

Abstract Submitted
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Isentropic Compression Studies With High Explosive Pulsed Power¹ DOUGLAS TASKER, JAMES GOFORTH, HENN OONA, Los Alamos National Laboratory — An extensive study of the one-dimensional isentropic compression experiment (ICE), performed with High Explosive Pulsed Power (HEPP), has been completed at the Los Alamos National Laboratory (LANL); the findings will be summarized. The study has demonstrated that accurate, high pressure, isentropic Equations of State (EOS) data may be obtained with the HEPP-ICE technique. It will be shown that the HEPP-ICE target configuration is capable of producing magnetic pressures that are uniform to 1 part in 1000 over the central 87% of the sample faces, and that HEPP-ICE provides exact matching of the pressures between opposing samples; both of these features are key to obtaining accurate isentropic EOS data. An analysis of the overall accuracy of this technique will be given, together with the methods required for the highest accuracy. Isentropic EOS data have been obtained with the prototype LANL HEPP-ICE system, and the results for tungsten and copper will be presented. Moreover, some interesting structure was observed in the elastic to plastic failure of tungsten.

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