

Catalytic contribution of chemical sensitizers to the kinetics and direction of fast-flowing reactions in some energy-intensive compounds

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Studies of the catalytic contribution of chemical sensitizers and products of chemical decomposition reactions, as well as the explosive transformation of energy materials, allow us to assess their performance in technical devices and storage periods under certain conditions. It is important to separate the contribution of gaseous and condensed reaction products. For technical use in various mixed compositions, TATB and hexogen have become widespread, and interest is also shown in 2,4-dinitroanisole as a component of low-melting systems. In this paper, experimental studies and thermodynamic calculations of the products of decomposition reactions and explosive transformation of three energy-intensive compounds are carried out. The substances were previously contaminated with chlorine-containing, fluorine-containing and bromine-containing impurities. Reactions of interaction of decay products are shown by various methods of mass spectrometry, the mechanism of their decay is clarified. The results of the research are presented in the form of schemes of physico-chemical processes. The catalytic role of chlorine, fluorine and bromine in the slow decomposition and explosive transformation of the studied compounds is revealed.