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Blast and Shock Mitigation Through the Use of Advanced Materials SUSAN BARTYCZAK, LAUREN EDGERTON, Naval Surface Warfare Center Dahlgren Division, WILLIS MOCK, Kratos Defense Engineering Solutions — The dynamic response to low amplitude blast waves of four viscoelastic materials has been investigated: Dragonshield BC^{TM} and three polyurea formulations (P1000, P650, and a P250/1000 blend). A 40-mm-bore gas gun was used as a shock tube to generate planar blast waves, ranging from 1 to 2 bars, that impacted instrumented target assemblies mounted on the gas gun muzzle. Each target assembly consisted of a viscoelastic material sample sandwiched between two gauge assemblies for measuring wave velocity and input/output stresses. Each gauge assembly consisted of one polyvinylidene fluoride (PVDF) stress gauge sandwiched between two 3.25 inch diameter 6061-T6 aluminum discs. Impedance matching techniques were used on the stress measurements to calculate the stresses on the front and back of the samples. The shock velocity-particle velocity relationship, stress-particle velocity relationship, and blast attenuation for each material were determined. The experimental technique, analysis methodology, and results will be presented.

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