

## **Feasibility of utilizing waste polyethylene terephthalate as replacement in asphalt binder mixture**

### **ABSTRACT**

The feasibility of utilizing waste material for road construction is encouraging as it can decrease waste material harmful to the environment. Hence, a more sustainable method and a meticulous study of the available admixtures utilized to substitute standard asphalt binders with waste material must be conducted. However, there are several concerns and doubts about the real situation arising from the chemical and physical traits, as well as the mechanical performance issuing from the integration of waste material within the asphalt pavement to alleviate roads surface's permanent deformation. This investigation was carried out to study physical improvements made on ACW-14 bitumen by adding waste Polyethylene Terephthalate (PET) to serve as a partial replacement for bitumen content compared to normal, conventional 80/100 bitumen physical and rheological behavior. PET percentage added to the bitumen content was 10%, 8%, 6%, 4% and 2% of optimum bitumen content weight. The outcomes concluded that the best performance of bitumen on its density, VTM, VFB, flow, stability, and stiffness was achieved when 5.8% of Optimum Modified-Bitumen Content using PET. All the results obtained have been compared according to JKR Standards results, and the conclusion has fulfilled these requirements.