

METHOD TO DETERMINE THE THEORETIC BURN TEMPERATURE OF GASES IN THE CARTRIDGE

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Abstract: The grenade launcher with high-low pressure chambers, named the grenade launcher with double chamber or gas dynamic grenade launcher, belongs of the class of weapons with gases flows. The gases resulted from burning of propellant (powder) in the high-pressure chamber (combustion chamber) flow through one or more nozzles (orifices) in the low-pressure chamber (weapon chamber), where act on the grenade and increase its velocity.

The theoretical studies made on this systems comprise modelling of two-phase flow of black powder grains and their combustion products in the igniter. Also, the interaction of igniter efflux with the two-phase flow in propellant chamber with granular propellant charge is considered. The experimental investigations of igniter function in open air and in live propellant charge placed in fiberlass propellant chambers are performed. Influence of igniter characteristics on the ignition of propellant charge is established. Verification of the developed theoretical model by the comparison with experimental data is carried out. The presented theoretical-experimental access enables the choice of optimum igniter for ignition of propellant charge.

Key words: combustion, powder, chemical process, kinetic energy, grenade