

ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi dampak variasi kadar *fly ash* terhadap stabilitas, fleksibilitas, dan ketahanan campuran aspal porus. Metodologi yang digunakan dalam penelitian ini adalah pengujian eksperimental di laboratorium universitas muhammadiyah jember, termasuk uji Marshall, untuk menentukan kadar aspal optimum (KAO) serta parameter mekanik lainnya seperti stabilitas, flow, Void in Mix (VIM), Void in Mineral Aggregate (VMA), dan Marshall Quotient (MQ). Variasi kadar *fly ash* yang diteliti meliputi 0%, 25%, 50%, 75%, dan 100% sebagai pengganti filler konvensional. Hasil penelitian mengindikasikan bahwa kadar *fly ash* sebesar 25% menghasilkan stabilitas tertinggi, yaitu 835 kg. Sebaliknya, semakin tinggi kadar *fly ash*, semakin meningkat pula porositas, yang berakibat pada penurunan stabilitas campuran. Nilai VIM dan VMA menunjukkan peningkatan sejalan dengan bertambahnya kadar *fly ash*, sedangkan nilai MQ mengalami penurunan setelah kadar 50% meningkat. Oleh karena itu, kadar *fly ash* yang direkomendasikan dalam penelitian ini adalah 25%, karena memberikan keseimbangan terbaik antara stabilitas, fleksibilitas, serta ketahanan terhadap deformasi.

Kata kunci: Aspal Porus, Filler, *Fly Ash*, Marshall, Stabilitas.

ABSTRACT

This study aims to evaluate the impact of variations in fly ash content on the stability, flexibility, and durability of porous asphalt mixtures. The methodology used in this study is experimental testing in the laboratory of Muhammadiyah University of Jember, including the Marshall test, to determine the optimum asphalt content (KAO) and other mechanical parameters such as stability, flow, Void in Mix (VIM), Void in Mineral Aggregate (VMA), and Marshall Quotient (MQ). Variations in fly ash content studied include 0%, 25%, 50%, 75%, and 100% as a substitute for conventional fillers. The results indicate that a fly ash content of 25% produces the highest stability, which is 835 kg. Conversely, the higher the fly ash content, the higher the porosity, which results in a decrease in the stability of the mixture. The VIM and VMA values show an increase in line with the increase in fly ash content, while the MQ value decreases after the 50% content increases. Therefore, the recommended fly ash content in this study is 25%, because it provides the best balance between stability, flexibility, and resistance to deformation.

Keywords: *Filler; Fly Ash; Marshall; Porous Asphalt; Stability.*