

# PERFORMANCE OF HOT MIX ASPHALT USING FINE CRUMB RUBBER

Norhidayah Abdul Hassan, Fahmi, Mohd Rosli Hainin, Haryati Yaacob, Nordiana Mashros

Faculty of Civil Engineering, University Teknologi Malaysia, 81310 UTM Skudai, Johor, Malaysia

[norhidayah\\_utm@yahoo.com](mailto:norhidayah_utm@yahoo.com), [roslihainin@gmail.com](mailto:roslihainin@gmail.com), [yaacob.h@gmail.com](mailto:yaacob.h@gmail.com),  
[mnordiana@utm.my](mailto:mnordiana@utm.my)

**Abstract:** *This paper presents a study of laboratory evaluation on the performance of hot mix asphalt (HMA) using crumb rubber as an additive. Crumb rubber was identified to have a potential of becoming a modifier in HMA mixes. In this project, a small portion of fine crumb rubber (0.3mm to 0.6mm) recycled from discarded truck tires was used to modify asphalt mixes using Marshall mix design. The fine crumb rubber was incorporated into asphalt mixes by using dry process method which refers to technology that mix the crumb rubber with the aggregate prior to mixing it with asphalt binder. Two aggregate gradations were considered under this investigation, dense graded (asphaltic concrete with 14mm nominal maximum aggregate size-AC14) and gap graded (stone mastic asphalt with 14mm nominal maximum aggregate size-SMA14). For each gradation, the percentages of crumb rubber added were varied from 1 to 3% by weight of the total aggregates. Then, samples were prepared and tested for rutting characteristic as performance indicator. Based on the result, it was observed that the performance of HMA mixes was significantly affected with the addition of crumb rubber. Rubber modified asphalt mixes were found to have greater resistance to rutting potential compared to conventional mix. The results indicate that 2% of crumb rubber added gave better overall performance.*

**Keywords:** Rubber modified asphalt concrete; Crumb rubber; Dry process; Rutting