

# Analisis Prediksi Kadar Aspal Optimum pada Campuran Aspal Modifikasi Menggunakan Bahan Tambah dengan Proses Basah dan Kering = Analysis of Optimum Asphalt Content Prediction in Modified Asphalt Mixtures Using Additives with Wet and Dry Processes

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## Abstrak

Berdasarkan hasil uji stabilitas dan volumetrik Marshall, kualitas campuran aspal dan agregat ditentukan melalui besar Kadar Aspal Optimum (KAO). Dalam pembuatan sampel, rentang prediksi KAO ditentukan dengan menghitung berdasarkan ukuran fraksi agregat (agregat kasar, agregat halus, dan bahan pengisi) sesuai dengan pedoman Asphalt Institute dan RSNI M-06-2004. Dewasa ini, banyak peneliti yang melakukan pengembangan campuran beton aspal modifikasi menggunakan bahan aditif dengan proses basah atau kering. Penelitian ini dilakukan untuk membandingkan antara model prediksi KAO Asphalt Institute yang tercantum dalam RSNI M-06-2004 dengan model hasil regresi linear penelitian ini; membuktikan pengaruh perubahan proporsi fraksi ukuran agregat terhadap perubahan nilai KAO; dan melakukan analisis terkait perubahan koefisien setiap fraksi ukuran agregat pada model prediksi KAO pada campuran aspal konvensional dan campuran aspal modifikasi. Hasil model regresi linear bahwa fraksi agregat kasar tidak mempengaruhi penentuan nilai KAO, sementara agregat halus dan bahan pengisi memiliki pengaruh. Meningkatnya proporsi agregat halus menyebabkan peningkatan nilai KAO, yang mana pada campuran aspal konvensional lebih signifikan daripada campuran aspal modifikasi. Peningkatan proporsi bahan pengisi dapat meningkatkan nilai KAO pada proses kering, sebaliknya dapat menurunkan nilai KAO pada proses basah.

.....Based on the stability and volumetric Marshall test results, the quality of asphalt and aggregate mixtures is determined by the Optimum Asphalt Content (OAC). In sample production, the predicted range of OAC is determined by calculating based on the aggregate fraction sizes (coarse aggregate, fine aggregate, and filler) according to the Asphalt Institute's guidelines and RSNI M-06-2004. Nowadays, many researchers are developing modified asphalt concrete mixtures using additive materials through wet or dry processes. This study compared the Asphalt Institute's OAC prediction model, as stated in RSNI M-06-2004, with the regression model developed in this research. It aimed to demonstrate the influence of changes in aggregate size fraction proportions on the OAC value and analyze the coefficient changes for each aggregate size fraction in the OAC prediction model for both conventional and modified asphalt mixtures. The linear regression model results showed that the coarse aggregate fraction did not affect the determination of the OAC value. In contrast, the fine aggregate and filler material had an influence. Increasing the proportion of fine aggregate led to an increase in the OAC value, which was more significant in conventional asphalt mixtures than in modified asphalt mixtures. Increasing the proportion of filler material could increase the OAC value in the dry process. However, conversely, it could decrease the OAC value in the wet process.