SYNTHESIS AND APPLICATION OF A NEW SCHIFF BASE LIGAND OF ETHYLENIC BRIDGE (C_{35}H_{22}N_{2}O_{2}) AS CORROSION INHIBITOR


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Schiff bases are obtained by condensation of a primary amine with an aldehyde or ketone. They are used in many applications in different fields (metallurgy, catalysis and in the pharmaceutical field).

Corrosion inhibitors are used extensively in industrial processes requiring the protection of metal installations: oil industry, water treatment, acid pickling or descaling, storage or transport of metals but they can also be used as additives in anti-corrosive paints (accelerators or retarders).

Some research suggests that the inhibition efficiency of Schiff bases is much larger than the corresponding amines and aldehydes. This may be due to the presence of iminic group C = N in the molecule. Adsorbed species protect the metal against the corrosive environment, which causes decomposition of the metal. The adsorption depends not only on the nature and charge of the metal but also the chemical structure of the inhibitor.

In this work, we report the synthesis of Schiff base ligand derived from ethylene bridge (C_{35}H_{22}N_{2}O_{2}) and the study of the influence of ligand concentration on the behavior of steel in 1 M HCl.

The study of electrochemical behavior of the Schiff base ligand by cyclic voltammetry on a glassy carbon electrode in organic Bu4NPF6 DMF (0.1M) shows that the system is irreversible and governed by diffusion to the electrode kinetics without complications. Application of Schiff base ligand as a corrosion inhibitor that shows the current density decreases with increasing concentration this is confirmed by electrochemical impedance spectroscopy. The rate of inhibition is obtained at a percentage of 99% on steel in 1 M HCl.