



PACKAGING INTEGRATION TEAM (PIT) | DoD CFD

OVERVIEW:

The **Packaging Integration Team (PIT)** mission is to execute the advanced development and technology transition of demonstrated packaging and novel processing technologies to optimize Warfighter sustainability, combat effectiveness, and mobility. The scope of efforts conducted by the team includes demonstration and validation testing of innovative packaging and processing technologies, environmental and rough handling testing, sensory and storage testing in support of novel processing technologies, and transitioning technical requirements into Performance-based procurement documents.

EQUIPMENT/PROCESSING CAPABILITIES:

FLEXIBLE FOOD PACKAGING LABORATORY: Contains equipment to fabricate and test prototype packages of many types and sizes (e.g., bags, pouches, trays, cartons, etc.). Equipment can be used to mimic the shock and vibration a package endures during shipping and handling, to fabricate and fill packages on-line to simulate commercial production runs and test how well packaging materials or packages perform in environmental extremes such as desert, arctic or jungle conditions, using the packaging environmental chambers. The equipment consists of:

- **COMPRESSION TESTER** Is a fully automated test system used to determine the compression strength, load carrying capacity, or long term stacking strength of large packages and is in accordance with ASTM standards D-642 and D-4577.
- **DROP TESTER** Simulates the fall of a packaged shipping container in accordance with ASTM standard D-5276.
- **INCLINE IMPACT TESTER** Tests impact resistance of shipping containers in accordance with ASTM standard D-880.
- **SEAL STRENGTH AND INTEGRITY TESTER** designed to perform virtually all currently accepted test methods used to measure the seal strength and seal integrity, package integrity, and leak detection of flexible, rigid, porous, laminate, and foil-type consumer and medical packaging.
- **TENSILE TESTER** seal strength and tensile strength testing in accordance with ASTM standards with BlueHill software.
- **SCRATCH TESTER** built specifically for polymer based scratch testing and can give an indication of the scratch resistance of a polymer as well as having a quantifiable way to look at surface damage.
- **ENVIRONMENTAL CHAMBERS** Tests the durability of packaging materials and ensures the quality of food in extreme environmental conditions.
- **POUCH/TRAY BURST TESTERS** Measures the ability of pouches and trays to withstand changes to internal pressure.
- **VIBRATION TABLE** Simulates the forces and motions of motor trucks, railroad cars and aircraft in accordance with ASTM standard D-999.
- **SPRAY CHAMBER** Tests the water resistance of shipping containers in accordance with ASTM standard D-951.
- **HERMETIC SEALERS**
 - METAL TRAYCAN SEALER/POLYMERIC TRAY SEALER Hermetically seals both metal and polymeric trays prior to thermal processing.
 - THERMAL IMPULSE HEAT SEALERS Adjustable sealers apply uniform, consistent air-tight/water-tight seals in most thermoplastic films and laminates.
 - VACUUM/GAS FLUSH HEAT SEALER Evacuates headspace and applies a fusion (hermetic) seal to the pouches. The pouch is isolated from the atmosphere in an enclosed chamber. The chamber is then evacuated and two bars are used to heatseal the pouch.



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■ **PACKAGING FABRICATION EQUIPMENT**

- **ULTRASONIC WELDER** Enables the precision, high-strength joining of thermoplastics using ultrasonics.
- **HORIZONTAL FORM-FILL SEAL MACHINE** Fabricates the right-sized packaging on-line with rollstock materials. A base cavity is drawn, the product filled, and the lidding applied on-line. This simulates the commercial production of some military food products.
- **KONGSBERG XL 22 CAM TABLE & ARTIOS DESIGN SOFTWARE** Enables precision design and fabrication of fiberboard containers.

■ **PACKAGING QUALITY ANALYSIS**

- **MEAD JAR TESTER** Enables the non-destructive examination of leakage paths through finished cans and flexible/rigid packages.
- **HEADSPACE GAS ANALYZER** Draws a headspace sample and analyzes it for oxygen and carbon dioxide content. The system is used for package integrity testing, quality control in food applications, bioprocess and fermentation testing. The unit is rugged, and portable when needed via battery operation. The analyzer measures oxygen from 0.1%-100%.

FOOD PROCESSING LABORATORY: Includes equipment for the production and testing of food and food components to facilitate state-of-the-art ration development. The production equipment, which is all pilot plant scale, includes:

- **ALL-FILL PISTON FILLER AND FOOD YIELD QUANTIFIER** Measures out semi-solid food matrices to specific volumetric/gravimetric quantities for pilot scale food productions.
- **IMPINGEMENT OVEN (PIZZA OVEN)** Cooks 2 to 4 times faster than conventional ovens by surrounding the food with small jets of hot air while moving the product through the oven chamber via a chain conveyor.
- **MEAT PROCESSING CHAMBER** Is a temperature regulated chamber that provides an environment for various types of meat production to include cutting, grinding, pureeing, flaking, and vacuum infusion.
- **RETORTS** Steam and steam/water retorts coupled with validator systems provide dependable thermal processing and validation of all in-house productions utilized for product development efforts and field testing.
- **NORDEN TUBE MACHINE** Automated filling and sealing machine utilized to fill metalized food grade tubes with various food products.

POINT OF CONTACT:

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