



JOHN P. AMERSPEK PROPELLANT DEVELOPMENT COMPLEX

LABORATORY INFORMATION FACT SHEET

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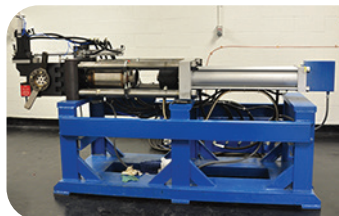


Propulsion Pilot Plant, a unit of Combat Capabilities Development Command Armaments Center (DEVCOM AC) Propulsion Pilot Processes Branch (PPPB) at Picatinny Arsenal, NJ, is responsible for the research and development of propellant processing technology, enabling innovative armaments solutions for today and tomorrow.

TECHNOLOGY/FACILITY DESCRIPTION:

The engineers, scientists and technicians of the Propulsion Pilot Plant are leading the field in propellant processing technology to manufacture and test

advanced gun propellants, igniters, thrusters and combustible case materials. The core mission of the plant is to produce the next generation of propellants, transition the process technology to its partners in the Industrial Base and provide the Warfighter superior armaments solutions that dominate the battlefield through increased range and precision. The Propulsion Pilot Plant comprises of the following facilities: John P. Amerspek Propellant Development Complex, Rheology Facility, Twin Screw Mixer/Extruder Facility, Celluloid Foaming and Processing Facility, Sub Scale Manufacturing Energetic Complex.



EQUIPMENT AND EXPERTISE AVAILABLE:

- Horizontal batch mixers with multiple blade configurations
- Twin Screw Extruder
- Vertical planetary mixers for low viscosity curable propellants
- Semi-automated roll mill for solventless propellants
- Horizontal extrusion press for solventless propellants
- Vertical extrusion press
- Rotary Pan Coater
- Spray Coater
- Foamed celluloid processing equipment
- Rheological Characterization and Testing Facility
- Characterization laboratory (particle size analyzer, pycnometer, optical microscopes, SEM)
- Synthesis laboratory
- Thermochemical analysis laboratory
- High pressure strand burner
- Erosion tester
- Closed bomb
- Ignition cartridge and primer static test bay
 - Insensitive munitions subscale propellant test bay
- Traditional batch solvent & solventless propellant processing
- Continuous solvent & solventless propellant processing
- Novel spheroidal propellant techniques
- Shock Gel
- Extrusion/Spheronization
- Propellant coating (glazing, diffusive, polymeric surface and Ultraviolet (UV) curable) diameter test for propellant energetic materials
- Raw material preparation/characterization
- Fluidized Energy Mill (FEM) attrition
- Ball attrition
- Fluidized Bed Granulation
- Celluloid processing
- Closed bomb (propellant: burning rate, force, quickness, vivacity, RF, RQ, RF, RV)
- Hot gas ignition for closed bomb (coated propellant characterization)
- Hot fragment conductive ignition test (subscale IM test)
- Propellant grain dimension measurements
- Particle size analysis (raw material characterization)
- Squeeze flow durometer (mix readiness for extrusion)
- Calorimetry (HoE, HoC)
- Strand burner (Burning rate)
- Energetic material density measurements
- Environmental conditioning of
- Interrupted burner (enables geometric or chemical analysis of propellant mid-burn)
- Erosion tester (relative measure of metal erosion due to propellant burning)
- Micro-thruster (propellant force)
- Spin stand (rocket assisted projectile motor thrust)
- Rocket testing (static firing to measure thrust)
- Subscale GAP test for propellant
- Critical diameter test for propellant