

Abstract Submitted  
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**Static and Dynamic Compaction of CL-20 Powders** MARCIA COOPER, AARON BRUNDAGE, EVAN DUDLEY, Sandia National Laboratories — Hexanitrohexaazaisowurtzitane (CL-20) powders were compacted under quasi-static and dynamic loading conditions. A uniaxial compression apparatus quasi-statically compressed the powders to 90% theoretical maximum density with applied stresses up to 0.5 GPa. Dynamic compaction measurements using low-density pressings (62-70% theoretical maximum density) were obtained in a single-stage gas gun at impact velocities between 0.17-0.70 km/s. Experiments were conducted in a reverse ballistic arrangement in which the CL-20 laden projectile impacted a target consisting of an aluminized window. VISAR-measured particle velocities at the explosive-window interface determined the shock Hugoniot states for pressures up to 0.9 GPa. The powder compaction behavior is found to be stiffer under dynamic loading than under quasi-static loading. Additional gas gun tests were conducted in which the low-density CL-20 pressings were confined within a target cup by the aluminized window. This arrangement enabled temporal measurement of the transmitted wave profiles in which elastic wave precursors were observed.

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