

The Complete Book on Gums and Stabilizers for Food Industry

Author:- H. Panda

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Gums are plant flours (like starch or arrowroot) that make foods & other products thick. Gums are used in foods for many reasons besides being used as a thickener. Gums are important ingredient in producing food emulsifier, food additive, food thickener & other gum products. The main reason for adding a gum or hydrocolloid to a food product is to improve its overall quality. India is the largest producer of gums specially guar gum products. Similarly stabilizers are an indispensable substance in food items when added to the food items, they smoothens uniform nature and hold the flavouring compounds in dispersion. Gum technology stabilizers are carefully controlled blends of various food ingredients. Most processed foods need some sort of stabilization at some point during production, transportation, storage and serving. The science and technology of hydrocolloids used in food and related systems has seen many new developments and advances over recent years. The breadth and depth of knowledge of gums and stabilizers has increased tremendously over the last two decades, with researchers in industry and academia collaborating to accelerate the growth. Gums as food constituents or as food additives can influence processing conditions in the following ways; retention of water, reduction of evaporation rates, alteration of freezing rates, modification of ice crystal formation and participation in chemical reactions.

Some of the fundamentals of the book are functions of gum, typical food applications, gums in food suspensions, rheology and characters of gums, natural product exudates, flavor fixation, ice cream, ices and sherbets, gelation of low methoxyl pectin, seaweed extracts, microbial gums, transformation of collagen to gelatin, cellulose gums, dairy food applications, bakery product applications, analysis of hydrocolloids, gums in food products, general isolation of gums from foods, identification of gums in specific foods, group analysis and identification schemes, group identification methods, qualitative group analysis etc.

This book contains rheology of gums, plant sheet gums, microbial gums, cellulose gums and synthetic hydrocolloids different stabilizers used in food industry. The book will be very resourceful to all its readers, new entrepreneurs, scientist, food technologist, food industries etc.

1. FUNCTIONS OF GUM

Convenience Foods

Instant Coffee

Frozen Foods

Freeze-Dried Foods

Gum Constituents

Effect on Processing

Pertinent Processing Parameters
Function in Food Applications
Viscosity
Definition and Meaning
Factors Effecting Hydrophilic Viscosities
Typical Food Applications
Gelation
Mechanism of Gel Formation
Types of Gel Linkage
Gel Textures
Effect of Sugar on Gels
Rheological Behavior
Gel-Enhancing Effect of Other Gums
Emulsification and Stabilization
Types of Emulsions
Preparation of Emulsions
Applications of Hydrocolloids
Breaking of Emulsions
Suspensions and Dispersions
Description
Yield Value
Gums in Food Suspensions
Foams
Description
Requirements for Stability
Food Applications
Measurement of Foam Stability
Crystallization Control
Description
Types of Crystal Bonding
Effect of Hydrocolloids
Flavor Fixation
Description
Historical Background
Basic Principles
Function of Gums
Important Parameters
Advantages of Gum Arabic
Limitations of Spray-Dried Flavors
Slab Fixation
Microencapsulation (Coacervation)
Alginate Film Encapsulation
Protective Films
Description
Applications
Synergistic Effect
Syneresis Inhibition
Selection and Application of Hydrocolloids

2. RHEOLOGY AND CHARACTERS OF GUMS

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Non-Newtonian Systems
Bingham Plastic
Pseudoplastic (Shear-Thinning)
Dilatancy (Shear-Thickening)
Thixotropic Flow
Rheopexy
Rheology in Foods
Flow Curve Data
Rheological Measurement of Liquids
Capillary Viscometers
Rotational Viscometers
Brookfield Synchro-Lectric Viscometer
Corn Industries Viscometer
Brabender Visco-Amylograph
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Rheological Measurements of Solids
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Exchange Ridgelimeter
Gel Characterization Apparatus (GCA)
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Gum Karaya
Structure
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Ice Cream, Ices and Sherbets
Meat Products
Baked Goods
Dairy Products
Miscellaneous
Gum Tragacanth
Structure

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Salad Dressings and Sauces
Ice Cream, Ices and Sherbets
Bakery Products
Confectionery
Miscellaneous

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Guar Gum
Historical Background
Source
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Psyllium Seed Gum

Source
Structure
Properties
Applications

Quince Seed Gum

Source
Structure
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Gel Formation
Theoretical Discussion
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Manufacture of Pectin
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Standardization
Manufacture of Low Methoxyl Pectins
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Jams, Jellies and Preserves
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Canned Fruits and Fruit Juices
Confectionery Products
Dairy Products

Miscellaneous
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Dessert and Pudding Mixes
Canned Fruit Sauce Gels
Canned Tomato Aspic
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Soda Fountain Fruit Toppings
Variegated Ice Cream
Fruit Pie Fillings
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Edible Protective Coatings
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Dehydrated Foods

Frozen Foods

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Food and Drug Administration Status

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Food and Drug Administration Status

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Carboxyvinyl Polymers (Carbopol)

Background

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Applications

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Group Identification Methods

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Infrared Spectroscopy

Paper Chromatography

Electrophoresis

X-Ray Diffraction

Differential Thermal Analysis (DTA)

Reagents for Gum Identification

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NIIR PROJECT CONSULTANCY SERVICES, 106-E, Kamla Nagar, New Delhi-110007, India.
Email: npcs.india@gmail.com **Website:** NIIR.org

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