

Influence of sawdust ash as filler in asphalt mixture

Siaw Ing Nicole Liew^a; Cui Ming Ng^a; Ramadhansyah Putra Jaya^a; Muzamir Hasan^a; Khairil Azman Masri^a; Zul Fahmi Mohamed Jaafar^b; Norhidayah Abdul Hassan^c; Nordiana Mashros^c

^a Department of Civil Engineering, College of Engineering, Universiti Malaysia Pahang, Kuantan, Gambang, 26300, Malaysia

^b School of Civil Engineering, Universiti Sains Malaysia (Engineering Campus), Penang, Nibong Tebal, 14300, Malaysia

^c Faculty of Engineering, School of Civil Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru, 81310, Malaysia

ABSTRACT

Using saw dust as a filler in asphalt mixture would go a long way toward alleviating the boycott of certain building enterprises' use of mineral filler in asphalt mixture, as well as decreasing the impact on littering and emissions in the environment. In this study, the performance of Sawdust Ash (SDA) as filler in asphalt mixture was investigated and mainly focused on the addition of sawdust ash in following the order of 0% as control, 3%, 6%, and 9% by bitumen weight. The bitumen used in this study was 60/70 penetration grade. The purpose of this study was to study the effect of sawdust ash on the engineering characteristics of concrete asphalt. Different percentages of sawdust ash were mixed into bitumen using a high shear mixer. The Marshall Stability test was carried out to determine the optimum bitumen content of the mixture. The performance was evaluated through stability and volumetric properties, modulus of resilience and indirect tensile strength. It can be seen that the different percentage of sawdust ash as filler in Hot Mix Asphalt had noticeably different effects on the performance of modified mixture. The added of sawdust ash as a filler in HMA was not enough improvement to the performance of asphalt pavement as the performance of conventional mixture is more stable than modified mixture.

KEYWORDS

Saw dust ash; Asphalt mixture; Road construction; Road engineering

ACKNOWLEDGEMENT

The support provided by the Malaysian Ministry of Higher Education and Universiti Malaysia Pahang in the form of a research grant vote number PGRS2003172 for this study is highly appreciated.