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Dynamic behaviour of TM380 mild steel and Ti6Al4V alloy subjected to blast loading

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Abstract

This paper deals with characterisation of blast loading to a mild steel plate (SUPRAFORM TM380) and titanium alloy (Ti6Al4V). Circular plates 3 mm thick with diameter 306 mm were impulsively loaded by a 20 g PE4 cylindrical charge at a standoff distance of 72 mm. A blast pendulum recorded the imparted impulse and a deflection gauge measured the dynamic mid-point deflection of the plate. Samples were cut from the test plates, mounted and polished for metallographic and failure analysis using optical and scanning electron microscopy and X-ray diffraction analysis. The observed phenomena on both plates are discussed and related to the mid-point deflection response measured by the deflection gauge.