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On the shock response of the magnesium alloy Elektron 675 PAUL HAZELL, GARETH APPLEBY-THOMAS, Cranfield University, CLIVE SIVIOUR, EUAN WIELEWSKI, University of Oxford — Alloying elements such as aluminium, zinc or rare-earths allow precipitation hardening of magnesium (Mg). The low densities of such strengthened Mg alloys have led to their adoption as aerospace materials and (more recently) they are being considered as armour materials. Consequently, understanding their response to high-strain rate loading is becoming increasingly important. Here, the plate-impact technique was employed to measure longitudinal stress evolution in armour-grade wrought Mg-alloy Elektron 675 under 1D shock loading. The strength and spall behaviour was interrogated, with an estimate made of the material's Hugoniot elastic limit. Finally, electron backscatter diffraction (EBSD) techniques were employed to investigate post-shock microstructural changes.

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