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More on the response of ceramics to shock waves ELI BAR-ON, Rafael Ballistics Center — The strength properties of Coors AD995 alumina is investigated in the stress range from about HEL (5 to 7 GPa) and up to 120 GPa. Simulating the experimental work done by Grady, Furnish and Chhabildas and Reinhart and Chhabildas, we try to explain the structure of loading, unloading, reloading and cyclic loading profiles measured by velocity interferometry. Many physicists are talking about plasticity and slip systems as the mechanism behind the unique structure of the response of Alumina to shock waves, and many use pseudo elastoplastic strength models to describe this response. Here we try to show that the strength properties of Alumina, being a brittle material, can be derived just from the combined effects of micro-mechanisms like pore crushing and cracks initiation and growth. Any, so called "yield," is due to pore crushing and not to invoked slip systems.

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