

Abstract Submitted
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Exploring the temperature dependence of failure mechanisms in fragmenting metal cylinders DAVID JONES, DAVID CHAPMAN, Imperial College London, PAUL HAZELL, Cranfield University, SIMON BLAND, DANIEL EAKINS, Imperial College London — We present current work to investigate the influence of temperature on the dynamic fragmentation of metals. Pre-heated/cooled cylinders of Ti-6Al-4V were subjected to rapid radial expansion up to and past the point of failure using a modified expanding insert method on a single stage gas gun. Additional experiments were performed using an electromagnetic drive system to produce uniform deformations on targets of differing dimensions (radius, wall thickness). Issues concerning the geometry of the experiments, methods of heating and cooling the sample and diagnostics are covered. Finally, the role of temperature on adiabatic shear banding and fragment distribution statistics is discussed.

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