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Experimental Study on Shear Response of 92.93 wt% Alumina under Combined Pressure-Shear Loading YAO GUOWEN, College of Civil Engineering and Architecture, Chongqing Jiaotong University, Chongqing, 400074, PR China, LIU ZHANFANG, Department of Engineering Mechanics, Chongqing University, Chongqing, 400044, PR China — Pressure-shear plate impact experiments and soft recovery experiments were performed for 92.93 wt% aluminas with 75-mm-diameter compressed-gas gun. The in-material longitudinal and transverse particle velocities were traced by embedded electromagnetic velocity gauges. The decoupled transverse particle velocities show an attenuation of shear waves with decreasing of material shear rigidity. SEM analysis of intact samples shows heterogeneous meso-structures, and that of recovered samples shows the transit of intergranular microcracks to transgranular microcracks with increasing shock loading. Shear component promotes the microcracks nuclearing and expanding, and these microcracks result in remarkable dilation of alumina samples after unloading.

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