

Comparative Study in Evaluating the Antioxidation Efficiency for Native Types Antioxidants Extracted from Crude Oil with the Synthesized Class

Authors : Mohammad Jamil Abd AlGhani

Abstract : The natural native antioxidants N,N-P-methyl phenyl acetone and N,N-phenyl acetone were isolated from the Iraqi crude oil region of Kirkuk by ion exchange and their structure was characterized by spectral and chemical analysis methods. Tetraline was used as a liquid hydrocarbon to detect the efficiency of isolated molecules at elevated temperature (393 K) that it has physicochemical specifications and structure closed to hydrocarbons fractionated from crude oil. The synthesized universal antioxidant 2,6-ditertiaryisobutyl-p-methyl phenol (Unol) with known stoichiometric coefficient of inhibition equal to (2) was used as a model for comparative evaluation at the same conditions. Modified chemiluminescence method was used to find the amount of absorbed oxygen and the induction periods in and without the existence of isolated antioxidants molecules. The results of induction periods and quantity of absorbed oxygen during the oxidation process were measured by manometric installation. It was seen that at specific equal concentrations of N,N-phenyl acetone and N, N-P-methyl phenyl acetone in comparison with Unol at 393 K were with (2) and (2.5) times efficient than do Unol. It means that they had the ability to inhibit the formation of new free radicals and prevent the chain reaction to pass from the propagation to the termination step rather than decomposition of formed hydroperoxides.

Keywords : antioxidants, chemiluminescence, inhibition, Unol

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