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An experimental study of shock wave propagation through a polyester film[1] VERONICA ELIASSON, University of Southern California and University of California, San Diego, HONGJOO JEON, University of Southern California — A polyester film is available in a variety of uses such as packaging, protective overlay, barrier protection, and other industrial applications. In the current study, shock tube experiments are performed to study the influence of a polyester film on the propagation of a planar shock wave. A conventional shock tube is used to create incident shock Mach numbers of $M_s = 1.34$ and 1.46. A test section of the shock tube is designed to hold a 0.009 mm, 0.127 mm, 0.254 mm, or 0.508 mm thick polyester film (Dura-Lar). High-temporal resolution schlieren photography is used to visualize the shock wave mitigation caused by the polyester film. In addition, four pressure transducers are used to measure the elapsed time of arrival and overpressure of the shock wave both upstream and downstream of the test section. Results show that the transmitted shock wave in the polyester film is clearly observed and the transmitted shock Mach number is decreased by increasing film thickness.

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