

Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

The evolution of sensitivity in HMX-based explosives during the reversion from delta to beta-phase PAUL PETERSON, KIEN-YIN LEE, DAVID MOORE, GABE AVILUCEA, LANL — In an effort to better understand the evolution of sensitivity in HMX-based explosives formulations during the reversion from delta to beta-phase, we have performed friction and impact experiments on a 3:1 mixture of Class 1 and Class 2 HMX. Initial baselines for Type 12 Drop Wt. Impact and BAM friction sensitivities were taken for the beta-HMX. The HMX was then heated at approx 180 degrees C for 14 hours. Raman spectroscopy was used to confirm the conversion to delta-phase. Impact and friction tests on the delta-HMX indicated a 20 percent increase in sensitivity for the delta-HMX in both impact and friction. Three weeks later we re-examined the HMX using Raman to determine the amount of reversion to beta-phase. However Raman spectroscopy indicated that the delta-HMX had instead converted to alpha-phase. Impact and friction tests were then repeated showing an additional 20 percent increase in sensitivity for the alpha-HMX. The alpha-HMX appears to be fairly stable over time as illustrated by Raman spectrum.

Paul Peterson
LANL

Date submitted: 23 Feb 2007

Electronic form version 1.4