Synthesis of α-Hydroxyalkyl Peroxide Esters and Ethers as Initiators of Radical Processes

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Abstract—α-Hydroxyalkyl peroxide esters and ethers containing, along with the peroxy bond, also acyloxy and alkoxy groups, are effective initiators of radical processes. The initiation efficiency is due to the capability of these molecules to generate simultaneously oxygen- and carbon-centered radicals capable of hydrogen abstraction from the substrate and of addition to >C=C< bonds. The selectivity of the synthesis of α-hydroxyalkyl peroxide esters and ethers is mainly determined by the steps of the synthesis and isolation of the intermediate α-chloroalkyl peroxides, because of their high reactivity. Experimental conditions allowing control of the synthesis of α-hydroxyalkyl peroxide esters and ethers were found.

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