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Spallation in NiTi Under One-Dimensional Shock Loading A. WALLWORK, AWE, Y. MEZIERE, J.C.F. MILLETT, Cranfield University, N.K. BOURNE, University of Manchester, A. WORKMAN, AWE — The dynamic response of the shape memory alloy NiTi has recently been found to be of great interest. The dynamic tensile strength (pull back strength) of NiTi had been investigated under one-dimensional shock loading. The pulse length and the impact stress were varied in order to carry on this study. The design of the experiments was such that the spall lay in the middle of the target. Varying the dimensions of the flyer/target combinations thus led to variations in tensile strain rate at the spall plane. The pull back stress (spbs) was found to increase with the applied pulse length. This suggests that the dynamic tensile strength is dependent upon the generation of a deformation microstructure that evolves behind the shock front. In contrast, increasing stress levels resulted in a near constant pull back stress, although at the lowest applied stress, spallation did not occur.

J.C.F. Millett Cranfield University

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