

# Initiation of detonation in explosives based on HMX by rectangular shock waves with a pressure amplitude of up to 5 GPa

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To verify the models of detonation kinetics used in mathematical modeling of the operation of products containing explosives data on shock-wave initiation of detonation obtained in model experiments are used. Successful models of detonation kinetics are those that, with the same set of parameters, are able to describe with acceptable accuracy the entire set of experimental data on shock wave initiation. In this work, we studied the process of detonation initiation in an HMX-based explosive by rectangular shock waves with front pressures of 2 and 5 GPa. The loading of explosives was carried out by a impactor using barrel loading installations. The registration of process was carried out using the method of manganin pressure sensor, PDV and radio interferometer. The pressure profiles behind the front of the initiating shock wave in various sections of the loaded explosive sample were obtained, x-t and D-t diagrams of the transition of the initiating shock wave to the detonation wave were recorded. The experimental data are compared with the calculated ones obtained using the “OCHAG” detonation kinetics model: a good agreement between the calculated and experimental data is observed. The experimental results can also be useful for testing other models of detonation kinetics.