

Studi pengaruh penambahan Asam Askorbat (Vitamin C) pada inhibitor ekstrak ubi ungu sebagai inhibitor korosi untuk pipa baja API-5L pada lingkungan NaCl 3,5% = Study of effect of addition Ascorbic Acid (Vit C) in purple sweet potato extract inhibitors as a corrosion inhibitors for API-5L Pipe Steel in NaCl 3,5% solution

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Abstrak

Korosi merupakan degradasi material karena adanya reaksi dengan lingkungan. Korosi penyebab umum kegagalan dalam industri minyak dan gas. Untuk mengurangi laju korosi ini, dikembangkanlah penggunaan suatu inhibitor organik. Bahan organik dipilih sebagai inhibitor karena bersifat aman, mudah didapatkan, biodegradable, murah dan ramah lingkungan. Penelitian dilakukan untuk mengetahui pengaruh penambahan asam askorbat (vitamin C) ke dalam inhibitor ubi ungu dalam larutan NaCl 3,5%. Metode penelitian yang dilakukan adalah dengan pengujian polarisasi, pengujian kehilangan berat, Electrochemical Impedance Spectroscopy (EIS) dan Fourier Transform Infra Red (FTIR).

Pengujian EIS bertujuan untuk melihat perubahan nilai tahanan pada inhibitor yang dicampur tersebut. Sedangkan pengujian FTIR dilakukan untuk melihat kandungan yang menginhibisi logam dari inhibitor ubi itu sendiri, maupun setelah pencampuran dengan asam askorbat. Seperti yang diketahui, ubi ungu memiliki senyawa antioksidan di dalamnya yang dapat menghambat laju korosi, yaitu antosianin dan asam askorbat. Penambahan asam askorbat disini bertujuan untuk melihat apakah adanya efek sinergisme apabila inhibitor ini dicampur. Pengaruh konsentrasi asam askorbat salah satu faktor penting yang dibahas dalam penelitian ini, sebab pembentukan lapisan oksida bergantung pada seberapa banyak konsentrasi yang diberikan.

Corrosion is the material degradation which happens by the cause of reactions with environment . Corrosion is the major cause failure in oil and gas industry. To decrease the corrosion rate, the use of organic inhibitors were developed. Organic compounds were chosen as an inhibitor due to its safety, easily available, biodegradable, low cost and environmentally friendly This study was conducted to study the addition effect of ascorbic acid (vitamin C) on purple sweet potato inhibitor for API-5L pipe steel in NaCl 3.5% solution. Methods which will be used in this study are dynamic polarization, weight loss methods, Electrochemical Impedance Spectroscopy (EIS) and Fourier Transform Infra Red (FTIR).

The purpose of EIS testing is to identify the difference in resistance value on mixed inhibitors. On the other hand, FTIR is conducted in order to indentify compounds which inhibit metals from purple sweet potato and from its mixture. As it has been studied, purple sweet potato has antioxidant compounds which has the ability to prevent corrosion rate, these antioxidants are anthocyanin and ascorbic acid. The addition of ascorbic acid in this study were purposed to identify the sinergestic effect if these inhibitors were mixed. The concentration effect of ascorbic acid is one of the important factor which will be discussed in this research, because the formation of passive oxide layer depends on the addition of certain concentration.