



ADVANCED THERMAL PROCESSING (ATP) | DoD CFD

Advanced Thermal Processing includes Radio Frequency (RF) and Microwave (MW) sterilization. Both are direct heating methods that offer faster, deeper, thermal penetration and better uniformity than conventional retorting or canning.

WHY IS IT NEEDED?

These promising new direct heating technologies will allow the development of currently unavailable combat ration components, such as heat sensitive egg and dairy products, fresh-like vegetables and tender whole muscle meats. This will lead to increased quality and variety of combat ration menus and enhanced morale and nutritional status of the Warfighter.

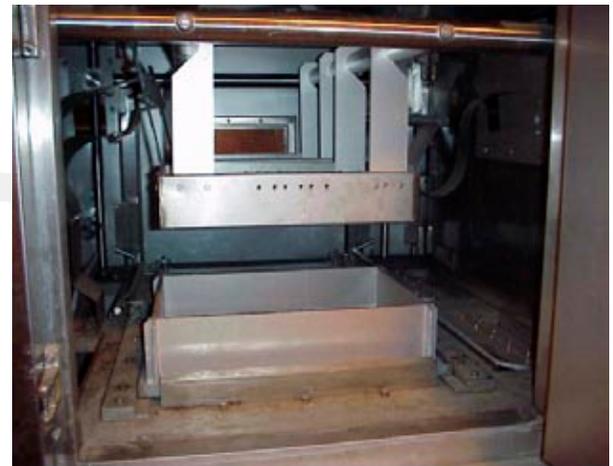


TECHNOLOGY:

In MW and RF processing rapid heating is used to sterilize solid and semi-solid foods providing the shelf stability needed for operational rations. Heat is generated by direct interaction between electromagnetic energy waves and food instead of the slow heat conduction of conventional retorting. It can therefore reduce heating time while achieving the same thermal lethality.

These two processing techniques have different applications. RF uses designated frequencies that have wavelengths approximately 80 times as long as those commonly used in microwave processing. This allows RF energy to penetrate more deeply and uniformly making it most suitable for processing large group sized food trays. A new MW processing method (which uses lower frequencies than those traditionally used to reheat foods) provides a gentle, yet effective method for sterilizing individually packaged heat sensitive foods.

These Advanced Thermal Processing technologies are being pursued through cooperative research with Washington State University and Kraft Foods Corp, among many other academic and industrial partners.



ATP APPARATUS: POLYTRAY IS PROCESSED BETWEEN TWO ELECTRODE PLATES.

KEY FEATURES:

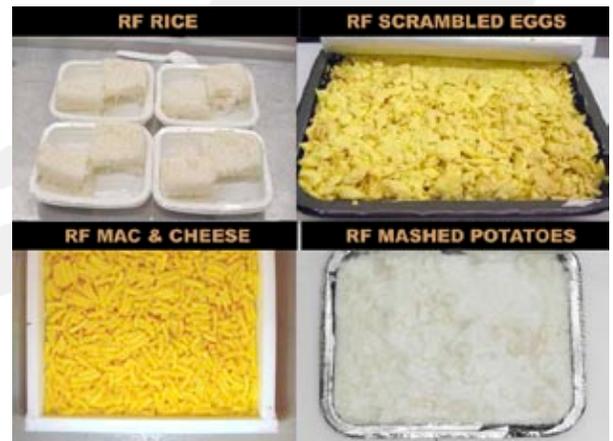
- Optimized nutrient retention, flavor, texture and shelf-life of combat ration components using new and efficient direct-heat sterilization processes.
- Offers a wider variety of high quality, typically heat-sensitive components for individual and group ration platforms.
- Developing an industrial base for next generation Advanced Thermal Processing for military rations.

POINT OF CONTACT:

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EXAMPLES OF PROCESSED POLYTRAYS