

## ABSTRAK

Korosi merupakan penurunan kualitas suatu material terutama yang berbahan dasar besi atau baja karena logam yang berhubungan atau bersentuhan dengan lingkungan sekitar. Banyak faktor penyebab suatu material dapat terkorosi, salah satunya adalah kehadiran elektrolit semacam garam *NaCl* pada logam yang akan memicu terjadinya reaksi korosif. Tujuan dilakukannya penelitian ini agar dapat memperlambat laju korosi sekaligus bermanfaat mengurangi kerusakan lingkungan karena menggunakan bahan alami serta untuk mengetahui efektivitas ekstrak biji kopi robusta sebagai inhibitor.

Metode yang peneliti gunakan adalah merendam benda uji dan dengan media *NaCl* 3,5%. Inhibitor yang digunakan sebesar 15%, 30%, 45% dan waktu perendaman selama 30 hari dan 60 hari tanpa dan dengan penambahan inhibitor.

Penambahan inhibitor ekstrak biji kopi robusta dapat memperlambat laju korosi baja ST41 pada larutan *NaCl* 3,5%. Hasil pengujian kehilangan berat menunjukkan bahwa perendaman selama 30 hari tanpa inhibitor dengan nilai laju korosi 11,367 mpy mengalami penurunan setelah penambahan inhibitor hingga nilai laju korosi paling rendah pada penambahan inhibitor biji kopi sebesar 45% yaitu 5,822 mpy. Sedangkan untuk perendaman selama 60 hari nilai laju korosi tertinggi adalah 14,19 mpy tanpa penambahan inhibitor dan nilai laju korosi paling rendah mencapai 7,531 mpy dengan penambahan inhibitor 45%.

Kata kunci : baja ST41, ekstrak biji kopi robusta, inhibitor alami, korosi.

## ABSTRACT

Corrosion is a deterioration in the quality of a material, especially those made of iron or steel because of metals that are in contact with the surrounding environment. Many factors cause a material to corrode, one of which is the presence of electrolytes such as *NaCl* salts on metals which will trigger corrosive reactions. The purpose of this research is to decelarate the rate of corrosion while being useful in reducing environmental damage because it uses natural ingredients and to determine the effectiveness of robusta coffee bean extract as an inhibitor.

The method used by the researcher soaking the test piece and with medium *NaCl* 3.5%. The inhibitors used were 15%, 30%, 45% and the soaking time was 30 days and 60 days without and with the addition of inhibitors.

The addition of robusta coffee bean extract inhibitors reduce the corrosion rate of ST41 steel in solution *NaCl* 3.5%. The results of the weight loss test showed that the immersion for 30 days without an inhibitor with a corrosion rate value of 11.367 mpy decreased after the addition of the inhibitor to the lowest corrosion rate value at the addition of coffee bean inhibitor of 45%, which is 5.822 mpy. Meanwhile, for immersion for 60 days, the highest corrosion rate value is 14.19 mpy without the addition of inhibitors and the lowest corrosion rate value reaches 7.531 mpy with the addition of 45% inhibitors.

Keywords: ST41 steel, robusta coffee bean extractci, natural inhibitor, corrosion.