PURDUE INNOVATES | Office of Technology Commercialization

New Lead Free Primary Explosives

Non-toxic silver-salt energetics deliver EPA-compliant explosive performance for defense and construction.

Researchers at Purdue University have developed new lead-free, heterocyclic, high-density energetic materials. The process for making these materials creates silver salts that have unique energetic properties, as well. The chemical makeup of the new energetics has been verified with carbon and proton NMR, IR spectroscopy, and x-ray crystallography. In addition, these materials exhibit excellent thermal control and performance that competes with current lead-based energetics. This innovative approach meets the latest US Environmental Protection Agency standards, having potential to improve safety in military and defense and commercial construction applications.

Advantages:

-Lead-Free

-Nontoxic

-High Performance

Potential Applications:

-Construction

-Military

-Defense

Recent Publication:

Tetrazole Azasydone (C2N7O2H) And Its Salts: High-Performing Zwitterionic Energetic Materials Containing a Unique Explosophore

Chemistry A European Journal, European Chemical Societies Publishing

DOI:10.1002/chem.202002664

Technology ID

2020-PIER-69143

Category

Aerospace & Defense/Defense Electronics & Surveillance Technologies

Materials Science & Nanotechnology/Materials Testing & Characterization Tools

Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

Further information

Will Buchanan
wdbuchanan@prf.org

View online

TRL: 3

Intellectual Property:

Provisional-Gov. Funding, 2020-08-18, United States

Utility-Gov. Funding, 2021-06-07, United States

Keywords: Chemical Engineering, Chemistry, Explosive Device, explosives, Material Development, Materials and Manufacturing, Materials Engineering, Materials Science