Abstract Submitted
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Measurements of shock sensitivity in a damaged explosive using a small-scale gap test[1] NICK CUMMOCK, ALEX CASEY, GABRIEL MONTOYA, Purdue University, CHRIS MOLEK, CHAD RUMCHIK, AFRL, STEVENSON, Purdue University — The shock sensitivity of an explosive is often given in terms of the input pressure versus the corresponding run-distance to complete detonation. Plotted in log-log space, these are known as Pop-plots. In this work, small cylindrical samples of less than 0.5 g of explosive are used in a small-scale gap test to determine the run-distance as a function of pressure in PBX 9501 at varying initial densities, which are compared to thermally damaged samples. In this set of experiments, the L50, or pressure input at which 50% of the samples will initiate is determined for pellets of length equal to 6 mm and 3 mm, where the pellet length is taken as the run distance for the L50 pressure. Differences in shock sensitivity as shown by Pop-plots are shown. Further work involving isolation of the mechanisms influencing the change in shock sensitivity, such as porosity shifts, changes in particle size, and solid phase changes is considered.

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