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Review

Recent advances in Agitation Thermal Processing

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Abstract:

Novel agitation systems permitting forced convection during thermal processing improve heat transfer, reduce process time, and minimize heat damage. During the last 2 decades, thermal process experts have studied various types of rotary agitation mechanisms, such as end-over-end or axial rotations. More recently, reciprocating mode of agitation was extensively studied. The present review brings into perspective the current state of literature relating to agitation thermal processing, with discussions on the various agitation mechanisms being used to enhance heat transfer rates. Recent progress and current problems in data gathering, heat transfer coefficient evaluation and product quality optimization are reviewed. This review shall be helpful to provide a quick insight into the state of agitation thermal processing in the 21st century.

Keywords: canning; temperature measurement; heat transfer coefficient; liquid particulate mixtures; minimal process.

Highlights

- Recent advances in agitation thermal processing is reviewed.
- Various mechanisms of agitation are discussed.
- Challenges in data collection methodologies are highlighted.
- Effect of agitation parameters on heat transfer coefficients is discussed.
- Optimization considerations for agitation thermal processing is highlighted.

Declarations of interest: none

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