

Characterization the Internal Corrosion Behavior by Using Natural Inhibitor in Crude Oil of Low Carbon Steel Pipeline

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Abstract : This study investigate the internal corrosion of low carbon steel pipelines in the crude oil, as well as prepare and use natural and locally available plant as a natural corrosion inhibitor, the nature extraction achieved by two types of solvents in order to show the solvent effect on inhibition process, the first being distilled water and the second is diethyl ether. FT-IR spectra and using a chemical reagents achieved to detection the presence of many active groups and the presence of tannins, phenols, and alkaloids in the natural extraction. Some experiments were achieved to estimate the performance of a new inhibitor, one of these tests include corrosion measurement by simple immersion in crude oil within and without inhibitors which added in different amounts 30,40,50and 60 ppm at tow temperature 300 and 323k, where the best inhibition efficiencies which get when added the inhibitors in a critical amounts or closest to it, since for the aqueous extract (EB-A) the inhibition efficiency reached (94.4) and (86.71)% at 300 and 323k respectively, and for diethyl ether extract (EB-D) reached (82.87) and (84.6)% at 300 and 323k respectively. Optical microscopy examination have been conducted to evaluate the corrosion nature where it show a clear difference in the topography of the immersed samples surface after add the inhibitors at two temperatures. The results show that the new corrosion inhibitor is not only equivalent to a chemical inhibitor but has greatly improvement properties such as: high efficiency, low cost, non-toxic, easily to produce, and nonpolluting as compared with chemical inhibitor.

Keywords : corrosion in pipeline, inhibitors, crude oil, carbon steel, types of solvent

Conference Title : ICCECP 2022 : International Conference on Chemical Engineering and Chemical Processes

Conference Location : Moscow, Russia

Conference Dates : August 30-31, 2022