**ABSTRACT**

The aim of the study was to develop methods to reduce the penetration ability of the flame front and red-hot striking elements that propagate in the confined space of mines. In the article is considered a method for localizing explosions of a methane-dust mixture in coal mines, by creating an aqueous barrier (increased density) in the propagation path of the flame front and incandescent particles, using a high-energy pyrotechnic composition based on nanoaluminum. The optimal pyrotechnic composition contents of ammonium nitrate - 50%, smokeless powder - 45%, magnesium - 3% and nanoaluminum - 2%. This composition punched the target to a depth of 6.5 mm with a barrier thickness of 50 mm. Water cannon with a nozzle with a diameter of 80 mm, allows to localize the spread of the flame front.

**Keywords:** Pyrotechnic composition, Nanoaluminum, Magnesium, Smokeless powder.