

**ABSTRACT:**

Carbon steels are widely used in petroleum industry. Examples of their extensive usage are pipelines, tubing, casings and a variety of other installations. Their widespread usage is essentially due to their advantages in terms of cost effectiveness. The efficiency of two commercial corrosion inhibitors named product A and product B was investigated in different conditions. The product A is essentially composed of trimethylbenzene, alkylbenzene, aminoethanol and amid/imidazoline while the product B contains trimethylbenzene and aliphaticamins. The protective performance and mechanism of these corrosion inhibitors was investigated by various electrochemical techniques in different media formed by mixtures of water/oil. The results were obtained using techniques of measure of corrosion potential, linear polarization resistance (LPR) and electrochemical impedance spectroscopy (EIS). The obtained results clearly show that with a corrosion inhibitor concentration of up to 20 ppm, the RP value increases and the rate of protection reaches an efficiency of 90 percent. Similar results were obtained using the EIS technique and the results were expressed by a set of parameters; namely  $R_{ct}$ ,  $R_{pf}$ ,  $C_{dl}$ . The Product A offers a better protection of carbon steel against corrosion and the highest rate of corrosion without corrosion inhibitor was obtained in the electrolyte solution a formed by 90% water and 10% oil.