SYNTHESIS AND STUDY OF SULPHUR-CONTAINING ANTIOXIDANTS OF COMBINED ACTION

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This report deals with the results of recent researches on the synthesis, study the action mechanisms and also the relation between the structure and antioxidant efficiency of sulphur-containing derivatives of phenols (phenolsulphides), amines (aminosulphides) and other sulphur-containing organic compounds.

It was established that the compounds mentioned are the antioxidants of combined action, i.e. they terminate the oxidation chains by reacting with peroxy radicals and decompose hydroperoxides.

The unique characteristics of the above antioxidants such as ability of the products of their oxidation by hydroperoxides catalytically decompose hydroperoxides into the molecular products and cause multiple chain termination in the oxidizing hydrocarbons have been found out.

The supposition concerning the structures of oxidation products of some antioxidants, affecting the catalytic decomposition of hydroperoxides, has also been done.

The kinetic regularities and quantitative characteristics of the reactions of the above antioxidants with cumylperoxide radicals and cumyl hydroperoxide, and also interrelation between their structure and activity in the reaction were established.

Thus, the sulphur-containing compounds studied are the antioxidants of combined action: terminate oxidation chains reacting with peroxy radicals; being oxidized by hydroperoxides, form products which catalytically destruct hydroperoxides into molecular products and actively react with peroxy radicals.

In inhibiting the oxidation process of hydrocarbons by the antioxidants containing sulphur atom in combination with phenolic or aniline fragment, an internal synergism (autosynergism) is observed leading to new effects.