

1. Record Nr.	UNINA9910831094303321
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Titolo	Cellulose and cellulose derivatives in the food industry : fundamentals and applications / / Tanja Wustenberg
Pubbl/distr/stampa	Baden-Wurttemberg, Germany : , : Wiley-VCH, , 2015 ©2015
ISBN	3-527-68296-1 3-527-68293-7 3-527-68295-3
Descrizione fisica	1 online resource (549 p.)
Disciplina	661.802
Soggetti	Cellulose Cellulose - Derivatives Cellulose - Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cellulose and Cellulose Derivatives in the Food Industry: Fundamentals and Applications; Contents; Preface; List of Abbreviations; 1 General Overview of Food Hydrocolloids; 1.1 Introduction to the World of Hydrocolloids; 1.2 Plant Extracts; 1.2.1 Agar; 1.2.2 Alginates and PGA; 1.2.3 Carrageenan; 1.2.4 Pectins; 1.2.5 Native and Modified Starches; 1.2.6 Furcellaran; 1.2.7 Larch Gum; 1.3 Seed Flours; 1.3.1 Guar Gum; 1.3.2 Locust Bean Gum (Carob); 1.3.3 Tara Gum; 1.3.4 Tamarind Seed Gum; 1.3.5 Konjac Gum; 1.4 Exudates; 1.4.1 Acacia Gum/Gum Arabic; 1.4.2 Tragacanth; 1.4.3 Karaya Gum 1.4.4 Ghatti Gum1.5 Bacterial Polysaccharides; 1.5.1 Xanthan; 1.5.2 Others; 1.6 Overview Tables for the Most Important Cellulose Derivatives; 1.7 Commercial Development - Global Market; References; 2 Rheology of Food Hydrocolloids; 2.1 Introduction to Rheology, Rheometry, and Visco-Elasticity; 2.2 Definitions; 2.3 Basic Data; 2.4 Different Types of Flow Behaviour; 2.5 Structures of Polymers with Shear-Thinning Flow Behaviour; 2.6 Causes of Shear-Thickening of Products; 2.7 Factors that Influence Rheological Behaviour; 2.8 Viscosity Measurement of Thickening Hydrocolloid Solutions

2.9 Characterization of Gels; 2.10 Viscosimeters and Rheometers; 2.11 Relationship between Rheology and Sensory; References; 3 Cellulose; 3.1 Introduction, History and Development; 3.1.1 Introduction; 3.1.2 Historical Origin; 3.1.3 Industrial Development from the Beginning to Today; 3.1.4 Current Data for Cellulose Processing; 3.2 Raw Materials and Biological Origin; 3.2.1 Occurrence; 3.2.2 Potential Sources for Natural Cellulosic Fibres; 3.2.3 Wood as Cellulose Supplier; 3.2.3.1 Tree Wood and Perennial Plants; 3.2.3.2 Annual Plants; 3.2.4 Bacterial Cellulose; 3.2.5 Biosynthesis; 3.2.6 Biological Composition; 3.2.6.1 Cotton Fibres; 3.2.6.2 Wood Fibres; 3.2.7 Explanation for Industrial Derivatization; 3.3 Manufacture of Pulp; 3.3.1 Purification of Natural Cellulose Sources; 3.3.2 Cotton Linters; 3.3.3 Wood; 3.4 Chemical Composition and Structure; 3.4.1 Molecular Structure; 3.4.1.1 Basic Structure; 3.4.1.2 Differences between Cellulose and Starch; 3.4.1.3 Structural Anomalies; 3.4.1.4 Chain Length and Molecular Weight; 3.4.2 Secondary Structure; 3.4.2.1 Lattice Structure and Crystallization; 3.4.2.2 Hydrogen Bonding; 3.4.2.3 Chain Stiffness of the Cellulose Molecule; 3.4.3 Supramolecular Structure of Native Cellulose Fibres; 3.5 Rheology; 3.5.1 Dissolution Behaviour; 3.5.2 Gelation and Behaviour with Other Ingredients; 3.6 Stability; 3.6.1 Physical Properties; 3.6.2 Stability in Food Products; 3.6.3 Chemical Reactions; 3.6.4 Possibilities for Degradation; 3.7 Analysis and Rheometry; 3.7.1 Qualitative Analysis; 3.7.2 Quantitative Determination; 3.7.3 Characterization of Structure of Cellulose Fibres; 3.7.4 Viscosity Measurement; 3.8 Synergies with Other Hydrocolloids; 3.9 Application in Food Products; 3.10 Non-food Applications; 3.11 Options for Derivatization of Cellulose

## Sommario/riassunto

Authored by an expert with many years of experience as an application engineer at renowned cellulose processing companies in the food industry, this book presents all the conventional and latest knowledge available on cellulose and its derivatives. Throughout, the necessary details are elucidated from a theoretical and practical viewpoint, while retaining the focus on food applications. The book provides an essential source of informations including recommendations and instructions of a general nature to assist readers in the exploration of possible applications of cellulose and its derivative