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Evaluation of Shock Sensitivity of Nano-Scaled 1,3,5-Trinitro-1,3,5-Triazacyclohexane Using Small Scale Gap Test

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Abstract : In this study, small scale gap test (SSGT) was performed to measure shock sensitivity of nano-scaled 1,3,5-trinitro-1,3,5-triazacyclohexane (RDX) samples. The shock sensitivity of energetic materials is usually evaluated by the method of large-scale gap test (LSGT) that has a higher reliability than other methods. But LSGT has the disadvantage that it takes a high cost and time by using a large amount of explosive. In this experiment, nano-scaled RDX samples were prepared by spray crystallization in two different drying methods. In addition, 30μm RDX sample produced by precipitation crystallization and 5μm RDX sample produced by fluid energy mill process were tested to compare shock sensitivity. The study of shock sensitivity measured by small-scale gap test shows that small sized RDX particles have greater insensitivity. As a result, we infer SSGT method has higher reliability compared to the literature as measurement of shock sensitivity of energetic materials.

Keywords : nano-scaled RDX, SSGT(small scale gap test), shock sensitivity, RDX
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