

Abstract Submitted  
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**Use of SHPB tests for incorporating a compaction constitutive equation within a two-phase model** S.A. WECKERT, A.D. RESNYANSKY, Weapons and Combat Systems Division, DST Group, PO Box 1500, Edinburgh SA 5111, Australia — The well-known Split Hopkinson Pressure Bar (SHPB) set-up is used for analysis of compaction of calcite sand samples within a gauge instrumented confinement. A two-phase material model, used previously for simulation of sand behaviour under extreme shock loading, requires a constitutive equation for a parameter responsible for the compaction response within a non-equilibrium loading path tending to the solid Hugoniot. A mathematical formulation approximating the present experimental set-up is suggested and used for inverse adjustment of parameters in the constitutive equation. This equation determined from the SHPB tests and incorporated in the two-phase model is used for description of the behaviour of explosively driven sand with the help of the CTH shock physics code. Comparison with available independent experiments shows a good agreement.

Anatoly Resnyansky  
Weapons and Combat Systems Division, DST Group

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