

# SPECIFIC FEATURES OF BURNING OF PASTY CONDENSED SYSTEMS\*

V. A. Babuk, D. I. Kuklin, S. Yu. Naryzhnyi, and A. A. Nizyaev

D. F. Ustinov Baltic State Technical University “Voenmeh,” 1 Krasnoarmeyskaya 1st Str., St. Petersburg 190005, Russian Federation

**Abstract:** The burning process of pasty condensed systems has been studied. The factors determining the burning rate, the characteristics of the agglomeration process, and the properties of the surface layer have been determined. It is shown that these factors are close to the corresponding factors for solid propellants based on an active binder with a linear polymer. They consist in suppressing the formation of a skeleton layer with increasing pressure and, as a consequence, the agglomeration process. In addition, one of the consequences of this phenomenon is an increase in the sensitivity of the burning rate to pressure. New features that occur when using an active binder associated with the formation of the skeleton layer have been established. They consist in the connection of the activity of the binder and the structure of the propellant with the formation of the skeleton layer. Possible approaches related to the composition have been proposed to reduce the burning rate dependence on pressure with an almost constant energy potential. The directions of improvement of this type of energy systems are also determined.

**Keywords:** solid propellant; pasty propellant; skeleton layer; agglomerate; burning rate; burning rate law

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## Figure Captions

**Figure 1** The  $r_b(P)$  dependence: 1 — modified binder; 2 — modified binder and activated carbon; and 3 — initial binder

**Figure 2** The  $Z_m^a(P)$  (a) and  $\eta(P)$  (b) dependences

**Figure 3** Functions  $f_m(D)$  for single experiments: 1 — 6.3 MPa; and 2 — 1.3 MPa

**Figure 4** Mass density size distribution function of “pockets”

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## Contributors

**Babuk Valey A.** (b. 1948) — Doctor of Science in technology, professor, head of department, D. F. Ustinov Baltic State Technical University “Voenmeh,” 1 Krasnoarmeyskaya 1st Str., St. Petersburg 190005, Russian Federation; babul\_va@mail.ru

**Kuklin Dimitry I.** (b. 1997) — graduate student, D. F. Ustinov Baltic State Technical University “Voenmeh,” 1 Krasnoarmeyskaya 1st Str., St. Petersburg 190005, Russian Federation; dimitrykuklin1997@mail.ru

**Naryzhnyi Sergey Yu.** (b. 1994) — junior research scientist, D. F. Ustinov Baltic State Technical University “Voenmeh,” 1 Krasnoarmeyskaya 1st Str., St. Petersburg 190005, Russian Federation; sergei.nar@bk.ru

**Nizyaev Alexander A.** (b. 1987) — Candidate of Science in technology, associate professor, D. F. Ustinov Baltic State Technical University “Voenmeh,” 1 Krasnoarmeyskaya 1st Str., St. Petersburg 190005, Russian Federation; anizyaev@bstu.spb.su