

## Correlation between Alternating Temperature Accelerated Aging and Real World Storage of HTPB Propellant

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**Abstract:** Alternating temperature accelerated aging test was designed to ensure that accelerated aging could preferably simulate real world storage of HTPB propellant. Aging test was designed in the temperature range from  $-10\text{ }^{\circ}\text{C}$  to  $60\text{ }^{\circ}\text{C}$  at three different rate of change ( $10\text{ }^{\circ}\text{C}/12\text{ h}$ ,  $20\text{ }^{\circ}\text{C}/12\text{ h}$ ,  $30\text{ }^{\circ}\text{C}/12\text{ h}$ ). Mechanical properties of HTPB propellant aged for three different periods were measured and analyzed. The correlation between accelerated aging and real world storage was analyzed in terms of elongation. Results show that the tensile strength increased and the elongation decreased after accelerated aging, showing the same trend of real world storage. The mechanical properties of HTPB propellant is strongly influenced by the rate of temperature change, and alternating temperature accelerated aging test is consistent well with real world storage.

**Key words:** solid mechanics; HTPB propellant; alternating temperature; real world storage; correlation; elongation

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## 第三届固体推进剂安全技术研讨会征文通知(第一轮)

第三届固体推进剂安全技术研讨会拟于2011年5月在福建(厦门或武夷山)召开,此次会议由航天工业固体推进剂安全技术研究中心主办,航天科技集团公司四院四十二所承办。

会议主题: 固体推进剂安全技术研究进展与发展方向

### 一、征文范围

- (1) 固体推进剂安全技术研究进展与发展方向
- (2) 固体推进剂配方与新型含能材料安全性
- (3) 固体推进剂安全性试验方法与测试技术
- (4) 固体推进剂安全性数值模拟及仿真分析技术
- (5) 固体推进剂安全性评估、评价方法
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- (7) 固体推进剂低易损性技术
- (8) 固体推进剂安全性相关技术

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