

ABSTRAK

Paving block merupakan material pracetak yang banyak digunakan sebagai alternatif perkerasan jalan. Kualitas *paving block* salah satunya ditentukan oleh daya serap air sesuai standar SNI 03-0691-1996. Berdasarkan pengujian awal di CV. Lukman Mandiri Jaya, nilai daya serap air rata-rata sebesar 11,2% belum memenuhi standar mutu. Hasil observasi menunjukkan perbandingan campuran yang digunakan perusahaan sebesar 1:10, jauh dari standar umum 1:4. Maka dari itu, penelitian ini menggunakan variasi jumlah semen dan agregat halus berdasarkan hasil penelitian terdahulu, yaitu perbandingan 1:3 dan 1:4, untuk menentukan komposisi optimum terhadap daya serap air *paving block*. Penelitian ini menggunakan metode *Response Surface Methodology* (RSM) dengan dua faktor dan dual level variasi masing-masing. Hasil uji ANOVA menunjukkan kedua faktor berpengaruh signifikan terhadap daya serap air ($P < 0,05$), dengan agregat halus sebagai faktor paling dominan. Model RSM yang dihasilkan signifikan dengan *P value* model sebesar 0,000 ($\text{Sig} < 0,05$) dan tidak terdapat *lack of fit* dengan *P value* sebesar 0,072 (lebih dari 0,05). Hasil optimasi menghasilkan komposisi optimal 0,6731 kg semen dan 1,4586 kg agregat halus, dengan prediksi daya serap air sebesar 6,5370% yang telah mencapai standar mutu C yang telah ditetapkan.

Kata kunci: *Paving block*, Daya Serap Air, *Response Surface Methodology* (RSM).

ABSTRACT

Paving blocks are precast materials widely used as an alternative to asphalt pavement. One of the quality indicators of paving blocks is their water absorption capacity, as specified in the Indonesian National Standard (SNI) 03-0691-1996. Based on initial testing at CV. Lukman Mandiri Jaya, the average water absorption value was 11.2%, which did not meet the required quality standard. Observations revealed that the company uses a mix ratio of 1:10, which differs significantly from the general standard of 1:4. Therefore, this study applied variations in the amounts of cement and fine aggregate based on previous research, namely with ratios of 1:3 and 1:4, to determine the optimum composition for reducing the water absorption of paving blocks. This study employed the Response Surface Methodology (RSM) approach with two factors and two levels of variation for each. The ANOVA test results showed that both factors had a significant effect on water absorption ($P < 0.05$), with fine aggregate being the most dominant factor. The resulting RSM model was significant, with a P value of 0.000 ($\text{Sig} < 0.05$) and no lack of fit indicated by a P value of 0.072 (greater than 0.05). The optimization results obtained an optimum composition of 0.6731 kg of cement and 1.4586 kg of fine aggregate, producing a predicted water absorption value of 6.5370%, which meets the SNI standard for quality category C.

Keywords: *Paving block, Water Absorption, Response Surface Methodology (RSM).*