

Introducing the Carrier Particle Design Modeling Software



Carrier Particle Design for Aseptic Multiphase Food Processing

Monitoring and validation of continuous thermal pasteurization and sterilization processes require the use of simulated food particles, which must exhibit conservative flow and thermal characteristics. Simulated food particles (having the same shape and size as the food particle or biomaterial present in the processed product) are designed and fabricated from plastic polymer materials to meet these design criteria, where the determination of wall thickness of the carrier particle becomes very critical for the safety and quality of the product to be processed.

- **Carrier particle:** The particle (typically a polymer) that is used as an enclosure for a thermosensitive implant for the purpose of monitoring and validation of continuous thermal processing of multiphase foods.
- **Conservative thermal behavior:** Thermal protection provided by the carrier particle to its cavity is at least equivalent to or greater than the thermal protection provided by the target food particle to its cold spot under identical heating conditions.
- **Product safety** demands a thermally conservative particle design. However, a minimally conservative particle design is targeted to obtain the highest product quality possible.



CPDesign Startup Screen



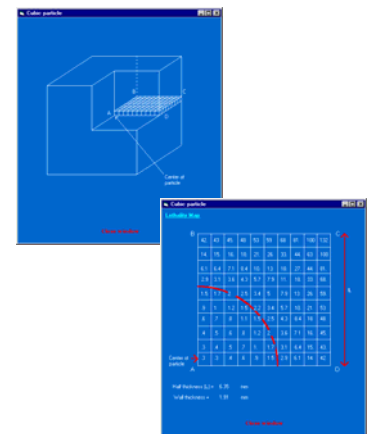
Particle Selection and Data Entry Screen

CPDesign integrates the sequential steps of particle design

- Simulates heating of a food particle until a target lethality is accumulated at the cold spot
- Under identical conditions, simulates heating of a polymer material during the same time period
- Examines the spatial lethality distribution within the polymer particle to determine the appropriate (minimally conservative) wall thickness
- Calculates implant weight for target particle density

Flexible Design Options:

- Pre-populated food properties or user customizable data entry
- Pre-populated plastic materials properties or user customizable
- Supports particle geometries such as sphere, cube, cylinder
- Simulation results may be saved to file or printed
- Quotes available upon request



Cubic Particle Detailed Models

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