TO THE PROBLEM OF HEARTH COMBUSTION ON THE SURFACE OF DOUBLE-BASE PROPELLANT

S. V. Finyakov

N. N. Semenov Federal Research Center for Chemical Physics of the Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation

Abstract: The paper presents an approximate model for determining the shape of the formed hot spot on the surface of burning gunpowder at different pressures of gas medium. It was found that with increasing pressure, the geometric dimensions of the hot spot decrease. The burning hearth appears in extinguishment or in nonstationary mode. Apparently, if the dimensions of the hot spot along the surface of the powder and along its height are connected by an "elliptical" connection then its geometric shape is the closest to the experimental shape.

Keywords: hearth; rate; curvature; extinction; pressure; temperature; surface; camera; powder

DOI: 10.30826/CE23160307 **EDN:** GVHQFN

Figure Captions

Figure 1 Approximation of a single dependence by a cubic polynomial for propellant N at a pressure of 5 atm: signs — exact values of the burning rate

Figure 2 The shape of the hot spot surface: (*a*) contour found according to model I; (*b*) II; (*c*) contour found according to model III

Table Caption

Calculated and experimental parameters of a burning hot spot

Acknowledgments

The work was supported by the Program of Fundamental Scientific Research of the Russian Federation "Processes of Combustion and Explosion," registration No. 122040500073-4, and had budget funding.

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Received February 15, 2023

Contributor

Finyakov Sergey V. (b. 1948) — Doctor of Science in physics and mathematics, chief research scientist, N. N. Semenov Federal Research Center for Chemical Physics of the Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; Finykhov@mail.ru