Journal of Industrial and Environmental Chemistry
ISSN 2591-7331(E)
2020
Vol.04 No.4

Electrochemicalbehavior study of a new anticorrosion coating based on a conductive polyaniline/lignine polymer

Boudieb Naima

University M'Hamed Bougara-UMBB-Boumerdes, Faculty of Sciences, Laboratory of Polymers Treatment and Forming; Algeria

Abstract

Passive protection of metal installations against corrosion is provided by coatings (organic or metallic) and paints. These limit the flow of aggressive elements by creating a physical barrier. Most of these coatings are not perfect and therefore the contact metal/corrosive medium is inevitable. The efficiency of anticorrosive paints is dependent on the intrinsic characteristics of the organic film (barrier effect), its adhesion (metal/paint interface), the presence of inhibitors or sacrificial pigments within the film of the painting.

The aim of this work is to propose primer based on a conductive polymer (polyaniline / lignin) and to evaluate its anti-corrosive performance when protecting carbon steel in a 1M HCl acid medium.

Conventional primers are based on zinc chromates, currently prohibited for environmental reasons, hence their substitution by zinc phosphate. three primaries are investigated in this study:

1. Conventional zinc phosphate-based primer, manufactured by the Algerian National Paintings Company (ENAP) and which is a reference set,
2. Primary without anticorrosion load for comparative purposes.
3. Polyaniline / lignin-based primer developed in this study,

The study of the corrosion behavior and the evolution of the protective power of these primers were carried out by an immersion test, and by stationary (polarization curves) and non-stationary electrochemical techniques (electrochemical impedance spectroscopy, test of cathodic delamination). These methods make it possible to demonstrate, on the one hand, the efficiency of the nature of the anti-corrosive used in the primary formulations on the protection performance of carbon steel against corrosion in acidic medium (1M HCl), and of on the other hand the solubility of the anti-corrosion charge in the chosen solvent system (dimethylformamide, xylene).

19th International Conference on Electrochemistry, Biosensors & Renewable Energy; May 25-26, 2020 Webinar

Journal of Industrial and Environmental Chemistry
ISSN 2591-7331(E)
2020
Vol.04 No.4

Abstract Citation:

Boudieb Naima, Electrochemical behavior study of a new anticorrosion coating based on a conductive polyaniline/lignine polymer, Electrochemistry 2020, 19th International Conference on Electrochemistry, Biosensors & Renewable Energy; May 25-26, 2020 Webinar

(https://electrochemistry.chemistryconferences.org/speaker/2020/boudieb-naima-university-m-hamed-bougara-umbb-boumerdes-algeria)