

[1]陈进,袁宝慧,梁争峰,等.活性材料能量释放特性实验评估方法[J].火炸药学报,2015,38(3):49-53.[doi:10.14077/j.issn.1007-7812.2015.03.009]

CHEN Jin,YUAN Bao-hui,LIANG Zheng-feng,et al.An Experimental Evaluation Method of Energy Release Characteristics of Reactive Materials[J].,2015,38(3):49-53.[doi:10.14077/j.issn.1007-7812.2015.03.009]

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## 活性材料能量释放特性实验评估方法 分享到:

《火炸药学报》[ISSN:1007-7812/CN:61-1310/TJ] 卷: 38 期数: 2015年第3期 页码: 49-53 栏目: 出版日期: 2015-07-01

**Title:** An Experimental Evaluation Method of Energy Release Characteristics of Reactive Materials

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**关键词:** 爆炸力学; 活性材料; 能量释放特性; 准静态压力; 比化学能

**Keywords:** explosion mechanism; reactive materials; energy release characteristics; quasi static pressure; specific chemical energy

**分类号:** -

**DOI:** 10.14077/j.issn.1007-7812.2015.03.009

**文献标志码:** A

**摘要:** 为评估与表征活性材料在撞击作用下的能量释放特性,基于VCC实验方法,对动态能量释放特性的测量装置进行了改进,建立了活性材料动态能量及反应效率与准静态压力的函数关系,并针对3种典型活性材料进行了验证。利用压力传感器和高速摄像机获取活性材料发生撞击反应后容器内的准静态压力及火球的变化过程,根据最大准静态压力值计算了活性材料释放的比化学能和反应效率。结果表明,在实验条件及配方相同的条件下,所获得的比化学能及反应效率的一致性均较好,证明该方法可靠。

**Abstract:** To evaluate and characterize the energy release characteristics of reactive materials under impact, a dynamic energy release characteristic testing device was improved based on Vented Chamber Calorimetry(VCC) test method. The function relations of dynamic energy of reactive materials, quasi-static pressure and reaction efficiency were established. At the same time, aiming at three typical reactive material samples, the verification was performed. The quasi-static pressure inside the chamber after impact response and fireball change process of reactive materials were acquired by a pressure sensor and a high-speed camera. The specific chemical energy released by reactive materials and reaction efficiency were calculated based on the value of maximum quasi-static pressure. The results show that the consistency of specific chemical energy and reaction

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efficiency obtained under the same formulation and experimental condition is good, which demonstrates the reliability of this method.

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备注/Memo: -

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更新日期/Last Update: 2015-06-30