

**EFFECT OF SODIUM DODECYL SULFATE ON THE OXIDATION OF ETHYLBENZENE, CUMYL AND DODECANE***Kashkay A.M.*Institute of catalysis and inorganic chemistry  
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Additions of ionogenic surfactants (surfactants) catalytically influence the decomposition of hydroperoxides and oxidation of hydrocarbons. In the presence of surfactants, not only the rate of the process, but also the composition of the formed products, i.e. the direction of the reaction, may change. The character of influence differs for cationic and anionic surfactants, depends on the nature of the oxidised hydrocarbon and the hydroperoxide formed, as well as on the structure of the hydrocarbon fragment of the surfactant. The influence of surfactants on oxidation of hydrocarbons of different types is considered. Crude oil, refined petroleum products, oils and products based on them to varying degrees include water, oxygen-containing polar compounds and surfactants (surfactants) to prevent stratification and precipitation. Many surfactants are traditionally regarded as chemically inert components that ensure homogeneity and homogeneity of the material.

Ionogenic surfactants added to the hydrocarbon medium were found to have a strong effect on the kinetics of oxidation by molecular oxygen. Sodium anionic surfactants (C10-13) catalysed the hydroperoxide decomposition of ethylbenzene, cumene and dodecane. The kinetic curves of GPC consumption in the presence of sodium dodecyl sulfate (SDS) in the oxidation of ethylbenzene and cumene have an S-shaped appearance, which is characteristic of autocatalytic processes. With increasing GPC concentration at constant DDS content, the induction period decreases and the maximum rate of decomposition ( $W_{max}$ ) increases. In the case of DDS, apparently, the driving force of ROOH decomposition is the successful orientation of ROOH molecules in microaggregates formed by anionic surfactants. The essential role of the geometrical factor is indicated by the fact that during the decomposition of HPC in the presence of DDS, mainly  $\alpha$ -methylstyrene is formed along with phenol, a well-known product of acid-catalysed decomposition of HPC.

The kinetic curves of WPC consumption with different initial concentrations at (DDS = constant) mutually intersect. Thus, the consumption time  $t_k$  decreases with increasing initial concentration of HPC. The inverse dependence of  $t_k$  on the initial concentration of the reagent is characteristic of autocatalytic processes in which the catalyst proper is formed with the participation of this reagent (in this case GPC) during the reaction. It is noteworthy that in another system - dodecane hydroperoxide (HPC) during oxidation of dodecane, DDS also acts as a decomposition catalyst, but the kinetic curves of HPC consumption at different initial concentrations do not overlap. The decomposition of dodecane hydroperoxides in the presence of DDS results in the formation of olefins both in an inert atmosphere and in the oxidation of dodecane by molecular oxygen with a yield of about 20% (1400). In this case, DDS can be considered as a catalyst for oxidative dehydrogenation of alkane.