

Abstract Submitted
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Shock wave control using liquid curtains BRENDAN COLVERT, XINGTIAN TAO, VERONICA ELIASSON, Univ of Southern California — The effectiveness of a planar wall of liquid as a blast mitigation device is examined using a shock tube and a custom-designed and -built shock test chamber. Experimental data collection methods being used include high-speed schlieren photography and high-frequency pressure sensors. During the relevant shock interaction time periods, the liquid-gas interface is examined to determine its effect on shock waves. The characteristic quantities that reflect these effects include reflected-to-incident shock strength ratio, transmitted-to-incident shock strength ratio, transmitted and reflected impulse, and peak pressure reduction. These parameters are examined for correlations to incident wave speed, liquid mass, liquid density, and liquid viscosity. Initial results have been obtained that show a correlation between fluid mass and peak pressure reduction. More experiments are being performed to further explore this relationship as well as examine the effects of altering the other parameters such as liquid-gas interface geometry and using dilatant fluids.

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