

ABSTRACT

Tesa Evangeline Agnelia Parmana, 24020221120009. **Anti-Corrosive Activity Test on Paints with Citronella (*Cymbopogon nardus*), Patchouli (*Syzygium aromaticum*), and Clove (*Pogostemon cablin*) Essential Oil** (under the guidance of Hermin Pancasakti Kusumaningrum, and Arina Tri Lunggani).

Corrosion is one of the problems experienced by many industries, which causes metal quality to deteriorate and become brittle. Corrosion events are very detrimental and dangerous, so prevention methods are needed to prevent corrosion. Selection of the right materials, layering, application of inhibitors and electrochemical methods are some of the ways that can be done. Coating and inhibitor administration is most often used for prevention, but it often utilizes chemicals that are toxic, harmful and polluting the environment. The purpose of the study is to determine the potential anti-corrosion activity possessed by the essential oils of cloves, lemongrass and patchouli; as well as the influence of concentration variations. The method used is immersion, where metal plates that have been coated with paint with the help of essential oils of each type and mixture (concentrations of 1%, 5%, and 10%) are soaked in NaCl water for 21 days. The metal surface is observed microscopically, macroscopically, the mass reduction data obtained is processed to determine the corrosion rate and inhibition of its efficiency. The mixture of essential oil-assisted paints makes the finished paint have a distinctive aroma, there is no color difference, and the paint tends to be more liquid. The results of the study show that the ability of essential oils to inhibit corrosion can be seen from the low reduction of mass and corrosion rate, as well as the high percentage of efficiency inhibition. 5% lemongrass produces a mass reduction of 22.1 mg; corrosion rate of 0.048 mm/y and inhibition efficiency of 93.7%. Patchouli 1% has a mass reduction of 45.8 mg; corrosion rate 0.081 mm/y; and inhibition efficiency of 88.8%. 10% cloves have a mass reduction of 21 mg; corrosion rate 0.047 mm/y; and inhibition efficiency of 93.7%. The 1% blend had a mass reduction of 26.8 mg; 0.059 mm/y; and inhibition efficiency of 91.8%. ANOVA statistical tests show that there is a significant influence of oil type on corrosion rates, but there is no significant effect of concentration variations on corrosion rates.

Keywords: *Inhibition Efficiency, Immersion, Corrosion, Corrosion Rate, Essential Oils*