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A Study of the Shock Sensitivity of PBX 9501 Damaged by Compressive Loading DARLA THOMPSON, RICHARD GUSTAVSEN, DANIEL HOOKS, PAUL PETERSON, RACCI DELUCA, DAVID STAHL, STEPHANIE HAGELBERG, Los Alamos National Laboratory, ROBERT ALCON, DE DIVISION, LANL TEAM — We have studied the effects of damage caused by compressive loading on the shock sensitivity of the plastic bonded explosive PBX 9501. PBX 9501 consists of 95 wt. % HMX ($C_4H_8N_8O_8$) and 5 wt. % Nitroplasticized Estane binder. The binder is a mixture of 49 wt. % Estane[®]5703 (BF Goodrich), 49 wt. % Nitroplasticizer (a 50/50 eutectic mixture of bis(2,2-dinitropropyl)formal and bis(2,2-dinitropropyl)acetal), and 2 wt. % Irganox[®] 1010 stabilizer. PBX 9501 cubes, 25.4 mm on a side, were subjected to various uniaxial compressive loads in an Instron machine. After loading, 3.5 mm thick slices were taken from the center of each cube. These slices were then subjected to nearly identical 35 kbar shocks. Transmitted shock wave profiles were measured using interface velocimetry (VISAR). Comparison of shock wave growth is a measure of shock sensitivity. Results on four specimens are being analyzed relative to previous baseline data on PBX 9501 at various pressed densities, to determine if the response of damaged material is due to factors other than simple density changes. (*LA-UR 07-1206*)

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