量对发射药抗冲和抗压强度的影响，当固化剂用量为预聚体所需量 2.0 ~ 4.5 倍时（发射药体系含 20% NC），发射药的抗冲和抗压性能较合适。

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Mechanical Properties of JMZ Gun Propellants

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Abstract: The static and dynamic mechanical properties of gun propellants containing NC, RDX and polyether-urethane PET with mixed nitrate easter as plasticizing agent (JMZ gun propellants) were tested by DMA and materials tester at different temperatures. The influence rule of prepolymers of PET and curing agent contents on mechanical properties of propellants were obtained. The results show that when molecular mass of PET prepolymer with 2 functional groups increases, impact strength of JMZ gun propellant descends. Molecular mass of PET prepolymer with 3 functional groups has little influence on impact strength of JMZ gun propellants. Mechanical properties of JMZ gun propellants were optimized with curing agent content of about 200% - 450% quantity for curing PET prepolymer (JMZ propellants containing 20% NC). The results also show that contents and functionality of PET materials affect the mechanical properties of propellants, and the mechanical properties of propellants are improved by using 3 functional group polyether poitamine and appropriate molecular mass.

Key words: materials science; PET; gun propellant; mechanical property; functionality