

ULTIMATE CONDITIONS OF BURNING THE MAGNESIUM POWDER IN NITROGEN–OXYGEN MIXTURE

V. M. Shmelev, V. G. Krupkin, V. M. Nikolaev, and S. V. Finyakov

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

Abstract: Regimes and ultimate conditions of burning the magnesium powder with a particle size of about 80 μm in nitrogen–oxygen mixture in the pressure range from 1 up to 80 atm were studied. It was shown that there was a critical concentration of oxygen in the mixture which determined the area of possible burning the magnesium powder. The boundary of the steady burning region was determined. Depending on the oxygen concentration, two burning regimes were possible: one-stage regime far from the burning limit and two-stage regime at the burning limit. The burning rate of magnesium at the burning limit was found in dependence on the mixture pressure.

Keywords: metal burning; magnesium; oxygen; nitrogen; diffusion burning

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Contributors

Shmelev Vladimir M. (b. 1940) — Doctor of Science in physics and mathematics, head of laboratory, N. N. Semenov Federal Research Center of Chemical Physics of the Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; shmelev.05@mail.ru

Krupkin Vladimir G. (b. 1949) — Doctor of Science in physics and mathematics, chief research scientist, N. N. Semenov Federal Research Center of Chemical Physics of the Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; krupkin49@mail.ru

Nikolaev Vladimir M. (b. 1975) — Candidate of Science in physics and mathematics, leading research scientist, N. N. Semenov Federal Research Center of Chemical Physics of the Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; vm-nikolaev@mail.ru

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