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Dynamic High-Pressure Behavior of Customized Silica Sand and Natural Moist Sandy Soil GREGORY KENNEDY, NARESH THADHANI, Georgia Institute of Technology, Material Science and Engineering — The dynamic high-pressure behavior of two sets of sand based materials is presented. Sand and sandy soils with a wide range of properties have been studied in previous literature. Sand is a broad term that is applied to a wide range of geologic materials found in nature. This work investigates one complicated system, a natural sandy soil with an 8% water content pressed to 1.7g/cm^3 , and a customized high purity silica sand with rounded grains and controlled size, size distribution and water content. The customized sand was selected with two size ranges, approximately $50\mu\text{m}$ and $500\mu\text{m}$, to provide a range of responses to compare with meso-scale simulations. The materials were pressed into a copper capsule ring connected to a copper driver plate and backed by a PMMA window. Experiments were performed in plate impact high velocity gas gun, using VISAR velocity interferometry and PVDF piezoelectric pressure gauges. The shock velocity was calculated from transit times measured from velocity profiles recorded by VISAR probes at the back surface of the driver and the rear surface of the sample in contact with the PMMA window. PVDF pressure gauges were used in some experiments to compare with the VISAR records.

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