

Abstract Submitted  
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**Characterization of a Y-TZP Zirconia material for gas gun experiments** MICHAEL GOFF, JEREMY MILLETT, GLENN WHITEMAN, MARK COLLINSON, JAMES FERGUSON, AWE plc, Aldermaston, Reading, RG7 4PR, UK — A number of shots were carried out on the AWE single stage gas gun with Het-V diagnostics to determine the shock Hugoniot of a commercial Y-TZP Zirconia ceramic material ( $\rho$  6.05 g/cc). Zirconia ceramic has a higher density and acoustic impedance than alumina, this allows for higher shock pressures to be achieved in impact velocity limited scenarios where conductive materials are not suitable. For example, when using electromagnetic particle velocity gauge diagnostics. The grade examined here was highly reflective to 1550 nm wavelengths, which negated the need for window materials when taking free surface velocity measurements. The shock Hugoniot was determined to be linear up to 13.4 GPa with the form  $U_s = 5.82 + 2.20 U_p$  and the HEL was in the range of 7-9 GPa. Additionally data from lateral gauge shots examining the failure behavior of the material are reported on.  
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