ABSTRACT

Crumb rubber is the result of recycling used tires that are shredded into small particles and contain various chemical compounds such as Natural Rubber (C_5H_8), synthetic rubber (B), Black Carbon (BC), Zinc Oxide (ZnO), and Sulfur (S). These compounds contribute to characteristics such as durability, elasticity, and resistance to high temperatures and chemicals, making crumb rubber a potential modifier in asphalt mixtures. This study aims to analyze the use of crumb rubber to improve the characteristics and stability of asphalt. The research was conducted using an empirical design through an experimental method by adding crumb rubber to the asphalt mixture across 9 specimens. To evaluate the quality of the test specimens, Marshall testing was carried out based on the Bina Marga 2010 standard. The results of the Marshall test with crumb rubber content of 10%, 15%, and 20% show that the stability values meet the Bina Marga 2010 standard, which requires a minimum of 800 kg, with a recorded stability of 1170.6 kg, flow of 3.4 mm, VITM of 3.28%, VMA of 17.39%, and VFWA of 81.16%. The results indicate that increasing the amount of crumb rubber can reduce the stability of the asphalt.

Keywords : *Pavement, Crumb rubber, Empirical Design, Marshall Stability*