ABSTRAK

Penelitian tentang sintesis paduan silika abu sekam padi tanpa pengaruh *milling* (S0) dan paduan silika abu sekam padi *milling* 15 jam (S15) sebagai *filler* aspal penetrasi 60/70 dengan perbandingan 1:2 telah dilakukan. Sintesis silika dilakukan menggunakan metode sol gel. Bahan yang digunakan adalah abu sekam padi, aspal, akuades, NaOH 1 N dan CH_3COOH 1%, dan bensin, Uji fisis meliputi porositas dan daya serap air dan uji struktur morfologi permukaan menggunakan SEM (*Scanning Electron Microscope)*. Hasil uji porositas dan daya serap air untuk sampel S0 rata-rata 6,0% dan 5,3 %. Sedangkan, hasil uji porositas dan daya serap air S15 rata-rata 10,7% dan 10,2%. Struktur morfologi permukaan untuk sampel S0 menunjukkan butiran-butiran kecil yang menyebar tidak homogen, terjadi retakan, dan aggregat terdistribusi merata. Hasil SEM sampel S15 menunjukkan butiran butiran partikel terdistribusi homogen, karena aglomerasi silika bereaksi dengan aspal. Rata-rata kenaikan nilai porositas dan daya serap sebesar 78,3% dan 92,4%. Hasil uji porositas dan daya serap air menunjukkan adanya kenaikan pada sampel S15 diakibatkan adanya pengaruh *milling.* Sehingga, silika abu sekam padi dengan *milling* dapat diaplikasikan sebagai *filler* aspal penetrasi 60/70.

Kata kunci: aspal, silika abu sekam padi, porositas, daya serap air, struktur morfologi permukaan.

ABSTRACT

Research on the synthesis of silica alloy of rice husk ash without the influence of milling (S0) and alloy silica ash milling rice husk 15 hours (S15) as asphalt filler penetration 60/70 with a ratio of 1:2 has been conducted. Silica synthesis is carried out using the gel sole method. Materials used are rice husk ash, asphalt, aqueous, NaOH 1 N and CH_3COOH 1%, and gasoline, physic test includes porosity and water absorption and surface morphological structure test using SEM (Scanning Electron Microscope). Porosity and water absorption test results for S0 samples averaged 6.0% and 5.3%. Meanwhile, the results of the porosity and water absorption test of S15 averaged 10.7% and 10.2%. The surface morphological structure for the S0 sample showed small grains that spread non-homogeneously, cracks occurred, and aggregat was evenly distributed. The SEM results of the S15 sample showed homogeneous distributed particle granules, as silica agglomeration reacts with asphalt matrices. The average increase in porosity and absorption value was 78.3% and 92.4%. Porosity and water absorption test results showed an increase in S15 samples due to milling influence. Thus, silica ash rice husks with milling can be applied as asphalt filler penetration 60/70.

Keywords: asphalt, silica ash rice husk, porosity, water absorption, surface morphological structure.