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低附带毁伤弹药爆炸威力的理论分析与试验研究



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Title: Theory Analysis and Experiment Research on Blast Effect of Low Collateral Damage Ammunition

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Keywords: explosive mechanics; low collateral damage; composite material; blast effect; duration of positive pressure

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摘要: 为适应现代反恐作战的需求, 提出了一种新型低附带毁伤弹药, 根据爆炸力学相关理论建立了杀伤元抛撒速度与复合材料外壳、装药三者之间的关系模型。通过静爆试验, 利用压力传感器测试出3种不同装药爆炸后的超压曲线。结果表明, 从压力曲线来看复合材料外壳装药与纯炸药、发泡塑料外壳装药爆炸产生的冲击波超压曲线不同, 正压作用时间长。最后得出, 与传统杀爆弹相比低附带毁伤弹的杀伤区域较小, 而在较小的杀伤区域内杀伤效应更强。

Abstract: In order to adapt the need of anti terrorism, a new kind of low collateral damage ammunition was put forward. The operational principle of this ammunition was introduced. Based on the blast mechanics theory, a model describing the relation among casting velocity of lethal unit, composite material shell and explosive charge was established. Overpressure curve of three different circumstances was measured using the pressure sensor in the explosive experiment. The duration of the positive pressure of the airblast pressure wave caused by the explosive charge with composite shell is bigger than the unconfined explosive charge and that with foaming plastic shell. The results confirmed the blast effect of the low collateral damage ammunition is higher than the conventional blast ammunition in the smaller area.

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