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Chain reaction of N, N'- diphenyl -1,4- benzoguinonediimine with 2-mercaptobenzothiazole

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*Supervising author; ⁺Corresponding author Keywords: 2-mercaptobenzothiazole, N,N'-diphenyl-1,4-benzoquinonediimine, chain reaction, kinetics, the effect of the initiator.

Abstract

The kinetics of the reaction N, N'-diphenyl-1,4-benzoquinonediimine with 2-mercaptobenzoxazole in chlorobenzene at 343 K was studied. The reaction orders were defined on the components by the way of by introducing the initiator (tetraphenylhydrazine) found that the reaction is characterized by a chain mechanism of quadratic chain termination. There was defined the value of the parameter $k_{\rm pr}/(2k_{\rm t})^{1/2} = 12.4 \pm 1.1$ (l mol⁻¹c⁻ 1)^{1/2}, where k_{pr} – the rate constant for the rate-limiting step of continuing, and $2k_{t}$ – speed constant of chain termination step. It is shown that both specified steps proceed with 2-mercapto benzoxazolyl thiyl radicals.