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Cylinder Expansion Experiments and Measured Product Isentropes for XTX-8004 Explosive SCOTT JACKSON, Los Alamos National Laboratory — We present cylinder expansion data from full-scale (25.4-mm inner diameter) and half-scale (12.7-mm inner diameter) experiments with XTX-8004 explosive, composed of 80% RDX explosive and 20% Sylgard 182 silicone elastomer. An analytic method [S.I. Jackson, Proc. Combust. Inst., Vol. 35, Iss. 2, 2015, pg.1997-2004] is reviewed and used to recover detonation product isentropes from the experimental data, which are presented in the standard JWL form. The cylinder expansion data was found to scale well, indicating ideal detonation behavior across the test scales. The analytically determined product JWLs were found to agree well with those produced via iterative hydrocode methods, but required significantly less computational effort.

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