

## Studi pemanfaatan ekstrak daun sirsak (*annona muricata* linn) sebagai green corrosion inhibitor dalam produced water = Study of using extract soursop leaves *annona muricata* linn as green corrosion inhibitor in produced water

Mohammad Ikbal Hikmawan, author

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### Abstrak

Inhibitor ramah lingkungan saat ini diperlukan untuk mengurangi dampak pencemaran dari inhibitor anorganik. Penelitian ini mempelajari pengaruh injeksi ekstrak daun sirsak dengan pelarut tiga tingkat sebagai inhibitor organik terhadap baja karbon rendah API 5L grade A dalam larutan air terproduksi. Berdasarkan pengujian weight loss dari seluruh sampel uji, sampel 8 hari dengan penambahan inhibitor 2 ml menunjukkan nilai efisiensi paling tinggi yakni sebesar 52.62 %. Hasil uji polarisasi dan EIS dengan pelarut tiga tingkat didapatkan pelarut etanol mempunyai nilai efisiensi paling besar: 88.52%, sedangkan pelarut semi polar dan non polar nilai efisiensinya hampir sama. Data dari EIS menunjukkan tahanan larutan menjadi turun dengan semakin meningkatnya penambahan inhibitor ekstrak daun sirsak. Uji FTIR memperlihatkan bahwa terdapat gugus fungsi dari ekstrak daun sirsak dan senyawa aktifnya adalah tipe polifenol.

.....Green inhibitors are now increasingly needed to reduce the adverse environmental impacts of the inorganic inhibitor. This research studied the effects of injection of soursop leaves extract in three-level solvents (polar, semi polar and non polar) as an organic inhibitor for the low-carbon steel API 5L of grade A in produced water solution. Based on weight loss test of the entire sample, the 8 days's sample with addition of 2 ml inhibitor from soursop leaves extract showed the highest efficiency value which amounted to 52.62%. The polarization and EIS tests for three levels's solvents show that the ethanol solvent (type of polar) has the greatest efficiency values: 88.52%, while the efficiency value of non-polar and semi-polar solvent is almost without difference. EIS data showed that inhibiting power of the solution decreases when the inhibitor of soursop leaves extract is increasingly added. FTIR test showed that there is a functional group in the soursop leaves's extract and the active compound is a kind of polyphenol.