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Effects of Particle Size and Temperature on Solubility of RDX

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Abstract: The solubility of RDX with average particle size of 20 μm , 5 μm , 500 nm and 100 nm in the 8 solvents including the ethyl acetate, ethanol, propyl alcohol, isopropanol, *n*-butyl alcohol, sec-butyl alcohol, isobutanol and deionized water at 5, 20, 40 $^{\circ}\text{C}$ and 60 $^{\circ}\text{C}$ respectively were measured by the evaporation method of the solvent in the saturated solution. Results show that the solubility of RDX with the same granularity level is lowest in the deionized water and highest in the ethyl acetate. The solubility in ethanol is higher than that in propyl alcohol and butyl alcohol. The solubility in *n*-butyl alcohol is higher than that in sec-butyl alcohol and isobutanol. In same solvent, the solubility of RDX at the same temperature increases with decreasing of the particle size. The solubility of RDX with same granularity level increases with the increasing of temperature.

Key words: RDX; particle size; temperature; solubility

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《含能材料》高效毁伤弹药专栏征稿

高效毁伤弹药以“利用最小化成本获得最大化效果”为目标,对含能材料的性能和能量提出了更高的要求。为进一步促进高效毁伤弹药及其技术的研究,本刊将于2015年增设高效毁伤弹药专栏,内容涉及(1)传统含能材料的优化和改进以及先进含能材料的开发和应用,包括:传统含能材料合成、制造、处理和应用的新技术,新的CHON含能材料的开发和应用,金属化炸药,非传统概念炸药(如燃料空气炸药、温压炸药),高能量密度材料;(2)含能材料能量的控制输出研究,包括:能量输出增强(如组合装药),能量输出聚焦/定向,能量输出模式可控(如多模装药),能量输出范围可控(如低附带毁伤炸药)。欢迎广大学者投稿,来稿时请选择对应的专栏。

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