

## STUDY OF THE PROPOLIS EXTRACT AS A CORROSION INHIBITOR OF COPPER ALLOY IN ETHYLENE GLYCOL / WATER 0.1 M NaCl

H. Hachelef<sup>\*1</sup>, A. Benmoussat<sup>1</sup>, A. Khelifa<sup>2</sup>, M. Meziane<sup>3</sup>

<sup>1</sup>Materials and Corrosion Equip of LAEPO Research Laboratory Abobeker Belkaid  
University of Tlemcen BP 230, Tlemcen 13000 Algeria

<sup>2</sup>Research laboratory of processes Genius, Department of Industrial Chemistry, Faculty of  
Technology, Saâd Dahlab University of Blida, BP 270, 09000, Blida, Algeria

<sup>3</sup>Laboratory of fundamental and applied physics Faculty of Technology, Saâd Dahlab  
University of Blida, BP 270, 09000, Blida, Algeria

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### ABSTRACT

The effect of propolis extract as a corrosion inhibitor of copper alloy in ethylene glycol / water 0.1 M NaCl solution was studied by electrochemical measurements. The Tafel polarization curves showed that the propolis extract at different concentration acts as mixed inhibitor, and the maximum value of the inhibitory efficacy is 73.28% at optimum concentration of 1.25 g/L of propolis extract. The activation parameters reveal that the inhibitor molecules on copper surface are absorbed by physisorption and obey Langmuir isotherm adsorption. These results were supplemented by IR Spectroscopy, Scanning electron microscopy (SEM) and EDX spectrum of chemical composition. The metal solution interface is simulated as a physical model by using Electrochemical Impedance Spectroscopy (EIS).

**Keywords:** Copper Alloy, Propolis extract, ethylene glycol; Corrosion inhibition; Adsorption, Electrochemical impedance Spectroscopy (EIS).

Author Correspondence, e-mail: [hachelefhakima@yahoo.fr](mailto:hachelefhakima@yahoo.fr)

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