

ABSTRACT

Disposed coal ash is resulted from residual of coal refinery process and becomes environmental impact issues, because the residue of coal combustion results in SO₂, NO₂ and fly ash. This research was conducted to obtain the maximum utilization of fly ash as pavement materials especially in Hot Rolled Sheet Wearing Course (HRS-WC) mixture.

This research was conducted with adding fly ash as the additive in modified asphalt in Hot Rolled Sheet Wearing Course (HRS-WC) mixture. This research was conducted with creating modified asphalt with fly ash variations: 1%, 3% and 5%. The modified asphalt was tested with penetration test, softening point test, specific gravity test and viscosity test to obtain the characteristics of modified asphalt. This research was conducted with 108 specimens with fly ash variations: 0%, 1%, 3% and 5%. Marshall Method was used to determine the optimum asphalt content each of variation of fly ash. The specimens were conducted with Marshall test and Indirect Tensile Strength test to obtain the density-voids, stability, and Tensile Strength Ratio (TSR) value.

The results of this research show the characteristics of modified asphalt with the fly ash variations were 1%, 3% and 5%; the penetration values were 58.8, 56.4, and 54.6, respectively; the softening point values were 48.5%, 48.75% and 49.25%, respectively; the Hot Rolled Sheet Wearing Course mixture characteristics with fly ash variations were 0%, 1%, 3% and 5%, the optimum asphalt content of each variation was 6.8%, 6.4%, 6.5% and 6.7% respectively. With the standard 0.5 hour immersion, the stability values were 1649, 1422, 1332 and 1276, respectively; the Tensile Strength Ratio (TSR) value at 0% fly ash variation after 24 hours immersion was 99.28% and then after 48 hours immersion was 98.32%; the Tensile Strength Ratio (TSR) value at 5% fly ash variation after 24 hours immersion was 98.84% and then after 48 hours immersion was 96.09%.

key word Toray fly ash, Additive, HRS-WC, Marshall test, ITS test