POTENTIAL USE OF POLYETHYLENE AS A MODIFIER FOR ASPHALT PAVEMENT

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Bachelor of Engineering (Hons) Civil (Infrastructure)
UNIVERSITI TEKNOLOGI MARA
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By

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DECLARATION OF THE CANDIDATE

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other institution or non-academic institution for any degree or qualification

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Increasing number and recurrence of passing vehicles, especially heavy vehicles such as bus and truck which have higher gross weight than passenger cars will contribute to surface distress. Besides, the amount of waste plastic also expected to be increased. Sadly, most of the waste produced today will stay on the earth for a long time as it is non-biodegradable products. Due to these problems, this study is focused on the potential use of waste plastic (polyethylene) in asphalt pavement. The first objective of this study is to determine the strength and stability of modified aggregate in comparison with conventional aggregate. Second, to evaluate the Marshall Properties of the modified bituminous mixture and conventional bituminous mixture by using Marshall Mix Design. The last objective is to compare the percentage of weight loss of Cantabro Loss Test between the modified bituminous mixture and conventional bituminous mixture. The modified mixture used 1% of granules form of High Density Polyethylene (HDPE) and Low Density Polyethylene (LDPE) by weight of aggregate as the additive. This study used a dry mix process to coat the aggregate with polyethylene. Both mixtures have met with JKR Specification in term of its properties and performance. The result showed that the modified mixtures are better in strength and stability than unmodified mixtures. Therefore, it is suitable to be applied in road construction.

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