

Abstract Submitted
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Spall Experiments On Stainless Steel 21-6-9 Varying Pulse Lengths and Longitudinal Stress GLENN WHITEMAN, AWE — The material addressed in this research is 21-6-9, a 200 series stainless steel alloy which has so far found applications in aviation, demolition, motor-vehicle design and nuclear reactor containment. The shock Hugoniot, HEL and spall strength of this material has been determined in gas-gun driven uni-axial strain experiments. The spall signature has been determined in experiments varying input pulse lengths and maximum stress. The material shows a decrease of spall strength with pulse duration and an increase with longitudinal stress. Post loading microstructure analysis has revealed both brittle and ductile failure and a change from dislocation to twinning deformation mechanisms at a stress between 2.5 and 6.5 GPa.

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