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Study of Thermal Sensitivity and Thermal Explosion Violence of Energetic Materials in the LLNL ODTX System PETER HSU, GARY HUST, CHADD MAY, MICHAEL HOWARD, KEO SPRINGER, Lawrence Livermore National Laboratory, JON MAIENSCHEIN — Some energetic materials may explode at fairly low temperatures and the violence from thermal explosion may cause a significant damage. Thus it is important to understand the response of energetic materials to thermal insults for safe handling and storage of energetic materials. The One Dimensional Time to Explosion (ODTX) system at the Lawrence Livermore National Laboratory can measure times to explosion, lowest ignition temperatures, and determine kinetic parameters of energetic materials. Samples of different configurations can be tested in the system. The ODTX testing can also generate useful data for determining thermal explosion violence of energetic materials. After the ODTX testing, each anvil cavity size was monitored to obtain the thermal explosion violence data. In this paper, we will present some recent ODTX experimental data and compare thermal explosion violence and detonation violence.

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