

Front Curvature Rate Stick Experiment of TATB Based Insensitive High Explosives at High Temperature

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Abstract: To study the influence of high temperature on the front curvature rate effect for insensitive high explosives, steady-state detonation velocities and wave shapes were obtained for TATB Based Insensitive High Explosives (IHEs) with three different diameters at the temperature 60 °C by using high speed streak camera technique and electric foil velocimetry. Results show that steady-state detonation velocities increase almost linearly with the diameter of TATB based IHEs at the temperature 60 °C. For each charge diameter, steady-state detonation waves propagated slower and the wave shapes become much curved as the initial temperature increases. The $D_n(\kappa)$ parameters of TATB based IHEs at the temperature 60 °C were obtained numerically using the genetic arithmetic method for DSD. By using these $D_n(\kappa)$ parameters, the detonation propagation behaviors of TATB based IHEs at the temperature 60 °C were simulated with the DSD model. The numerical results agree well with the experimental ones.

Key words: insensitive high explosive; front curvature effect; steady-state detonation velocity; steady-state detonation front wave shape; detonation shock dynamics

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编者按: 近日,西南科技大学裴重华教授参考《关于“芪”的读音和使用的探讨》(编辑学报,2012(S2):36-37),严谨地分析了“六硝基芪(HNS)”中“芪”的读音并来信,以期促进含能材料学科相关知识的正确传播。希望含能材料领域的学者们踊跃发言,参与讨论。

关于六硝基芪(HNS)中“芪”的读音

近日在评阅一份论文时涉及一个六硝基芪的炸药,看“芪”字被打印成“卅”和“氏”两个字分开粘合而成,字体别扭,就去查“芪”的读音,在“dī”中没有搜索到“芪”字,后来通过部首查,找到了“芪”字。百度百科对该字有解释:芪(读音 zhī),亦作芪(读音 qí)(stilbene),即指 1,2-二苯基乙烯(1,2-diphenylethene)。后来咨询同行专家,原来“芪”字一直误读为“dī”,曰:老师就是这样教的。为了避免一讹再讹,特此提出供各位方家讨论。

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