APPLICABILITY OF THE PHENOMENOLOGICAL MODEL OF UNSTEADY BURNING TO EXOTHERMIC CONVERSION UNDER HIGH PRESSURES OF 1–10 GPA

V. M. Belskii[1] and B. S. Ermolaev[2]

[1]Russian Federal Nuclear Center — All-Russian Research Institute of Experimental Physics, 37 Mira Ave., Sarov, Nizhny Novgorod Region 607188, Russian Federation
[2]N. N. Semenov Federal Research Center for Chemical Physics of the Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation

Abstract: It has been shown that the phenomenological model of unsteady burning developed by Zel'dovich and Novozhilov for the rocket pressures can find application under certain conditions for an analysis of exothermic conversion of high explosives in the field of the higher pressures at a level of 1–10 GPa and more. It enables to introduce the effect of the pressure rise rate into the formal-kinetic equations applied for a modeling of reaction progress behind the initiating shock waves. This approach being realized will not only change the values of coefficients, which are included in these equations and determined by means of comparison of calculations with experimental data, but also let us to find conditions leading to extinction.

Keywords: unsteady burning; explosive combustion; explosive materials; shock initiation; nonideal detonation

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Contributors

Belskii Vladimir M. (b. 1947) — Doctor of Science in physics and mathematics, leading research scientist, Russian Federal Nuclear Center — All-Russian Research Institute of Experimental Physics, 37 Mira Ave., Sarov, Nizhny Novgorod Region 607188, Russian Federation; belsky.vmb@mail.ru

Ermolaev Boris S. (b. 1940) — Candidate of Science in physics and mathematics, leading research scientist, N. N. Semenov Federal Research Center for Chemical Physics of the Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; boris.ermolaev44@ mail.ru