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Dynamic High-Pressure Behavior of Quartz Silica Sand of Two Different Particle Sizes GREGORY KENNEDY, NARESH THADHANI, Georgia Institute of Technology — The dynamic high-pressure behavior of customized high purity quartz silica sand is presented. The silica was chosen to have rounded grains and controlled size, size distribution, and water content. The customized sand was selected with two narrow size ranges, approximately 100μm and 500μm, 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 light gas gun and powder gun, using VISAR and PDV velocity measurement techniques, and PVDF piezoelectric pressure gauges. The compaction wave velocity was calculated from transit times measured by PVDF gauges placed on either side of the silica samples. Interface particle velocity profiles were recorded by VISAR and PDV at the rear surface of the sample in contact with a PMMA window. Analysis of the details of the shapes of the rise and plateaus in the VISAR and PDV measured velocities reveal a dependence on the size of the particles.

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