

Gums, Adhesives & Sealants Technology (with Formulae & their Applications) 2nd Edition

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Naturally occurring polysaccharides from plant exudates have been in use from many decades in immense quantities. Natural gums are natural polymers, which mainly consists of carbohydrates sometimes with small amounts of proteins and minerals. Gum and its derivatives are widely used in various industries as per its needs. The appearance and properties of natural gums determine their commercial value and end use. Due to their extraordinary, unrivalled technological & functional properties gum is used in many industries. Gums not only modify viscosity and consistency, they also often attenuate odour, taste and flavour intensity. Adhesive or sealant is a mixture in a liquid or semi-liquid state that is capable of holding materials together by surface attachment. Adhesives and sealants are used as a raw material for the manufacturing industry or for the service of different processing industries. Adhesives and sealants virtually touch every part of our lives. The adhesives and sealants are two chemically similar but functionally different groups of formulated products. There is no end in sight to the new materials, new formulation, and new uses to which adhesives and sealants will be put in the future.

Some of the fundamentals of the book are advantages of adhesive bonding, hybrids and coupling agents, adhesive films, designing polymers for adhesives, fundamentals of adhesion, designing polymers for adhesives, thermodynamics of adhesion, casein and mixed protein adhesives, lime-free casein adhesives, foil to paper laminating adhesives, casein and protein blend glues as wood adhesives, chemistry of protein blend glues, natural rubber adhesives, vulcanizing latex adhesives, solution adhesives from natural rubber, halogenated butyl rubber, butyl rubber and poly isobutylene lattices, polysulfide sealants and adhesives etc.

This book covers a wide range of polymeric adhesives and sealants, gums along with their essential formularies, distinguished by applications and based on technology. The main areas covered in details are the basic fundamentals, properties, uses and applications, formulations and chemistry, methods of manufacturing and lastly testing methods. This book will be very resourceful to its readers who are just beginners in this field and also to upcoming entrepreneurs, engineers, existing industries, technologist, technical institution etc.

I INTRODUCTION TO ADHESIVES

ADVANTAGES OF ADHESIVE BONDING

HISTORY

TYPES OF ADHESIVES

Application and Setting

Origin

Cure; Solubility; Crosslinking

Hybrids and coupling Agents

Adhesive Films

High Temperature Resistance; Flame Retardance

MATCHING ADHESIVE TO ADHEREND

Critical Surface Tension

Solubility Parameter

Figure

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Grafting

Reactive Oligomers and Polymers

Copolymerization

Block Copolymers

Interpenetrating Polymer Network (IPN)

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Adhesive Joint Strengths

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Polymers

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Introduction

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MANUFACTURING

PROPERTIES

TEST GRADES

TESTING

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FLEXIBLE AND NON-WARP GLUES

GLUE APPLICATION

COATED ABRASIVES

SET-UP WHEELS

GREASELESS BUFFING COMPOUNDS

GUMMED TAPE

GLASS CHIPPING

SIZING AND COATING

PAPER

COMPOUNDED RUBBER

GASKET MANUFACTURING
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PHYSICAL PROPERTIES OF CASEIN

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Foil-to-Paper Laminating Adhesives

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Formulation and Chemistry of Casein-Lime Glues

Mixing Casein Glue

Additives for Casein and Protein Blend Glues

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Miscellaneous Additives

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White Dextrins

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Pregelatinized Starches

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Corrugating

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Laminating Adhesives

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Label and Envelope Adhesives

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Vulcanizing Latex Adhesives

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Major Applications

SBR (SOLID) IN ADHESIVES

General

Classification

Compounding Ingredients

Major Applications

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MOLDING COMPOUNDS

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WOOD BONDING
INSULATION AND FOAM
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I POLYOLEFIN AND ETHYLENE COPOLYMER-BASED

HOT MELT ADHESIVES

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Tackifiers

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Nonwovens

Furniture

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Polyester Beverage Bottles

Carpet Seaming Tape

Paper Laminates

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Compatibility

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Thermal Properties

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Peel Adhesion

Cohesive Strength

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I FACTORS INFLUENCING GUM COSTS AND APPLICATIONS

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2. Seaweed Gums

3. Seed Gums

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1. Linear Neutral Polysaccharides

2. Branched Neutral Polysaccharides

3. Polysaccharides with Carboxyl Groups

4. Polysaccharides with Strong Acid Groups

5. Polysaccharides with basic Groups

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2. Introduction of Acidic Groups

3. Introduction of Groups

4. Graft Polymers

5. Other Chemical Modifications of Natural Polysaccharides

I AGAR

INTRODUCTION

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1. Raw Material

2. Processing

3. Finished Product

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2. Manufacture

3. Use

4. Present Applications

5. Derivatives

IV. STRUCTURE

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2. Sols

3. Gels

I ALGIN

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3. Harvesting

4. Processing

5. Grades

6. Industrial Importance

7. Potential Amount

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BAKERY PRODUCTS

OTHER FOOD PRODUCTS

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5. Industrial Applications

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TEXTILE PRODUCTS

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OTHER INDUSTRIAL USES

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3. Gels
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3. Emulsion Stabilization and Thickening
4. Pharmaceuticals and Cosmetics
5. Extruded Fibers and Films
6. Glycosamine Hydrochloride in Foods and Pharmaceuticals

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3. Films and Fibers
4. Adhesiveness
5. Compatibilities

I GUM ARABIC

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3. Nigeria
4. Tanganyika
5. Morocco

6. British Somaliland and Abyssinia
7. South Africa
8. India
9. Australia
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1. Preparation
2. Properties
3. Degraded Gum Arabic
4. Derivatives of Arabic Acid

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4. pH
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7. Mechanical Treatment
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2. Freezing Point

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3. Preparation of Coacervates
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5. Effect of Temperature
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7. Reactions of Salts
8. Physical Phenomena
9. Uses of Gum Arabic-Gelatin Coacervates
10. Coexisting Coacervates
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1. Chemical Reactivity
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2. Systematic Analytical Scheme
3. Physical Confirmatory Tests
4. Chemical Confirmatory Tests
5. Direct Tests for Gum Arabic in Some Commercial Products

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1. Foods
2. Adhesives
3. Paints
4. Inks
5. Lithography
6. Textiles

7. Miscellaneous

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DEVELOPMENT OF USE

STRUCTURE

PROPERTIES

I GUAR GUM

INTRODUCTION

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2. Agronomics

3. Purification

4. Grades

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3. Foods

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5. Paper Industry

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7. Derivatives

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3. Films

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5. Miscellaneous

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3. Seasonal Effect

4. Collection

5. Purification

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7. Impurities

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4. Collection
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7. Impurities
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9. General Industrial Uses Other Than in Foods

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DIRECTORY SECTION

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SUPPLIERS OF RAW MATERIALS

SUPPLIERS OF THE PLANT M/C & EQUIPT.

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