

SHOCK WAVE DISPERSION IN FLUIDS WITH LOOSELY DISTRIBUTED RIGID BODIES

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For protection of personnel, instruments etc., attenuation of shock waves combined with good breathing facilities is of primary importance. Basic research in this field, sponsored by the Defense Research Board, has been conducted in the shock and flametube laboratory at The University of Calgary. Attenuation of long positive duration shockwaves has been done in the Defense Research Establishment shocktube laboratory at Suffield, Alberta, Canada.

G.I. Taylors' probabilistic approach to blast waves in turbulent air is extended for shock waves propagating through randomly distributed solids in gas. The shock wave suffers dispersion and is changed to a train of weak waves spread over a longer positive time duration. If frictional losses are small, the impulse remains approximately constant.

Frictional losses neglected in this study have been dealt with by the authors in a different paper. The above results are complimentary to the attenuation of long positive duration shockwave entering a closed vessel through a small orifice. The result of this investigation was presented at the Thermal Fluid Conference of Australian Institute of Engineers, Melbourne, 1974