# PENGARUH PENGGUNAAN *POLIVINYL CHLORIDE* (PVC) SEBAGAI BAHAN TAMBAH PADA CAMPURAN ASPAL (AC-WC) TERHADAP KARAKTERISTIK *MARSHALL*

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## ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh penambahan polimer *Polivinyl Chloride* (PVC) pada campuran aspal AC-WC terhadap karakteristik *Marshall*. Dalam pelaksanaan penelitian ini dilakukan menggunakan metode eksperimental laboratorium, dengan penambahan polimer PVC sebagai bahan tambah pada campuran aspal AC-WC dengan variasi pencampuran sebanyak 1%, 3% dan 5%. Pada tahapan awal pengujian didapat Kadar Aspal Optimum (KAO) sebesar 6,0%. Setelah mendapatkan nilai KAO selanjutnya pembuatan benda uji dengan penambahan polimer PVC sebagai bahan aditif. Benda uji yang telah dicampurkan variasi polimer kemudian dilakukan pengujian *Marshall* dengan perendaman 30 menit. Berdasarkan hasil pengujian dan analisis yang dilakukan menunjukkan bahawa penambahan polimer PVC pada campuran aspal AC-WC dapat mempengaruhi nilai krakteristik *Marshall*. Dengan pengaruh yang ditimbulkan dari penambahan polimer PVC adalah semakin banyak persentase penambahannya maka akan semakin tinggi nilai flow, VMA, dan VFB yang terbentuk. Sedangkan untuk nilai stabilitas, MQ, dan VIM, akan mengalami penurunan seiring dengan semakin banyak persentase penambahan polimer PVC yang digunakan. Dari hasil yang didapatkan nilai stabilitas tertinggi diperoleh pada variasi kadar polimer 1% sebesar 2354 kg, nilai kelelehan (*flow*) tertitinggi pada kadar polimer 5% sebesar 3,83, nilai MQ sebesar 831 kg/mm pada kadar polimer 1%, nilai VIM sebesar 5,77% pada kadar polimer 1%, nilai VMA sebesar 17,48% pada kadar polimer 5% dan nilai VFB memiliki nilai terbesar pada kadar polimer 5% yaitu 75,29%. Berdasarkan data yang di dapat, seluruh variasi polimer PVC yang direncanakan memenuhi nilai Karakteristik *Marshall* sesuai dengan spesifikasi Bina Marga 2018. Kadar polimer terbaik ialah 1% karena memiliki nilai stabilitas tertinggi.

Kata Kunci : Modifikasi, *Polivinyl Chloride*, Bahan Aditif, *Marshall*, Bina Marga

# THE EFFECT OF THE USE OF POLYVINYL CHLORIDE (PVC) AS ADDITIONAL MATERIALS IN THE ASPHALT MIXTURE (AC-WC) ON THE CHARACTERISTICS OF MARSHALL

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## ABSTRACT

This study aims to determine the effect of adding Polyvinyl Chloride (PVC) polymer to the AC-WC asphalt mixture on Marshall characteristics. In the implementation of this research, it was carried out using laboratory experimental methods, with the addition of PVC polymer as an additive to the AC-WC asphalt mixture with mixing variations of 1%, 3% and 5%. In the early stages of testing, the Optimum Asphalt Content (KAO) was obtained at 6.0%. After getting the KAO value, the test object was made by adding PVC polymer as an additive. The specimens that have been mixed with various polymers are then tested by Marshall with 30 minutes of immersion. Based on the results of the tests and analyzes carried out, it is shown that the addition of PVC polymer to the AC-WC asphalt mixture can affect the value of Marshall characteristics. With the effect caused by the addition of PVC polymer, the higher the percentage addition, the higher the flow, VMA, and VFB values formed. As for the value of stability, MQ, and VIM, will decrease along with the increasing percentage of addition of PVC polymer used. From the results obtained, the highest stability value was obtained at 1% polymer content variation of 2354 kg, the highest flow value at 5% polymer content was 3.83, MQ value was 831 kg/mm at 1% polymer content, VIM value was 5.77% at 1% polymer content, the VMA value is 17.48% at 5% polymer content and the VFB value has the largest value at 5% polymer content, which is 75.29%. Based on the data obtained, all planned variations of PVC polymer meet the Marshall Characteristics value according to the 2018 Highways specification. The best polymer content is 1% because it has the highest stability value.

Keywords: Modification, Polyvinyl Chloride, Additives, Marshall, Highways