ABSTRAK

Banjir rob yang kerap terjadi di kawasan pesisir Indonesia menyebabkan genangan air di jalan raya. Akibatnya kondisi jalan perkerasan lentur di daerah genangan air rob banyak mengalami penurunan kinerja dan keawetan, baik tergolong dalam rusak ringan maupun rusak berat. Karena sifat air yang menekan kesegalah arah saat dibebani oleh beban lalulintas maka menyebabkan deformasi pekerasan jalan menjadi cepat rusak dan lama kelamaan akan membentuk lubang, sehingga perlu dilakukan penelitian terhadap alternatif baru campuran perkerasan didaerah rawan terendam genangan air laut. Tujuan penelitian ini untuk mengetahui kinerja campuran *Split Mastic Asphalt* (*SMA*) 0/11 dengan menggunakan abu sekam padi sebagai *filler* pengganti, apabila terendam air laut dengan dursi 48 jam dan 96 jam.

Tahap penelitian dimulai dari pemeriksaan sifat fisik material, menentukan nilai kadar aspal optimum, merendam benda uji kedalam air laut, melakukan uji Marshall, Immersion, Indirect Tensile Strength, Cantabro, dan permeabilitas. Standar yang digunakan dalam pemeriksaan sifat fisik material mengacu pada Bina Marga 2010 dan standar campuran mengacu pada spesifikasi Kimbangwil (1999).

Hasil menunjukan penambahan abu sekam padi menyebabkan peningkatan nilai stabilitas dan *MQ*, kemudian pada kadar *filler* 75% dan 100% mengalami penurunan. Sedangkan nilai *flow* terjadi penurunan kemudian pada kadar *filler* 75% dan 100% mengalami peningkatan. Pada saat dilakukan perendaman air laut nilai stabilitas, *flow*, dan *MQ* mengalami penurunan. Penurunan stabilitas terbesar pada kadar *filler* 100% sebesar 25,07% rendaman 48 jam dan 35,51% rendaman 96 jam, nilai *flow* mengalami penurunan terbesar pada kadar *filler* 75% sebesar 16,57% rendaman 48 jam dan 18,24% rendaman 96 jam, penurunan nilai *MQ* terbesar pada kadar *filler* 25% sebesar 20,96 rendaman 48 jam dan kadar *filler* 50% sebesar 28,59% rendaman 96 jam. Nilai *IRS* meningkat sampai kadar 50% kemudian menurun kembali seiring penambahan persentase kadar *filler*. Lama rendaman air laut selama 0 jam, 48 jam, dan 96 jam menggunakan abu sekam padi sebagai bahan pengganti *filler* campuran *SMA* 0/11 memiliki nilai *IRS* kurang dari spesifikasi *Asphalt Institute* yaitu >75% kecuali pada kadar *filler* 50% yang masih masuk persyaratan dengan nilai 76,88%. Nilai *ITS* pada campuran *SMA* 0/11 yang menggunakan *filler* abu sekam padi mengalami penurunan dan pada saat direndam air laut nilai *ITS* menurun sebesar 15,06% rendaman 48 jam dan 22,09% rendaman 96 jam. Nilai *Cantabro* pada campuran *SMA* 0/11 yang menggunakan abu sekam padi dan direndam air laut mengalami persentase kehilangan berat yang meningkat. Campuran yang direndam air laut pada kadar *filler* 75% dan 100% kehilangan berat melebihi spesifikasi Bina Marga yaitu <20%. Permeabilitas yang menggunakan *filler* abu sekam padi menunjukan indikator drainase jelek. Sehingga ditarik kesimpulan kadar *filler* 50% campuran *SMA* 0/11 merupakan campuran yang paling baik dalam menahan beban pada saat terjadi genangan air laut.

Kata kunci: Abu Sekam Padi, Air Laut

ABSTRACT

Rob flood that often occured in Indonesia's coastal areas caused puddles on the highway. As the consequence, the quality of the performance and durability of the flexible pavement road condition in the water puddle area of rob have decreased, whether classified as lightly damaged or heavily damaged. Due to the nature of the water that suppressed the obstacles to any direction when burdened by traffic loads, it then caused deformation of road pavement to become rapidly damaged and gradually it would form a pit. Thus, it was necessary to study new alternatives of pavement mixture that could be published in submergence areas submerged in sea water puddle. The purpose of this study was to understand the performance of mixture of Split Mastic Asphalt (SMA) 0/11 and rice husk ash as an alternative filler if there was immersion of air water during 48 hours and 96 hours.

This research started from examining the physical properties of the material, determining the value of the optimum bitumen content, immersing the test material into the sea water, performing Marshall, Immersion, Indirect Tensile Strength, Cantabro, and permeability tests. The standard used to examine the physical properties of the material referred to Bina Marga 2010 and the mixed standard referred to the specification by Kimbangwil (1999).

The results showed that the addition of rice husk ash contributes an increase in stability and MQ value, then at 75% and 100% filler it decreases. On the other hand, the value of flow decreased then at 75% and 100% filler it increases. During the sea water immersion, the value of stability, flow, and MQ decreased. The greatest decrease in stability was at 100% filler content of 25.07% of immersion during 48 hours and 35.51% of immersion during 96 hours, the flow value got the the greatest decrease in 75% filler content of 16.57% of immersion during 48 hours and 18.24% of immersion during 96 hours, the greatest MQ value decreased at 25% filler content as 20,96 of immersion during 48 hours and the filler content 50% equal to 28,59% of immersion during 96 hours. The IRS value increased to 50% and then it decreased again as the percentage of filler levels increases.

The duration of sea water immersion for 0 hour, 48 hours, and 96 hours used rice husk ash as a substitute of the mixture of SMA 0/11 has IRS value less than the specification by Asphalt Institute that was> 75% except on 50% filler level which still met the requirement with value of 76.88%. The value of ITS in the mixture of SMA 0/11 used filler of rice husk ash has decreased and when it was in immersion of the sea water, the value of ITS decreases by 15.06% of the immersion during 48 hours and 22.09% of immersion during 96 hours. The cantabro value of the mixture of SMA 0/11 and rice husk ash and those that were soaked in sea water experiences an increased percentage of weight loss. The seawater-soaked mixture at the 75% filler content and 100% weight loss exceeded the specification by Bina Marga that was <20%. Permeability using rice husk ash filler indicates poor drainage indicator. Therefore, it could be concluded that 50% filler content of the SMA 0/11 mixture was the best mixture in holding the load when therewas a puddle of sea water.

Keywords: Rice Husk Ash, Sea Water