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Plate-Impact Experiments on the HMX-based Explosive PBX 9404 FORREST SVINGALA, RICHARD GUSTAVSEN, JUSTIN JONES, ANDREW HOULTON, Los Alamos National Laboratory — This report examines a series of 5 plate-impact experiments on the HMX-based explosive PBX 9404 (94%wt HMX, 3%wt CEF, 2.9%wt NC, 0.1%wt DPA), Lot 10102Y. These experiments were performed using the single- and 2-stage gas guns at Los Alamos National Laboratory, and cover a pressure range of 2.98–6.66 GPa. Through the use of an embedded magnetic particle velocity gauge technique, *in situ* particle velocity histories and shock wave times of arrival (ToA) are obtained at 11 gauge locations and 116 'shock tracker' points, respectively. Analysis yielded measurements of the reactant Hugoniot in the shock velocity-particle velocity plane, and run distances to detonation as a function of initial pressure. The shock Hugoniot was found to differ from a legacy Hugoniot published in the LASL Explosive Reference Guide, while the run to detonation data agree within error, but with a systematic shift. Re-analysis of the legacy run to detonation data using the Hugoniot measured in this work is shown to correct this shift. Hugoniot and Pop pot fits for this lot of PBX 9404 are reported, and detailed particle velocity and ToA data are available for use by the modeling community in the LANL Small Scale Database.

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