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Large Area and Short Pulsed Shock Initiation of A TATB/HMX Mixed Explosive<sup>1</sup> GUIJI WANG, CHENGWEI SUN, JUN CHEN, CANGLI LIU, FULI TAN, NING ZHANG, Institute of Fluid Physics, Chinese Academy of Engineering Physics — The large area and short pulsed shock initiation experiment on a plastic bonded mixed explosive of TATB(80%) and HMX(15%) has been performed with an electric gun where a mylar flyer of 19mm in diameter and  $0.05 \sim 0.30$ mm in thickness is launched by an electrically exploding metallic bridge foil. The cylindrical explosive specimens ( $\Phi 16$ mm  $\times 8$ mm in size) were initiated by the mylar flyers in thickness of  $0.07 \sim 0.20$  mm, which induced shock pressure in specimen was of duration ranging  $0.029 \sim 0.109 \mu s$ . The experimental data were treated with the DRM(Delayed Robbins-Monro) procedure and to provide the threshold of shock pressure P 13.73 $\sim$ 5.23GPa. The shock initiation criterion of the explosive specimen is  $(P/\text{GPa})^{1.451}(\tau/\mu\text{s}) = 1.2$ . Meanwhile the criterion in 100% probability in the experiment is  $(P/\text{GPa})^{1.8}(\tau/\mu\text{s}) = 2.63$ . In addition, the 30° wedged specimen was tested and the shock to detonation transition (SDT) process emerging on its inclined surface was diagnosed with a device consisting of multiple optical fiber probe, optoelectronic transducer and digital oscilloscope. The POP plot of the explosive has been gained from above SDT data.

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