

Abstract Submitted  
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**The increased shock sensitivity of PBX 9502 at high temperature**

PHILIP RAE, EVA BACA, ANGELO CARTELLI, WX-6, LANL — It has been shown previously that the shock sensitivity of TATB based PBXs can be significantly increased at elevated temperature. In fact, some researchers have reported that at 250°C the Pop plot for LX-17 (a TATB based composition) overlays the Pop plot for room temperature PBX 9501 (an HMX based composition). The current study made use of the modified LANL small-scale gap test to investigate the shock sensitivity as a function of temperature. The modified gap test inputs an almost planar shock into the acceptor explosive rather than the more usual highly divergent one. This important change not only makes the geometry less sensitive to machining and assembly imperfections than a divergent version, but also allows accurate computer simulation using models calibrated to 1D Pop plot data. In these tests, samples of PBX 9502 were held at temperatures of 180, 200, 230 & 260°C for 30 minutes prior to firing the donor booster. As expected a significant increase in sensitivity was observed, but the material was not as sensitive as PBX 9501 even at 260°C. The method of performing these more complex high temperature gap tests and the accompanying computer modeling of the results will also be presented.

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