

## **RINGKASAN**

PENGARUH PENAMBAHAN PLASTIK *POLYETHYLENE TEREPHTHALATE* (PETE) TERHADAP KEKUATAN ASPAL BETON (AC-WC)

(Ondi Pratama Matanari dibawah Bimbingan Dr. Ir. Ermadani, M.Sc. Dan Ade Nurdin, S.T., M.T).

Untuk menaikkan mutu campuran beraspal seperti aspal beton, salah satunya adalah dengan menambahkan bahan tambah (*additive*). Pada penelitian ini menggunakan plastik jenis *Polyethylene Terephthalate* (PETE) sebagai bahan tambah.

*Polyethylene Terephthalate* (PETE) adalah salah satu bahan plastik yang banyak digunakan masyarakat indonesia. Plastik *Polyethylene Terephthalate* (PETE) diproduksi untuk pembuatan botol seperti botol air mineral, botol minyak goreng, botol kosmetik dan kemasan botol lainnya. Pada penelitian ini menggunakan plastik jenis botol minuman bekas yang telah dipotong kecil-kecil.

Tujuan penelitian ini adalah untuk mengetahui pengaruh penambahan plastik PETE terhadap campuran aspal beton AC-WC dengan variasi campuran 2%, 4%, 6%, 8%, dan 10% dari kadar aspal optimum (KAO) yang dilanjutkan dengan pengujian marshall. Metode pencampuran dilakukan dengan cara kering dimana botol plastik dicampurkan dengan agregat yang sedang dipanaskan hingga suhu 150°C.

Dari hasil pengujian marshall dan analisa diperoleh Kadar aspal optimum sebesar 5,5%. Pada pengujian campuran dengan bahan tambah plastik PETE didapat hasil stabilitas 904,2 kg pada penambahan 2% plastik PETE, 889,3 kg pada penambahan 4%, 863,1 kg pada penambahan 6%, 770,4 kg pada penambahan 8%, dan 1327,7kg pada penambahan 10% PETE. Dari hasil pengujian juga didapatkan nilai pelelehan sesuai dengan standar spesifikasi umum 2018 yaitu pada campuran 2% PETE sebesar 2,53 mm, campuran 4% PETE sebesar 2,57, campuran 6% PETE sebesar 2,7 mm, campuran 8% PETE sebesar 2,57 dan campuran 10% PETE sebesar 3 mm.

Dari hasil penelitian diambil kesimpulan bahwa penambahan plastik PETE dengan cara kering dapat mengurangi nilai stabilitas dan pelelehan campuran aspal. Sedangkan persen rongga cenderung mengalami penurunan dan tidak memenuhi syarat spesifikasi umum 2018 terutama pada rongga terhadap agregat (VMA).

## **SUMMARY**

THE EFFECT OF ADDITIONAL POLYETHYLENE TEREPHTHALATE (PETE) PLASTIC ON THE STRENGTH OF ASSET CONCRETE (AC-WC)

(Ondi Pratama Matanari under the guidance of Dr. Ir. Ermadani, M.Sc. and Ade Nurdin, S.T., M.T).

To increase the quality of asphalt mixtures such as concrete asphalt, one of them is by adding additives. This research uses Polyethylene Terephthalate (PETE) as an added material.

Polyethylene Terephthalate (PETE) is a plastic material that is widely used by Indonesian society. Polyethylene Terephthalate (PETE) plastic is produced for the manufacture of bottles such as mineral water bottles, cooking oil bottles, cosmetic bottles and other bottle packaging. In this study, used plastic beverage bottles that have been cut into small pieces.

The purpose of this study was to determine the effect of adding PETE plastic to the AC-WC concrete asphalt mixture with mix variations of 2%, 4%, 6%, 8%, and 10% of the optimum bitumen content (KAO) followed by Marshall testing. The mixing method is done in a dry way where the plastic bottles are mixed with the aggregate which is being heated to a temperature of 150°C.

From the results of Marshall testing and analysis, the optimum asphalt content was obtained at 5.5%. In testing the mixture with the added material of PETE plastic, the stability results obtained were 904.2 kg in the increment of 2% PETE plastic, 889.3 kg in the addition of 4%, 863.1 kg in the addition of 6%, 770.4 kg in the addition of 8%, and 1327 , 7kg at 10% PETE additions. The test results also showed that the melt value was in accordance with the general specifications of 2018, namely the 2% PETE mixture of 2.53 mm, 4% PETE mixture of 2.57, 6% PETE mixture of 2.7 mm, 8% PETE mixture of 2 , 57 and a mixture of 10% PETE at 3 mm.

From the research results, it was concluded that the addition of PETE plastic could reduce the stability value and melting of the asphalt mixture. Meanwhile, the percent of ronga tends to decrease and does not meet the requirements of the 2018 general specifications, especially in the cavity to aggregate (VMA).