving block as a test object was made by combining two materials. The residue of plastic mixture pyrolysis and LDPE plastic melt was mixed with a mass ratio of 70:30%, referred to as material I. Furthermore, palm oil bottom ash and sand were mixed with a mass ratio of 100%, 80%, 60%, 40%, and 20%, referred to as material II. The ratio of ingredients I and II used was 1: 1. Testing of the quality of paving blocks includes a compressive strength test and a water absorption test. The test results showed that the ratio of PS/LDPE/PP mixture (50:25:25) had a compressive strength of 104.1 kg/cm² or 102.08 MPa and the water absorption of 2.4% at the ratio of palm oil bottom ash and sand at 80:20%. Adding palm oil bottom ash can reduce the paving block's compressive strength, and the residue's LDPE content can affect water absorption because of its chemical structure properties. Therefore, a reduction in the amount of LDPE residue is needed to obtain optimal water absorption values in paving blocks and add palm oil bottom ash. Based on this compressive strength in this study and SNI 03-0691-1996, these paving blocks can be used for gardens.

KEYWORDS:

LDPE, Palm Oil Bottom Ash, Paving Block, Plastic, Pyrolysis