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Initiation of Secondary Explosives Measured Using Embedded Electromagnetic Gauges CHRIS STENNETT, GARY COOPER, PAUL HAZELL, GARETH APPLEBY-THOMAS, Cranfield University, SN6 8LA, UK — There is considerable evidence that secondary explosive materials having a relatively large (10-12%) proportion of HTPB binder do not exhibit DDT under cook-off. However, the understanding of the mechanisms controlling the growth of reaction in such experiments is incomplete. Most importantly, it is not known whether a mechanistic reason exists to preclude DDT; it is possible that existing techniques to explore cook-off simply do not offer the correct conditions to allow DDT to occur. We present experiments in which impacts were made against an RDX/HTPB PBX using a single-stage light gas gun. Electromagnetic particle velocity gauge packages were embedded within the targets, placing sensing elements at different distances from the impact face, to record the onset of reaction, and in some cases detonation. These experiments were also performed against RDX/TNT 60:40 targets. The time-resolved particle velocity histories have allowed comparison of some of the factors governing growth of reaction, and have provided run distance to detonation data for different impact stresses.

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