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CL-20基含铝炸药爆轰波阵面法向速度与曲率的关系

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Title: Relationship Between Normal Velocity and Curvature of Detonation Wave Front for CL-20 based Aluminized Explosive

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关键词: 爆炸力学; 含铝炸药; 非理想爆轰; Dn(κ)关系; CL-20; 高速扫描; 拟定态波形

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摘要: 采用高速扫描相机及电探针测速法测量了具有相同铝含量的CL-20基和RDX基含铝炸药的拟定态爆轰波形及爆速，分析了炸药波阵面法向速度Dn与曲率κ之间的函数关系。结果表明，CL-20基含铝炸药的爆轰波阵面较RDX基含铝炸药的平坦，其法向爆速受曲率效应的影响也较RDX基含铝炸药的小。当$\kappa>0.005mm^{-1}$时，其法向爆速的下降速率明显小于RDX基含铝炸药；当$\kappa<0.005mm^{-1}$时，其法向爆速的下降速率略高于RDX基含铝炸药。

Abstract: The steady state wave shapes and detonation velocities of CL-20 based and RDX-based aluminized explosives with same Al content were measured by a high speed scanning camera and electrical probe measuring velocity method. The function relationship between the normal velocity (Dn) and curvature (κ) of the detonation wave front of explosives was analyzed. Results show that the detonation wave front of CL-20 based aluminized explosive is flat than that of RDX based aluminized explosive. The effect of curvature effect on normal detonation velocity of CL-20 based aluminized explosive is smaller than that of RDX-based aluminized explosive. When $\kappa>0.005mm^{-1}$, the reduced rate of Dn of CL-20 based aluminized explosive is obviously less than that of RDX based aluminized explosive. When $\kappa<0.005mm^{-1}$, the reduced rate of Dn of CL-20 based aluminized explosive is slightly higher than that of RDX-based aluminized explosive.

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备注/Memo: -

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