

# **PENGARUH PENAMBAHAN MINYAK CENGKEH SEBAGAI INHIBITOR KOROSI PADA PLAT BAJA KARBON TERHADAP LAJU KOROSI DALAM MEDIA AIR TAWAR STATIS**

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## **ABSTRAK**

Penelitian ini bertujuan untuk mengetahui efektifitas dari minyak cengkeh sebagai inhibitor korosi pada spesimen plat baja karbon dalam media perendaman air tawar statis 200 ml. Untuk mengetahui laju korosi dan efisiensi inhibitor yang dihasilkan dilakukan dengan metode pengurangan berat.

Efisiensi inhibitor pada media air tawar statis 200 ml mencapai nilai terbesar 0.647 pada penambahan inhibitor minyak cengkeh sebanyak 6 ml dan efisiensi terkecil berada pada angka 0.492 dimana minyak cengkeh yang di tambahkan kedalam media air tawar statis hanya sebesar 2 ml.

Sedangkan, untuk mengetahui topografi, morfologi, dan komposisi korosi yang di hasilkan pada plat baja karbon setelah di rendam dalam media perendaman air tawar statis 200 ml dengan inhibitor dan tanpa inhibitor minyak cengkeh dilakukan pengujian SEM (*Scanning electron microscope*) dan EDX (*Energy dispersive X-ray Spectroscopy*). Berdasarkan hasil Analisa SEM dan EDX.

reaksi oksidasi terbesar ada pada spesimen tanpa inhibitor karena memiliki unsur O (oksigen) tertinggi di banding spesimen dengan tambahan inhibitor, sementara itu unsur Fe pada sampel 0% yang tanpa di tambahkan inhibitor adalah yang paling sedikit yaitu 57,47%. hal ini menunjukkan bahwa Fe pada sampel tanpa inhibitor banyak yang teroksidasi oleh unsur O, sehingga memiliki laju korosi paling tinggi. Dari kedua hasil analisis dan perhitungan laju korosi serta efisiensi inhibitor didapatkan bahwa inhibitor minyak cengkeh efektif dalam menginhibisi laju korosi pada plat baja karbon.

Kata kunci : Korosi, inhibitor, minyak cengkeh, SEM dan EDX.

## **ABSTRACT**

*This study aims to determine the effectiveness of clove oil as a corrosion inhibitor on carbon steel plate specimens in 200 ml static fresh water immersion media. To determine the corrosion rate and the efficiency of the inhibitor produced, the weight reduction method was carried out.*

*The efficiency of the inhibitor in 200 ml static freshwater media reached the largest value of 0.647 with the addition of 6 ml clove oil inhibitor and the smallest efficiency was at 0.492 where clove oil added to static fresh water media was only 2 ml.*

*Meanwhile, to determine the topography, morphology, and composition of the corrosion produced on carbon steel plates after being immersed in 200 ml static fresh water immersion media with inhibitors and without clove oil inhibitors, SEM (Scanning electron microscope) and EDX (Energy dispersive X) tests were carried out. -ray Spectroscopy). Based on the results of SEM and EDX analysis.*

*The largest oxidation reaction was in the specimen without the inhibitor because it had the highest element of O (oxygen) compared to the specimen with the addition of an inhibitor, meanwhile the Fe element in the 0% sample without the addition of an inhibitor was the least, namely 57.47%. This shows that the Fe in the sample without the inhibitor is oxidized by the element O, so it has the highest corrosion rate. From both analysis and calculation of corrosion rate and inhibitor efficiency, it was found that clove oil inhibitor was effective in inhibiting corrosion rate on carbon steel plate.*

*Keywords: Corrosion, inhibitor, clove oil, SEM and EDX.*