Reduced sensitivity RDX and HMX crystallized and spheriodized in propylene carbonate

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Abstract:

Propylene carbonate is eco-friendly solvent usable for high explosive crystallization. This solvent is possible to use in closed loop without distillation necessity, saving energy for solvent recovery. Energetic materials were crystallized from propylene carbonate solutions with the help of fatty acids. From tested additives, stearic acid causes formation of more spherical and less defect crystal materials. Obtained reduced sensitivity RDX was less impact sensitive in comparison with starting material (7.5 J, 15 J resp.) and also less friction sensitive (110 N starting RDX, 160 N crystallized). HMX and RDX crystals were then spheriodized in propylene carbonate suspension at a constant temperature for 2-4 hours. Final spherical or oval-shaped crystal materials were submitted to GAP test and mechanical sensitivity tests.

Keywords: RDX; HMX; propylene carbonate; sensitivity; spherical.