5 Conclusions

The fine grain composition of Mg-Al alloy powder and PTFE reveals high resistance to all mechanical and thermal impulses and is extremely sensitive to hot sparks and open fire. The burning rate of the composition changes from 1 cm \cdot s⁻¹ to 100 m \cdot s⁻¹ along with its density decreasing. Charges with the composition of density below 1 g \cdot cm⁻³ burn so violently, that the phenomena is similar to explosion. Charges with density above 1.1 g \cdot cm⁻³ burn relatively rapidly and stably.

The burning, at a high subsonic velocity, of the pyrotechnic composition under study causes powerful air blast. The external features of such a phenomenon (light, thunder, flame and an air blast wave) make it similar to explosion. The nature of the generated pressure impulse is not that of a typical shock wave. A rise of pressure over the distance from the point of explosion to the maximum value lasts 50-100 milliseconds, while for shock waves this factor is less than a microsecond for equivalent charges. The methods of initiation of the composition influence the shape and parameters of the pressure impulse. Surprisingly, a strong detonation initiation creates a much lower pressure impulse than in the case of initiation by a weak flame.

The charges of low density PAM/PTFE composition, which are energetically equivalent to the ANFO high explosive in terms of explosion heat, produce air blast

waves with a total pressure impulse hundreds times bigger. The effect described in the paper was used for evaluation of explosive pressure resistance of industrial doors and windows. It also seems feasible to use the described effect for manufacturing explosive charges with enhanced demolition ability.

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近年,《含能材料》得到了广大作者的支持,为表达我们深深的谢意,特向 2006~2007 两年来发表两篇以上论文的作者(第一作者)赠送 2008 年全年《含能材料》。本刊期望在新的一年能得到广大作者更多的关心! 欢迎赐稿!

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