

ANALYSIS OF POSSIBLE DEVELOPMENT OF BLINDING SOURCES OF NON-COHERENT RADIATION ON THE BASE OF IMPULSE PYROTECHNIC RADIATORS

Kobylkin I.F., Selivanov V.V.

Bauman Moscow State Technical University

Abstract

The paper is devoted to the analysis of possible development of one of special means of temporal neutralization to be applied during peace-keeping and anti-terrorism actions. A variant of less-than-lethal weapon – blinding compact radiators based on impulse pyrotechnic sources of non-coherent radiation has been considered. In contrast to laser ones these sources of radiation have continuous isotropic defeating field that is their advantage at comparatively low distances and in closed areas (buildings and objects of any kind). Photo-mixtures (mixtures of powder metal fuel (Al, Mg) and oxidizer (KClO₄)) reacting in detonation-like regime are proposed to be applied as energetic material for impulse radiators.

Different variants of radiator constructions have been analyzed, a conclusion of perspectives of radiators with spatial division of fuel and oxidizer has been made. Joint projection of fuel and oxidizer, their mixing and igniting detonation-like regime of conversion in formed mixture are produced by explosion of special inflaming dispersing charge (IDC). In order to prevent metal fuel micro-particles compacting during projection it is necessary to use charges of low-density explosive composition on the base of TNT, RDX, Al and foamed polystyrene (TNT/RDX/Al/foamed polystyrene) as IDC.

In the paper known energetic criteria of eye defeat have been considered, radiating ability of photo-mixtures has been analyzed, detonation characteristics of low-density composition TNT/RDX/Al/foamed polystyrene are presented.

Keywords: blinding sources, non-coherent radiation, impulse pyrotechnic radiator