ABSTRACT

Indonesia has many coastal areas, sometimes coastal areas have a typical problem that difficult to obtaining fresh water, causing seawater forced to used as a solution replacing fresh water in concrete mixtures. However, using seawater can be harmful to the reinforcement because of chloride ions content in seawater. Result of this study is to determine the effect of seawater on reinforced concrete, as well as examine corrosion inhibitors that can reduce the corrosion rate of concrete reinforcement, as well as examine the effects caused on reinforcement on corrosion rate and the effect on concrete on compressive strength when added inhibitor material, by making concrete specimens in the form of cylinders and cubes using seawater as a mixing agent for concrete mortar, then 3%, 4% calcium nitrate is added,and in other concrete specimens added tea leaves 0.8 kg/m^3, 1.6 kg/m^3. Reinforced concrete cube specimens are disassembled to take iron bone specimens to be researched for weight loss, and for non-reinforcing concrete cylinder specimens going in compressive strength tests. The results of the analysis showed that concrete with a mixture of tea leaves 1.6 kg/m^3 of concrete produced the smallest iron weight loss, the largest compressive strength for concrete with inhibitor in was produced by concrete specimens with tea leaves of 0.8 kg/m^3 of concrete.

***Keywords**: inhibitor; corrosion; tea leaves; corrosion rate; weight loss*

ABSTRAK

Indonesia memiliki banyak daerah pesisir, di mana pada daerah pesisir memiliki masalah yang khas yaitu kesulitan mendapatkan air tawar, sehingga menyebabkan air laut terpaksa dijadikan solusi pengganti air tawar dalam campuran beton. Namun penggunaan air laut ini dapat membahayakan pada tulangan karena adanya kandungan ion klorida dalam air laut. Tujuan penelitian ini untuk mengetahui efek dari air laut terhadap beton bertulang, serta meneliti bahan-bahan penghambat korosi (inhibitor) yang bisa menurunkan laju korosi pada tulangan beton, serta meneliti efek yang ditimbulkan pada tulangan terhadap laju korosi dan efek pada beton terhadap kuat tekan apabila sudah ditambahkan bahan inhibitor, dengan cara membuat spesimen beton berbentuk silinder dan kubus menggunakan air laut sebagai bahan pencampur adukan beton,lalu ditambahkan kalsium nitrat 3%, 4%, dan pada spesimen beton lainnya akan ditambahkan daun teh seberat 0,8 kg/m^3,1,6 kg/m^3. Spesimen kubus Beton bertulang di bongkar untuk diambil spesimen besi tulanganya untuk diteliti kehilangan beratnya, dan untuk spesimen silinder beton non tulangan diuji kuat tekan. Hasil analisis menunjukkan bahwa beton dengan campuran daun teh 1,6 kg/m^3 beton menghasilkan kehilangan berat besi terkecil, untuk beton dengan inhibitor kuat tekan terbesar dihasilkan oleh spesimen beton dengan daun teh 0,8 kg/m^3 beton.

Kata kunci: inhibitor; korosi; daun teh; laju korosi; kehilangan berat