Advanced blasting solutions with fast-combusting energetic compositions for extraction of dimension stones, or for demolition in tender conditions of civil engineering

Petar Krastev Shishkov, Nadezhda Krasimirova Stoycheva

 University of mining and geology “St. Ivan Rilsky”, Sofia, Bulgaria
sfxman86@yahoo.com ; nandy\_f@abv.bg

**Abstract.**

 In some cases of resources extraction, as well as during construction at industrial and urbanised territories, commercial explosives are not enough safe for the surroundings with regard to the generated fly-rocks, air-blast, toxic fumes, seismic waves and vibrations. The main reasons for these harmful impacts of explosion are the velocity and mechanism of the chemical reaction of explosive decomposition. The industry redirects its attention from the detonating explosives to high-speed combusting energetic materials. Utilisation of aged military arms is a good source of cheap materials for the explosive industry. The production of low explosive non-detonating mixtures from long term stored single base propellants (SBP), double base propellants (DBP) and ammonium nitrate prills in different configurations, as well as popular flash-powder compositions was studied. The samples of different cartridge casings, filled with non-detonating propellant mixtures, or flash-powder compositions was investigated by two methods for velocity of propagation. The blasting cartridges were made from the investigated materials and were examined via field tests. General information on dimension stones as well as brief information about the explosives involved in their extraction are presented.

***Key words:*** *non-detonating blasting cartridges, propellants, cautious blasting, dimensional stone extraction.*