**A CREST Model for the RDX/TNT Explosive Composition B**
NICHOLAS WHITWORTH, CAROLINE HANDLEY, AWE — The high explosive
Composition B (Comp B), which comprises approximately 60% RDX and 40% TNT
by weight, is still widely used for a range of applications, and reactive burn models
able to simulate its shock initiation and detonation response are required for
modelling assessments. CREST is unique among such models in using an entropy-
dependent reaction rate to convert the solid unreacted explosive to gaseous detona-
tion products. This paper describes the calibration of a CREST reactive burn model
for Comp B. The equations of state are fitted to the available shock Hugoniot, sound
speed and overdriven detonation wave data, and are demonstrated to be suitably
robust and compatible. The reaction rate has been tuned to fit recent sustained-
shock gas-gun data and, owing to a lack of modern data, a detonation size-effect
curve dating from the 1950's on a slightly different Comp B variant. This made it
necessary to accept a compromise fit to the calibration data, and which is explored
further in the paper. The model is then tested against other Comp B data from
the literature to assess its ability to predict a wide range of behaviour. CREST
now adds to those reactive burn models available for simulating this well-studied
explosive.

Nicholas Whitworth
AWE

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