Kontribusi bahan tambah BNA-Rubber pada campuran beraspal hangat terhadap nilai modulus resilien dan nilai kuat tarik = Contribution of BNA-Rubber as material added in warm mix asphalt toward values of resilient modulus and tensile strength

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Abstrak

Penelitian ini menggunakan metode teknologi campuran beraspal hangat yang memungkinkan pengurangan temperatur pada campuran aspal. Penggunaan BNA-R sebagai bahan tambah pada campuran hangat diharapkan sebagaimana dapat mengurangi dampak buruk lingkungan yang dihasilkan dari metode hotmix, serta lebih ramah lingkungan. Proses pencampuran aspal dengan BNA-R yaitu dengan menggunakan alat pengaduk modifikasi dengan kecepatan maksimum 3000 rpm. Penelitian ini dilaksanakan di Laboratorium Bahan dan Material Departemen Teknik Sipil, Fakultas Teknik, Universitas Indonesia, dan Laboratorium BBPJN IV, Cikampek-Karawang, Jawa Barat. Kadar BNA-R yang digunakan yaitu 10%, 15%, 20%, dan 25%. Penelitian ini menggunakan variasi kadar aspal 5%, 5,5%, 6%, 6,5%, dan 7% untuk mendapatkan kadar aspal optimum dan digunakan sebagai acuan awal dalam job mix penelitian ini. Lalu dilakukan analisis dengan metode deskriptif analitis, yaitu dengan analisis regresi dan korelasi. Hasil penelitian menunjukkan hubungan yang kuat antara nilai ITS dengan MR yaitu dengan persamaan ?MR (MPa) = 0,010 ITS ^1,236?, dengan R^2 = 0,837. Selain itu terdapat pola hubungan antara nilai ITS dengan kadar BNA-R dimana pertambahan BNA-R akan meningkatkan nilai ITS. Pola tersebut dinyatakan dalam persamaan ?y = 3306x^2 - 1049x + 836.2?. Sedangkan, pola hubungan antara Modulus Resilien dengan kadar BNA-R dinyatakan dalam persamaan ?y = 20900x^2 - 5658x + 9138?.

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This research used warm-mix asphalt technology which allows a reduction in the temperature of the asphalt mix. The used of BNA-R additive as material added to enhance performance of the asphalt with penetration 60/70 mixture of bitumen and the warm-mix asphalt are expected to reduce the bad effects of hot-mix method, also more environmentally-friendly. Mixing process of asphalt modified was used modification mixer with max. 3000 rpm. This research was conducted at the Laboratory of Substances and Materials Department of Civil Engineering, Faculty of Engineering, University of Indonesia, and Laboratory BBPJN IV, Cikampek-Karawang,West Java. The BNA-R content that have been used are 10%, 15%, 20%, and 25%. This research used a variation of asphalt content; 5%, 5.5%, 6%, 6.5%, and 7%, to obtain the optimum aspalt content. Researcher must find the optimum asphalt content first before starting to mix the modification of the asphalt.. Then analyzed with descriptive analytical method; the regression and correlation analysis.The result of this research show the strength relation between ITS value and Resilient Modulus with equation ?MR (MPa) = 0,010 ITS ^1,236?, dengan R^2 = 0,727. In order that, there is a relation either between ITS value and BNA-R content that made in equation ?y = 3306x^2 - 1049x + 836.2?. And then, there is a relation too between Resilient Modulus and BNA-R content which ?y = 20900x^2 - 5658x + 9138?.