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Thermal Cook-Off Experiments of the HMX Based High Explosive LX-04 to Characterize Violence with Varying Confinement FRANK GARCIA, KEVIN S. VANDERSALL, CRAIG M. TARVER, DANIEL W. GREEN-WOOD, Energetic Materials Center, Lawrence Livermore National Laboratory, Livermore, CA 94550, JERRY W. FORBES, Center for Energetic Concepts Development, University of Maryland, College Park, MD 20742 — Thermal cook-off experiments were carried out using LX-04 explosive (85% HMX and 15% Viton by weight) with different levels of confinement to characterize the effect of confinement on the reaction violence. These experiments involved heating a porous LX-04 sample in a stainless steel container with varying container end plate thickness and assembly bolt diameter to control overall confinement. As expected, detonation did not occur and reducing the overall confinement lowered the reaction violence. Modeling was also performed using Ignition and Growth kinetics with reasonable agreement to the experiment. These results suggest that controlling the overall system confinement can modify the relative safety in a given scenario. This work was performed under the auspices of the U. S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under Contract No. W-7405-Eng-48.

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