

INTISARI

Dalam upaya meningkatkan mutu beton, proses perawatan (*curing*) pada beton merupakan salah satu faktor penting yang perlu diperhatikan. Perlakuan perawatan pada beton bertujuan untuk menjaga kelembaban beton dengan mencegah terjadinya proses kehilangan air selama proses beton mengalami pengerasan (hidrasi). Proses hidrasi yang tidak sempurna dapat menyebabkan retakan pada struktur beton. Berbagai variabel dapat digunakan untuk mengontrol proses kerusakan seperti resistivitas listrik dan porositas beton. Resistivitas listrik dikorelasikan dengan laju korosi, sedangkan porositas beton mempengaruhi kekuatan tekan pada beton. Oleh karena itu, perlu dilakukan studi lebih lanjut mengenai pengaruh perawatan terhadap nilai resistivitas listrik dan kuat tekan pada permukaan beton.

Penelitian ini meliputi analisis pengaruh perawatan terhadap kualitas permukaan beton dengan meninjau nilai kuat tekan dan resistivitas listrik pada permukaan beton pasca perawatan. Metode perawatan yang digunakan dalam penelitian ini adalah metode perawatan dengan perendaman beton dalam air (*wet curing*) dan pelapisan beton dengan karung goni basah (*poultice curing*). Perawatan dilakukan pada dua kelompok spesimen yang akan disebut dengan FC18 dan FC27 berdasarkan dengan kuat tekan rencana. Proses perawatan dimulai satu hari setelah beton dicetak dan dilakukan selama 28 hari di dalam laboratorium. Spesimen beton kemudian diletakkan di luar ruangan dan didiamkan sampai umur beton mencapai 60 hari agar spesimen dapat mencapai kondisi riil di lapangan. Kemudian, uji kuat tekan dan resistivitas listrik dilakukan pada sisi longitudinal pada permukaan beton dengan menggunakan alat CTS Hammer Test dan Wenner's Probe. Pada satu permukaan beton dilakukan pengujian pada 136 titik yang berbeda.

Hasil pengujian menunjukkan bahwa kedua metode perawatan menyebabkan peningkatan nilai kuat tekan pada permukaan beton. Peningkatan nilai kuat tekan tertinggi didapat pada spesimen FC27 metode *poultice curing* dengan kenaikan sebesar 19.5% jika dibandingkan dengan spesimen FC27 tanpa perawatan. Kemudian, hasil pengujian juga menunjukkan perubahan terhadap nilai resistivitas listrik pada permukaan beton. Kedua metode perawatan menyebabkan terjadinya penurunan nilai resistivitas listrik jika dibandingkan dengan spesimen tanpa metode perawatan. Penurunan nilai resistivitas listrik tertinggi terjadi pada spesimen FC27 metode *wet curing* dengan penurunan sebesar 38.66% jika dibandingkan dengan spesimen FC27 tanpa perawatan.

Kata Kunci: perawatan, resistivitas listrik, kuat tekan, *CTS hammer Test*, *wenner's probe*

ABSTRACT

In an effort to improve the quality of concrete, the curing process in concrete is one of the important factors that need to be considered. Curing process on concrete aims to maintain the moisture of the concrete by preventing the process of water loss during the process of hardening of the concrete (hydration process). Poor hydration process can cause cracks in the concrete structure. Various variables can be used to control the breakdown process such as electrical resistivity and porosity of concrete. The electrical resistivity is related with the corrosion rate, while the porosity of the concrete affects the compressive strength of the concrete. Therefore, it is necessary to conduct further studies on the effect of curing process on the value of electrical resistivity and compressive strength on the concrete surface.

This research includes an analysis of the effect of curing on the quality of the concrete surface by reviewing the compressive strength and electrical resistivity values on the post-curing concrete surface. The curing method used in this research is done by soaking the concrete in water (wet curing) and by coating the concrete with wet burlap sacks (poultice curing). Curing was carried out on two groups of specimens which will be referred to as FC18 and FC27 based on the design compressive strength. The curing process starts one day after the concrete is cast and is carried out for 28 days in the laboratory. The concrete specimens are then placed outdoors until the concrete reaches the age of 60 days so that the specimens can achieve real conditions in the field. Then, the compressive strength and electrical resistivity tests were carried out on the longitudinal side of the concrete surface using the Hammer Test and Wenner's Probe. A total of 136 data were conducted on each concrete's surface.

The test results show that both curing methods cause an increase in the compressive strength on the concrete surface. The highest increase in compressive strength was obtained in the FC27 specimen with the poultice curing method with an increase of 19.5% compared to the FC27 specimen without curing. Then, the test results also show a change in the electrical resistivity on the concrete surface. Both curing methods cause a decrease in the electrical resistivity when compared to specimens without curing methods. The highest decrease in the value of electrical resistivity occurred in the FC27 specimen with the wet curing method with a decrease of 38.66% when compared to FC27 specimen without curing.

Keywords: concrete curing, electrical resistivity, compressive strength, CTS Hammer Test, Wenner's probe