1. Record Nr. UNINA9910877816903321 Food mixing: principles and applications / / edited by P.J. Cullen Titolo Ames, Iowa, : Blackwell Pub., c2009 Pubbl/distr/stampa **ISBN** 1-282-37150-9 9786612371509 1-4443-1292-8 1-4443-0988-9 Descrizione fisica 1 online resource (320 p.) Altri autori (Persone) CullenP. J (Patrick J.) Disciplina 664/.024 Food industry and trade - Mathematical models Soggetti Mixing - Mathematical models Food mixes Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Cover: Contents: Contributors: 1 Mixing in the food industry: trends and challenges; 1.1 Role of mixing; 1.2 Design criteria for mixing; 1.3 Specific challenges in food mixing; 1.3.1 Quality assurance compliance through mixing; 1.3.2 Engineering texture through mixing; 1.4 Advances in the science of mixing; 1.5 Book objectives; 2 Mixing fundamentals; 2.1 Introduction; 2.2 Defining mixing; 2.2.1 Macromixing; 2.2.2 Mesomixing; 2.2.3 Micromixing; 2.3 Scale of scrutiny; 2.4 Quantifying mixedness; 2.4.1 Inference of mixing indices; 2.5 Determining the end point of mixing; 2.5.1 Solids mixing 2.5.2 Fluid mixing2.5.3 Multi-phase mixing; 2.5.4 Alternative measures of mixedness in industrial practice; 2.6 Residence time distributions; 2.6.1 Modelling of residence time distributions; 3 Kinematics of flow and mixing mechanisms: 3.1 Introduction: 3.2 Fluid mixing: 3.2.1 Kinematics of fluid flow; 3.2.2 Quantification of flow regimes; 3.2.3 Chaotic advection; 3.2.4 Fluid mixing mechanisms; 3.3 Solids mixing; 3.3.1 Mixing flow in solids; 3.3.2 Solids mixing mechanism; 3.4 Identification of mixing mechanisms; 3.4.1 Solids; 3.4.2 Fluids; 4

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## Sommario/riassunto

The mixing of liquids, solids and gases is one of the most common unit operations in the food industry. Mixing increases the homogeneity of a system by reducing non-uniformity or gradients in composition, properties or temperature. Secondary objectives of mixing include control of rates of heat and mass transfer, reactions and structural changes. In food processing applications, additional mixing challenges include sanitary design, complex rheology, desire for continuous processing and the effects of mixing on final product texture and sensory profiles. Mixing ensures delivery of a product wi