

Abstract Submitted
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Shock Hugoniot Measurements in Foam OREN PETEL, McGill University, Department of Mechanical Engineering, Montréal, QC, H3A 0C3, Canada, SIMON OUELLET, Defence Research and Development Canada Valcartier, Québec, QC, G3J 1X5, Canada, DAVID FROST, ANDREW HIGGINS, McGill University, Department of Mechanical Engineering, Montréal, QC, H3A 0C3, Canada — Foams are found in a variety of protective equipment, including those used in applications involving high-speed impact and blast waves. Despite their exposure to shock wave loadings, there is a considerable lack of shock Hugoniot data for these materials. Typical characterizations of foams have involved the use of split-Hopkinson pressure bars or quasi-static compression machines to determine the stress-strain relationship in the foams. As such, the elastic-plastic response of foam at intermediate pressure ranges continues to be a source of confusion. In the present study, Photonic Doppler Velocimetry is used to measure the shock Hugoniot of a foam for a comparison to its quasi-static compression curves. The deviation of these two curves will be discussed and compared to common plasticity models used to describe dynamic foam behaviour in the literature.

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