

ABSTRAK

Durabilitas beton dapat dipengaruhi oleh tingkat absorpsi dan laju korosi tulangan beton. Semakin tinggi tingkat penyerapan beton terhadap cairan di sekitar lingkungannya maka potensi korosi meningkat yang menyebabkan selimut beton mengalami retak dan mengurangi durabilitas beton. Penyerapan beton terjadi melalui pori-pori kapiler yang terbentuk akibat proses hidrasi semen. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan *Fly Ash*, *Superplasticizer*, dan variasi *Calcium Stearate* terhadap tingkat absorpsi dan korosi tulangan baja beton mutu 30 MPa. *Fly ash* yang digunakan sebesar 10% dari berat semen, *Superplasticizer* digunakan sebesar 0,375% dari berat semen dan variasi penambahan *Calcium Stearate* sebanyak 0 kg, 1kg, 5kg dan 10kg per meter kubik beton. Metode pengujian terdiri dari uji pendahuluan, *trial mix*, uji kuat tekan beton, uji absorpsi dan uji korosi buatan. Pengujian dilakukan dengan masing-masing 3 benda uji untuk kuat tekan, 18 benda uji untuk uji absorpsi, dan 12 benda uji untuk uji korosi buatan. Hasil pengujian menunjukkan tingkat penurunan absorpsi beton sebesar 37,46%, 78,74%, dan 86,45% dan korosi turun 1,72%, naik sebesar 9,96%, dan turun 38% beton memadat sendiri yang mengandung *fly ash* untuk masing-masing penambahan *calcium stearate* 1 kg, 5 kg, dan 10 kg per meter kubik beton dibandingkan dengan beton mampu memadat sendiri yang mengandung *Fly Ash* dengan kadar 0 kg per meter kubik beton *Calcium Stearate*. Berdasarkan hasil penelitian secara umum dapat disimpulkan penambahan *Fly Ash*, *Superplasticizer*, dan variasi *Calcium Stearate* mampu menurunkan tingkat absorpsi dan laju korosi tulangan baja pada beton mutu 30 MPa.

Kata Kunci : *Fly Ash*, *Superplasticizer*, *Calcium Stearate*, Beton Kedap Air, Beton Memadat Sendiri, Absorpsi, Korosi

ABSTRACT

Durability of concrete can be affected by absorption rate and corrosion rate of reinforcement steel on the concrete. If absorption rate of concrete in the water around environment is higher, then corrosion potential will increase. So the cover of concrete will crack and reduce the durability of concrete. Absorption occurs through the capillary pores formed by cement hydration process. This research aims to determine the effect of addition of Fly Ash, Superplasticizer, and Calcium Stearate variations on absorption rate and corrosion rate of reinforcement steel on the 30 MPa quality concrete. Fly Ash used 10% of cement weight, Superplasticizer used 0,375% of cement weight and variations of Calcium Stearate addition of 0 kg, 1 kg, 5 kg and 10 kg per meter cubic of concrete. The addition material can make waterproof concrete. Test methods consist of preliminary, trial mix, concrete compressive strength test, absorption test and artificial corrosion test. The test was performed 3 specimens for compressive strength, 18 specimens for absorption test, and 12 specimens for artificial corrosion test. The result showed absorption rate was decreased by 37,46%; 78,74% and 86,45% and corrosion rate decreased by 1,72%, increased by 9,96% and decreased by 38% on the self compacting concrete containing Fly Ash for each addition Calcium Stearate 1 kg, 5 kg and 10 kg per meter cubic of concrete compared with self compacting concrete containing Fly Ash for each addition Calcium Stearate 0 kg per meter cubic of concrete. Based on the result of research in general can be concluded the addition of Fly Ash, Superplasticizer, and Calcium Stearate variations can reduce absorption rate and corrosion rate of reinforcement steel on the 30 MPa concrete quality.

Keywords: *Fly Ash, Superplasticizer, Calcium Stearate, Waterproof Concrete, Self-Compacting Concrete, Absorption, Corrosion*