ABSTRAK

PENGARUH PENAMBAHAN BATU ANDESIT SEBAGAI SUBSTITUSI SEMEN TIPE PCC PADA *PAVING BLOCK*

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Substitusi batu andesit mempengaruhi kuat tekan, porositas serta absorpsi *paving block*. Bahan baku yang digunakan untuk membuat *paving block* yaitu semen, batu andesit, pasir serta air. Persentase substitusi batu andesit sebesar 10, 20, 30, 40 dan 50% dari berat semen. Sebelum digunakan, batu andesit sebelum dan setelah kalsinasi dikarakterisasi menggunakan XRF (*X-Ray Fluorescence*) dan XRD *(X-Ray Diffraction).* Hasil analisis XRD batu andesit sebelum kalsinasi terbentuk fase *Muscovite, Albite, Hedenbergite* dan *Microcline*. Hasil analisis XRD setelah kalsinasi pada 900^{o}C terbentuk fase *Muscovite, Hedenbergite* dan *Microcline*. Setelah itu *paving block* melalui proses pembuatan benda uji, pencetakan, perendaman serta pengujian fisik yang meliputi kuat tekan, porositas dan absorpsi. Hasil uji kuat tekan *paving block* tertinggi terdapat pada substitusi batu andesit 10% umur 28 hari sebesar 10,92 MPa dan kuat tekan terendah terdapat pada substitusi batu andesit 50% umur 7 hari sebesar 3,08 MPa. Porositas terendah terjadi pada substitusi batu andesit 10% umur 28 hari sebesar 16% dan porositas *paving block* tertinggi terdapat pada substitusi batu andesit 50% umur 7 dan 14 hari dengan nilai sebesar 17,5%. Absorpsi *paving block* tertinggi terdapat pada substitusi batu andesit 50% umur 7 hari sebesar 9,9% dan absorpsi terendah terdapat pada substitusi batu andesit 10% umur 14 dan 28 hari serta 20% umur 28 hari dengan nilai sebesar 9,1%.

Kata kunci: *Paving block*, batu andesit, kalsinasi, kuat tekan, porositas dan absorpsi.

ABSTRACT

EFFECT OF ADDITION OF ANDESIT STONE AS SUBSTITUTION OF PCC TYPE CEMENT ON PAVING BLOCK

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Andesite stone substitution affects the compressive strength, porosity and paving block absorption. The raw materials used for making paving blocks are cement, andesite, sand and water. The percentage of andesite substitution of rocks is 10, 20, 30, 40 and 50% by weight of cement. Prior to use, andesite stones before and after calcination were characterized using XRF (X-Ray Fluorescence) and XRD (X-Ray Diffraction). The result of XRD analysis of andesite rock prior to calcination formed Muscovite, Albite, Hedenbergite and Microcline phases. The results of XRD analysis after calcination at the calcination temperature of 900°C have formed Muscovite, Hedenbergite and Microcline phases. After that paving block through the process of making specimens, printing, immersion and physical testing which includes compressive strength, porosity and absorption. The result of compressive strength test is the highest compressive strength of paving block found in substitution of andesite stone 10% age 28 day equal to 10,92 MPa and the lowest compressive strength is found in 50% andesite stone substitution 50 days 7 days at 3,08 MPa. The lowest porosity occurred in the substitution of andesite rock of 10% age 28 days by 16% and the highest porosity of paving block was found in 50 andesite stone substitution of 50% age 7 and 14 days with value of 17,5%. The highest absorption of paving block was found in the substitution of 50% andesitic stone at 7 days by 9,9% and the lowest absorption was in the 10% andesite substitution of stone aged 14 and 28 days and 20% age 28 days with the value of 9,1%.

Keywords: Paving block, andesite stone, calcination, compressive strength, porosity and absorption