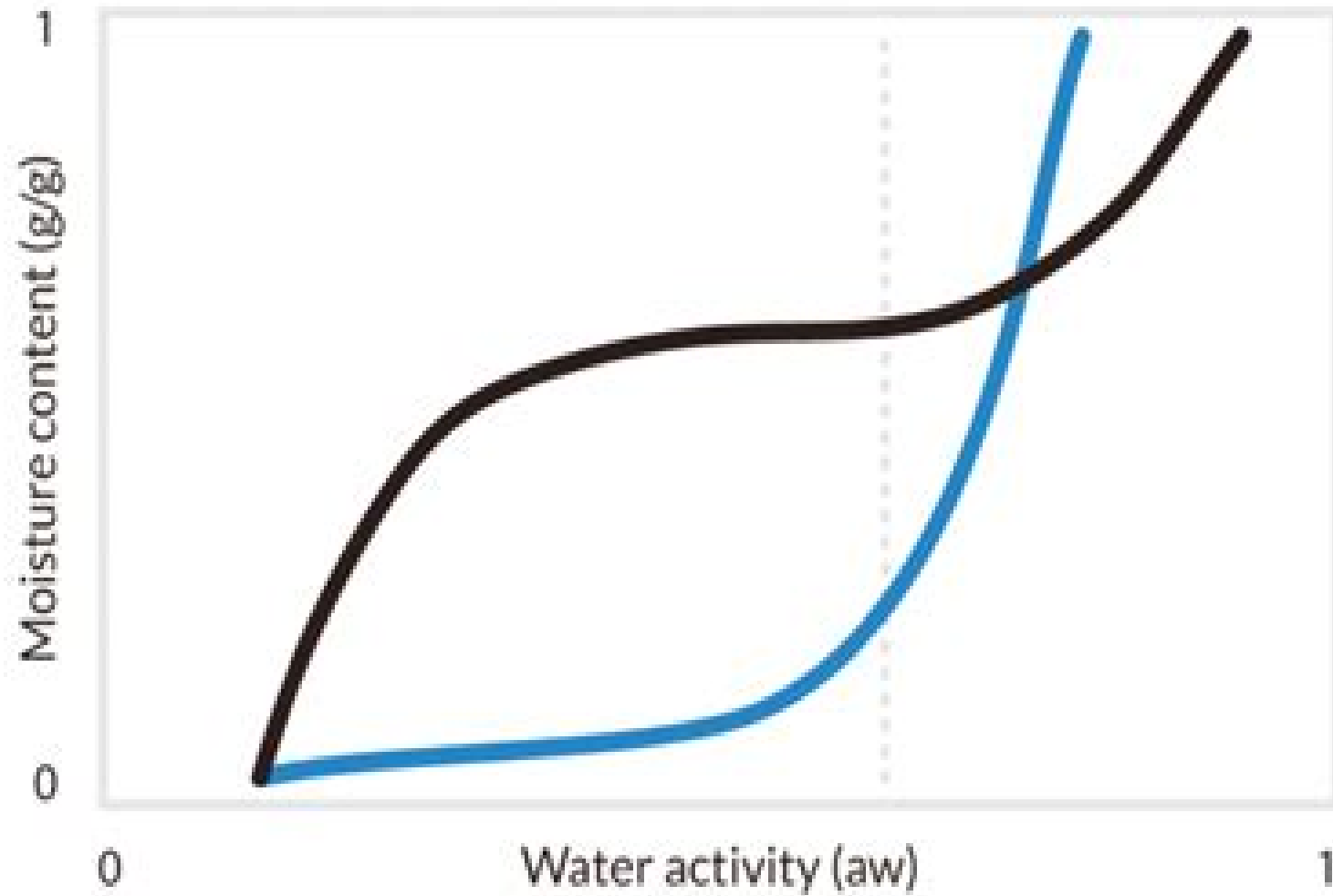


## ADSORPTION ISOTHERMS



# Sorption Isotherms And Water Activity Of Food Materials

**Simon Gaisford, Vicky Kett, Peter  
Haines**



## **Sorption Isotherms And Water Activity Of Food Materials:**

**Sorption Isotherms and Water Activity of Food Materials** W. Wolf, 1985      **Sorption Isotherms and Water Activity of Food Materials** W. Wolf, W. E. L. Spiess, 1985      *Handbook of Food Isotherms: Water Sorption Parameters For Food And Food Components* Hector Iglesias, 2012-12-02

*Handbook of Food Isotherms* Water Sorption Parameters for Food and Food Components is the first English handbook entirely devoted to water vapor sorption data of foods and food components. It contains more than 1 000 isotherms with the mathematical description of over 800 of these isotherms. The water sorption isotherms of foods show the equilibrium relationship between the moisture content of foods and the water activity at constant temperatures and pressures. Composed of three chapters, this book initially discusses the main types of changes in foods affected by water activity. It goes on describing the principal methods of water activity determination, namely gravimetry, manometry, and hygrometry. Data presented as plots of moisture content versus water activity are given. The last chapter presents several mathematical equations for describing water sorption isotherms of food materials. It emphasizes a statistical analysis on fitting abilities of various two parameter equations as applied to each experimental isotherm collected. It contains tables of parameters for mathematical description of food isotherms. Supplementary texts on nonlinear regression program used for determination of statistical parameters in this text are also provided.

*Water Activity in Foods* Gustavo V. Barbosa-Cánovas, Anthony J. Fontana, Jr., Shelly J. Schmidt, Theodore P. Labuza, 2020-05-14

This second edition of *Water Activity in Foods* furnishes those working within food manufacturing quality control and safety with a newly revised guide to water activity and its role in the preservation and processing of food items. With clear instructional prose and illustrations, the book's international team of contributors break down the essential principles of water activity and water-food interactions, delineating water's crucial impact upon attributes such as flavor, appearance, texture, and shelf life. The updated and expanded second edition continues to offer an authoritative overview of the subject while also broadening its scope to include six newly written chapters covering the latest developments in water activity research. Exploring topics ranging from deliquescence to crispness, these insightful new inclusions complement existing content that has been refreshed and reconfigured to support the food industry of today.

**Water Activity and Food** John Troller, 2012-12-02

*Water Activity and Food* explores the role of water activity in the water relations of microorganisms and in food processing, packaging, and storage. It reviews the literature and provides numerous examples demonstrating the use of water activity to predict the reactions of microorganisms or the stability of food components. It also highlights cases where water activity is not a reliable predictor of events and considers some interesting interactions with other environmental parameters. Comprised of 11 chapters, this volume begins with an overview of water in foods and solutions, water activity values for foods, and water relations of enzyme activity. It then discusses lipid oxidation, enzyme reactions, and non-enzymatic browning, and several other food-related factors. The reader is also introduced to water relations of microbial growth, the effects of water on microbial

survival the spoilage and preservation of foods at various levels of water activity the water relations of food borne pathogens such as Salmonella and toxigenic molds the importance of water activity in non microbiological aspects of food processing and storage and the influence of atmospheric relative humidity on sanitation and the protection of food products This book is an important source of information for researchers in food microbiology and microbial water relations *Handbook of Food Engineering* Dennis R. Heldman, Daryl B. Lund, Cristina Sabliov, 2018-12-19 As the complexity of the food supply system increases the focus on processes used to convert raw food materials and ingredients into consumer food products becomes more important The Handbook of Food Engineering Third Edition continues to provide students and food engineering professionals with the latest information needed to improve the efficiency of the food supply system As with the previous editions this book contains the latest information on the thermophysical properties of foods and kinetic constants needed to estimate changes in key components of foods during manufacturing and distribution Illustrations are used to demonstrate the applications of the information to process design Researchers should be able to use the information to pursue new directions in process development and design and to identify future directions for research on the physical properties of foods and kinetics of changes in the food throughout the supply system Features Covers basic concepts of transport and storage of liquids and solids heating and cooling of foods and food ingredients New chapter covers nanoscale science in food systems Includes chapters on mass transfer in foods and membrane processes for liquid concentration and other applications Discusses specific unit operations on freezing concentration dehydration thermal processing and extrusion The first four chapters of the Third Edition focus primarily on the properties of foods and food ingredients with a new chapter on nanoscale applications in foods Each of the eleven chapters that follow has a focus on one of the more traditional unit operations used throughout the food supply system Major revisions and or updates have been incorporated into chapters on heating and cooling processes membrane processes extrusion processes and cleaning operations *Introduction to Food Manufacturing Engineering* Tze Loon Neoh, Shuji Adachi, Takeshi Furuta, 2016-09-01 This book provides basic food engineering knowledge for beginners The discipline of food processing conforms with actual food manufacturing flows and thus is readily comprehensible although food engineering has great diversity as the common principles of operations for most food manufacturing processes are covered This volume therefore endeavors to initially embody food manufacturing flows and pays careful attention to quantitatively detailing and explaining the manufacturing operations involved from an engineering point of view Because this book is intended to be a very basic introductory text for food engineering it introduces a variety of foods and food ingredients with which the intended readership is familiar to explain comprehensively the fundamental unit operations through the manufacturing flows Various real foods and food ingredients are used to explain the principles of food engineering so that students of food science technology and engineering courses will be able to better grasp the basic concepts The book includes many exercises for learning how to draw proper graphs and how to deal with mathematical

formulas and numerical values Readers can learn common principles which are easily applicable to other fields such as pharmaceuticals and biotechnology through the many examples that are provided

**Engineering Properties of Foods** M.A. Rao, Syed S.H. Rizvi, Ashim K. Datta, 2014-10-31 Ten years have passed since this reference's last edition making Engineering Properties of Foods Third Edition the must have resource for those interested in food properties and their variations Defined are food properties and the necessary theoretical background for each Also evaluated is the usefulness of each property i

*Fennema's Food Chemistry* Srinivasan Damodaran, Kirk L. Parkin, 2017-05-25 This latest edition of the most internationally respected reference in food chemistry for more than 30 years Fennema's Food Chemistry 5th Edition once again meets and surpasses the standards of quality and comprehensive information set by its predecessors All chapters reflect recent scientific advances and where appropriate have expanded and evolved their focus to provide readers with the current state of the science of chemistry for the food industry This edition introduces new editors and contributors who are recognized experts in their fields The fifth edition presents a completely rewritten chapter on Water and Ice written in an easy to understand manner suitable for professionals as well as undergraduates In addition ten former chapters have been completely revised and updated two of which receive extensive attention in the new edition including Carbohydrates Chapter 3 which has been expanded to include a section on Maillard reaction and Dispersed Systems Basic considerations Chapter 7 which includes thermodynamic incompatibility phase separation concepts Retaining the straightforward organization and accessibility of the original this edition begins with an examination of major food components such as water carbohydrates lipids proteins and enzymes The second section looks at minor food components including vitamins and minerals colorants flavors and additives The final section considers food systems by reviewing basic considerations as well as specific information on the characteristics of milk the postmortem physiology of edible muscle and postharvest physiology of plant tissues

**The Chemistry of Food** Jan Velisek, Richard Koplik, Karel Cejpek, 2020-07-29 Wiley's landmark food chemistry textbook that provides an all in one reference book revised and updated The revised second edition of The Chemistry of Food provides a comprehensive overview of important compounds constituting of food and raw materials for food production The authors highlight food's structural features chemical reactions organoleptic properties nutritional and toxicological importance The updated second edition reflects the thousands of new scientific papers concerning food chemistry and related disciplines that have been published since 2012 Recent discoveries deal with existing as well as new food constituents their origin reactivity degradation reactions with other compounds organoleptic biological and other important properties The second edition extends and supplements the current knowledge and presents new facts about chemistry legislation nutrition and food safety The main chapters of the book explore the chemical structure of substances and subchapters examine the properties or uses This important resource Offers in a single volume an updated text dealing with food chemistry Contains complete and fully up to date information on food chemistry from structural features to applications

Features several visual aids including reaction schemes diagrams and tables and nearly 2 000 chemical structures Written by internationally recognized authors on food chemistry Written for upper level students lecturers researchers and the food industry the revised second edition of *The Chemistry of Food* is a quick reference for almost anything food related as pertains to its chemical properties and applications Handbook of Industrial Drying Arun S. Mujumdar, 2020-09-29 First Published in 1995 this book offers a full guide into industrial drying for various materials Carefully compiled and filled with a vast repertoire of notes diagrams and references this book serves as a useful reference for students of medicine and other practitioners in their respective fields Transport Phenomena of Foods and Biological Materials Vassilis Gekas, 2017-10-02 *Transport Phenomena of Foods and Biological Materials* provides comprehensive coverage of transport phenomena modeling in foods and other biological materials The book is unique in its consideration of models ranging from rigorous mathematical to empirical approaches including phenomenological and semi empirical models It examines cell structure and descriptions of other non traditional models such as those based on irreversible thermodynamics or those focused on the use of the chemical and electrochemical potential as the driving forces of transport Other topics discussed include the source term important for the coupling transport phenomena reaction or other intentional unintentional phenomena and the connections between transport phenomena modeling and design aspects Some 100 tables provide useful summaries of the characteristics of each model and provide data about the transport properties of an extensive variety of foods *Transport Phenomena of Foods and Biological Materials* will benefit a broad audience of chemists biochemists biotechnologists and other scientists in the academic and industrial realm of foods and biological materials *Handbook of Food Analysis: Physical characterization and nutrient analysis* Leo M. L. Nollet, 2004 This two volume handbook supplies food chemists with essential information on the physical and chemical properties of nutrients descriptions of analytical techniques and an assessment of their procedural reliability The new edition includes two new chapters that spotlight the characterization of water activity and the analysis of inorganic nutrients and provides authoritative rundowns of analytical techniques for the sensory evaluation of food amino acids and fatty acids neutral lipids and phospholipids and more The leading reference work on the analysis of food this edition covers new topics and techniques and reflects the very latest data and methodological advances in all chapters

*Encyclopedia of Agricultural, Food, and Biological Engineering* Dennis R. Heldman, Carmen I. Moraru, 2010-10-21 Examining the role of engineering in delivery of quality consumer products this expansive resource covers the development and design of procedures equipment and systems utilized in the production and conversion of raw materials into food and nonfood consumer goods With nearly 2000 photographs figures tables and equations including 128 color figures the book emphasizes and illustrates the various engineering processes associated with the production of materials with agricultural origin With contributions from more than 350 experts and featuring more than 200 entries and 3600 references this is the largest and most comprehensive guide on raw production technology Physical Properties of Foods Serpil Sahin, Servet

Gülüm Sumnu,2007-05-27 This book provides a fundamental understanding of physical properties of foods It is the first textbook in this area and combines engineering concepts and physical chemistry Basic definitions and principles of physical properties are discussed as well as the importance of physical properties in the food industry and measurement methods In addition recent studies in physical properties are summarized The material presented is helpful for students to understand the relationship between physical and functional properties of raw semi finished and processed food in order to obtain products with desired shelf life and quality

**Protein-Based Films and Coatings** Aristippos Gennadios,2002-02-07 This volume presents the most up to date and detailed information available on protein based biopolymer films and coatings It provides a comprehensive overview of the design technology properties functionality and applications of biopolymer films and coatings edible and inedible from plant and animal proteins Both widely commercialized and

*Water Activity: Influences on Food Quality* Louis B. Rockland,George F. Stewart,2013-10-22 Water Activity Influences on Food Quality is a collection of papers presented at the 1978 International Symposium by the same title held in Osaka Japan This book is a treatise on the influence of bound and free water on the quality and stability of foods and other natural products This book is organized into seven sections encompassing 33 chapters The first sections deal with the characterization of moisture sorption isotherms based on both theoretical and applied considerations as well as the relationship of bound water to the physical and chemical properties of natural products including foods The succeeding sections consider the structure of water and the influence of solutes and solute mobility on water activity and the influence of water and water activity on the structural and functional characteristics of proteins carbohydrates and proteins Other sections explore the influence of water activity and temperature on the rates of several important chemical reactions such as lipid oxidation vitamin decomposition browning and other reactions which affect the chemical physical and nutritional properties of food These sections also discuss the influence of water activity on food processing and storage practices from both theoretical and applied viewpoints specifically the application of water activity principals to the processing and preservation of leafy vegetables cheese dried fish and other products The final section is devoted to the influences of water activity on the behavior of food related microorganisms This section emphasizes the role of solvents in controlling water activity and the related survival of certain microorganisms This book will prove useful to food scientists and researchers

**Food Physics** Ludger Figura,Arthur A. Teixeira,2007-08-24 This is the first textbook in this field of increasing importance for the food and cosmetics industries It is indispensable for future students of food technology and food chemistry as well as for engineers technologists and technicians in the food industries It describes the principles of food physics starting with the very basics and focuses on the needs of practitioners without omitting important basic principles It will be indispensable for future students of food technology and food chemistry as well as for engineers technologists and technicians in the food industries Food Physics deals with the physical properties of food food ingredients and their measurement

*Handbook of Food Preservation* M.

Shafiur Rahman,1999-01-21 With over 2900 references tables and drawings this book covers a wide variety of conventional and potential food preservation techniques Emphasizing practical cost effective and safe strategies the book facilitates the selection of the best food ingredients and preservation techniques It covers postharvest handling explains conventional preservation methods details the use of natural antimicrobials antioxidants edible coating nitrites food packaging and HACCP in food safety Highlighting the effects of preservation methods on the functional and sensory properties of foods the book also features the exact mode or mechanisms involved in each preservation method Principles of Thermal Analysis and Calorimetry Simon Gaisford,Vicky Kett,Peter Haines,2019-03-15 The use of thermal and calorimetric methods has shown rapid growth over the past few decades in an increasingly wide range of applications The original text was published in 2001 since then there have been significant advances in various analytical techniques and their applications This second edition supplies an up to date concise and readable account of the principles experimental apparatus and practical procedures used in thermal analysis and calorimetric methods of analysis Written by experts in their field brief accounts of the basic theory are reinforced with detailed technical advances and contemporary developments Where appropriate applications are used to highlight particular operating principles or methods of interpretation As an important source of information for many levels of readership in a variety of areas this book will be an aid for students and lecturers through to industrial and laboratory staff and consultants



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