

## Method of Drag Reduction and Extend Range Based on Variable Burning Rate of Base Bleed Propellant

ZHANG Zhu-wei, ZHANG Ling-ke

(School of Energy and Power Engineering, Nanjing University of Science and Technology, Nanjing 210094, China)

**Abstract:** In order to research the drag reduction and extend range characteristics of base bleed projectile, the three burning models were established for base bleed propellant with different burning rate, cladding propellant with variable burning rate and different cladding layer position of propellant for 155 mm base bleed projectile. The drag reduction and extend range characteristics of base bleed projectile were calculated and analyzed numerically by introducing the burning rate change coefficient. Results show that the burning rate change coefficient increases from 0.7 to 1.2, the working time of the base bleed reduces 27.08 s, the firing range reduces 1.16 km and the extend range rate increases 3.86%. The extend range rate is 32.33% by using the variable burning rate propellant, which the inner layer burning rate is higher than outer layer. The maximum firing range is 39.76 km by optimizing the propellant at 1/4 of the inner ring. Therefore, the drag reduction and extend range characteristics of base bleed projectile could be improved by optimizing the layer position and using variable burning rate of base bleed propellant.

**Key words:** base bleed projectile; base bleed propellant; variable burning rate; reduction drag; extend range

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### 《含能材料》“含能共晶”征稿

含能共晶是不同含能分子通过氢键等相互作用力形成的具有稳定结构和性能分子晶体。含能共晶充分组合了单质含能分子的优点,呈现出感度低,综合性能优良的特点,具有潜在的应用前景,共晶研究已经引起国内外含能材料学界的高度关注。为推动含能共晶的研究和交流,本刊特推出“含能共晶”专栏,主要征稿范围包括含能共晶晶体设计与性能预测、含能共晶的制备、结构解析、性能等。来稿请注明“含能共晶”专栏。

《含能材料》编辑部