



# Handbook on Textile Auxiliaries, Dyes and Dye Intermediates Technology

**Author:** NPCS Board of Consultants & Engineers

**Format:** paperback

**Code:** NI221

**Pages:** 736

**Price:** Rs 1575 | US\$ 150

**Publisher:** NIIR PROJECT CONSULTANCY SERVICES

**Shipping:** 5 days

## About the Book

Textile auxiliaries are defined as chemicals of formulated chemical products which enables a processing operation in preparation, dyeing, printing of finishing to be carried out more effectively or which is essential if a given effect is to be obtained. Certain Textile Auxiliaries are also required in order to produce special finishing effects such as wash & wear, water repellence, flame retardancy, aroma finish, anti odour, colour deepening etc. The prime consideration in the choice of Textile materials is the purpose for which they are intended, but colour has been termed the best salesman in the present scenario. The modern tendency is towards an insistence on colour which is fast to light, washing, rubbing, and bleaching; this movement makes a great demand on the science of dyeing. Auxiliaries, dyes and dye intermediates play a vital role in textile processing industries. The manufacture and use of dyes is an important part of modern technology. Because of the variety of materials that must be dyed in a complete spectrum of hues, manufacturer now offer many hundreds of distinctly different dyes. The major uses of dyes are in coloration of textile fibers and paper. The substrates can be grouped into two major classes-hydrophobic and hydrophilic. Hydrophilic substances such as cotton, wool, silk, and paper are readily swollen by water making access of the dye to substrate relatively easy. On other hand hydrophobic fibers, synthetic polyesters, acrylics, polyamides and polyolefin fibers are not readily swollen by water hence, higher application temperatures and smaller molecules are generally required. Dyes are classified according to the application method. Some of the examples of dyes are acid dyes, basic or cationic dyes, direct dyes, sulfur dyes, vat dyes, reactive dyes, mordant dyes etc. Colorants and auxiliaries will remain the biggest product segment, while faster gains will be seen in finishing chemicals. World demand for dyes and organic pigments is forecast to increase 3.9 percent per year through 2013, in line with real gains in manufacturing activity. Volume demand will grow 3.5 percent annually. While the textile industry will remain the largest consumer of dyes and organic pigments, faster growth is expected in other markets such as printing inks, paint and coatings, and plastics. Market value will benefit from consumer preferences for environmentally friendly products, which will support consumption of high performance dyes and organic pigments. Some of the fundamentals of the book are antimony and other inorganic compounds, halogenated flame retardants, phosphorous compounds, dyes and dye intermediates, textile fibers, pigment dyeing and printing, dry cleaning agents, dry cleaning detergents, acrylic ester resins, alginic acid, polyvinyl chloride, sodium carboxy methyl cellulose, guar gum, industries using guar gum, gum tragacanth, hydroxyethyl cellulose, polyethylene glycol, industries using polyethylene glycols, etc. The book covers details of antimony and other inorganic compounds, halogenated flame retardants, silicone oils, solvents, dyes and dye intermediates, dry cleaning agents, different types of gums used in textile industries, starch, flame retardants for textile and many more. This is very resourceful book for new entrepreneurs, technologists, research scholars and technical institutions related to textile.

## Contents

1. Antimony and Other Inorganic Compounds
  - Antimony Compounds
  - Boron Compounds
  - Alumina Hydrates
  - Molybdenum Oxides
  - Applications
2. Halogenated Flame Retardants
  - Principles of Developing Flame-Retardant Polymers
  - Testing
  - Polymer Classes
  - Additive Flame Retardants
  - Reactive Flame Retardants
  - Economic Aspects
3. Phosphorous Compounds
  - Mechanism of Action of Phosphorus Flame Retardants
  - Phosphorus-Based Flame Retardants in Commercial Use
  - Health and Safety Factors
  - Economic Aspects
4. Urea-Formaldehyde Resins
  - Composition Variables
  - Melamine
5. Melamine-Formaldehyde Resins
  - New Nitrogen Compounds for Amino Resins
6. High Styrene-butadiene Rubber Resins
7. Chlorinated Biphenyls
8. Chlorinated Paraffins
9. Synthetic Rubber Resin Latexes
  - Procedure
10. Silicone Oils
  - Procedure
11. Solvents
  - TYPES OF VOLATILE SOLVENTS
12. Dyes and Dye Intermediates
  - Textile Fibers
    - Cotton and Rayon
    - Wool and Silk
    - Cellulose Acetates
    - Polyamides
    - Polyester
    - Acrylics
    - Vinyls
    - Polyolefins
    - Glass Fibers
    - Paper
  - THE PROPERTIES OF DYES
  - CLASSIFICATION OF DYES
    - Acid dyes
    - Basic or Cationic Dyes
    - Direct Dyes
    - Sulfur Dyes
    - Vat Dyes

Reactive Dyes  
Disperse Dyes  
Mordant Dyes  
Azoic Dyes  
Oxidation Dyes  
Ingrain Dyes  
THE APPLICATION OF DYES  
Fiber Preparation  
Dye Bath Preparation  
Dye Application  
Finishing  
DYEING EQUIPMENT  
PRINTING  
PIGMENT DYEING AND PRINTING  
NONTEXTILE USES OF DYES  
PRODUCTION AND USES  
RAW MATERIALS FOR THE MANUFACTURE OF DYES  
DYE INTERMEDIATES  
Nitration  
Reduction  
Amination  
Sulfonation  
Halogenation  
Alkaline Fusion  
Oxidation  
Other Important Reactions  
PRODUCTION OF DYE INTERMEDIATES  
THE MANUFACTURE OF DYES  
Azo dyes  
Manufacturing Processes for Azo Dyes  
Triphenylmethane Dyes  
Xanthene Dyes  
Anthraquinone and Related Dyes  
Indigoid and Thioindigoid dyes  
Sulfur Dyes  
Phthalocyanines  
Fluorescent brightening agents  
PRODUCTION STATISTICS  
NEW DEVELOPMENTS IN DYES  
13. Dry Cleaning Agents  
Stoddard Solvent  
Specification Tests  
Perchloroethylene  
Specification tests  
Procedure  
Fluorocarbon Solvent  
Used Drycleaning Solvents  
Drycleaning Detergents  
Methods of Analysis  
Specification tests  
Procedure

Performance tests

Procedure

14. Acrylic Ester Resins

15. Alginic Acid

GENERAL INFORMATION

Chemical Structure

Manufacture

Physical Properties

Solution Properties

Compatibilities

Toxicology/Environment

Application Procedures

Film forming

Pie Fillings

Industrial Applications

LABORATORY TECHNIQUES

Viscosity Measurement

Moisture Determination

Powder color determination

16. Cellulose Ethers

General Information

Chemistry

Manufacture

Toxicity and Handling

Solution Properties

Thickening

Powder and Film Properties

Physical and Chemical Properties

Commercial uses: Compounding and Formulating

Adhesives

Agricultural Chemicals

Chemical Specialties

Construction Industry products

Cosmetics

Food Products

Latex paint

Paint Removers

Paper Products

Pharmaceuticals

Printing Inks

Resins

Elastomers

Textiles

Tobacco Sheet

COMMERCIAL USES: Processing Aids

Ceramics

Leather

Polyvinyl Chloride

INDUSTRIES USING ALKYL AND HYDROXYALKYLCELLULOSE

Formulations

Latex Paint

Exterior High-Solids Acrylic  
Paint Remover  
Scrape-off paint and varnish remover  
Mixing  
Flash-off Paint Remover Formulation  
Construction Industry Products  
Food Products  
Pharmaceutical products  
Tobacco  
Leather  
17. Sodium Carboxy Methyl Cellulose  
Chemical Nature  
Physical Properties  
Manufacture  
Biological Properties  
Toxicological Properties  
Rheology  
Storage and Handling  
Applications  
18. Guar Gum  
Manufacture  
Chemical and Physical Properties  
Biological Properties  
Handling  
Applications  
Paper  
COMMERCIAL APPLICATIONS: Compounding and Formulating  
Food  
Explosives  
COMMERCIAL USES: Processing Aids  
Oil and Gas  
Textile  
Mining  
INDUSTRIES USING GUAR GUM  
Oil and Gas  
Explosives  
Food  
Paper  
Textile  
Mining  
19. Gum Arabic  
Chemical Nature  
Physical Properties  
Manufacture  
Biological/Toxicological Properties  
Rheological Properties  
Additives/Extenders  
Handling  
Applications  
Application Procedures  
Compatibility

**COMMERCIAL USES**

Food Applications

Pharmaceuticals

Medicines

Cosmetics

Adhesives

Paints

Inks

Lithography

Textiles

Miscellaneous Uses

20. Gum Tragacanth

Chemical Nature

Physical Properties

Preservatives

21. Hydroxyethyl Cellulose

Chemical Nature

Physical Properties

Manufacture

Biological/Toxicological Properties

Rheological Properties of Solutions

Additives/Extenders

Handling

Applications

Application Procedures

Specialties

Future Developments

**COMMERCIAL USES: Compounding and Formulating**

Protective Colloid in Latex

Thickener for Latex Compositions

Cosmetics and Pharmaceuticals

Paper Sizes and Coatings

Carpet and Textile Dye Pastes

Special Applications

**COMMERCIAL USES: Processing Aids**

Crude-Oil Drilling and Recovery

Electroplating and Electrowinning

Miscellaneous Binders

Other Specialty Uses

**INDUSTRIES USING HYDROXYETHYLCELLULOSE**

Adhesives

Agricultural Products

Building Products

Cosmetics

Oil and Gas Extraction

Paints and Coatings

Paper and Allied Products

Synthetic Resins

Textile Mill Products

**FORMULATIONS**

Copolymer Latex

Latex Interior Flat Wall Paint  
Textile Printing  
Oil-Well Workover Fluid  
Roll-on Antiperspirant  
Liquid Shampoo  
LABORATORY TECHNIQUES  
PRODUCT/TRADENAME/TERM GLOSSARY  
FURTHER USEFUL READING  
Technical Bulletins  
22. Hydroxy Propyl Cellulose  
Chemical Nature  
Physical Properties  
Manufacture  
Toxicological Properties  
Additives  
Handling  
Applications  
Application Procedures  
Specialties  
23. Locust Bean Gum  
Manufacture  
Properties  
Biological Properties  
Handling  
COMMERCIAL USES: Compounding and Formulating  
Food Products  
COMMERCIAL USES: Processing Aids  
Textiles Processing  
Paper Products  
Mining Industry  
INDUSTRIES USING LOCUST BEAN GUM  
Food Industry  
14-14 Locust Bean Gum  
Mining Industry  
Paper industry  
Textiles Industry  
24. Polyacrylic Acid  
Physical and Chemical Nature  
Methods of Preparation  
Polymer Reactions  
COMMERCIAL APPLICATIONS  
Thickening  
Suspending and Dispersing  
Flocculation  
Binders  
Coatings  
Leather Paste  
Ion-Exchange Processes  
Pharmaceuticals  
Adhesives  
Miscellaneous

25. Polyethylene Glycol  
Chemical Nature  
Physical Properties  
Biological/Toxicological Properties  
Manufacture  
Handling  
Applications  
Application Procedures  
Additives/Extenders  
Specialties  
Future Developments  
COMMERCIAL USES: Compounding and Formulating  
Chemical Intermediates  
Adhesives  
Agricultural Formulations  
Cellophane-Film Humectants  
Cosmetics and Toiletries  
Detergents and Cleaners  
Inks  
Paints and Coatings  
Pharmaceutical Products  
Rubber Compounds  
Miscellaneous Products  
COMMERCIAL USES: Processing Aids  
Ceramics  
Dialysis Operations  
Electroplating  
Heat-Transfer Baths  
Leather Treatment  
Metal-Working Operations  
Paper Products  
Petroleum Recovery and Processing  
Plastics Compounding  
Rubber Products  
Textile Products  
Wood Products  
INDUSTRIES USING POLYETHYLENE GLYCOLS  
Adhesive  
Agricultural Products  
Ceramics Products  
Chemical Specialties  
Cosmetics and Toiletries  
Electroplating and Electrowinning  
Food Products  
Inks and Printing  
Leather Processing  
Lubricants and Hydraulic Fluids  
Medical Sundries  
Metal Fabricating  
Packaging Materials  
Paints and Coatings

Paper Products  
Petroleum Recovery and Processing  
Pharmaceuticals  
Photographic Products  
Plastics Products  
Rubber and Elastomers  
Textile Products  
Wood Processing  
26. Poly-Ethylene Oxide  
Chemical Nature  
Physical Properties  
Manufacture  
Biological/Toxicological Properties  
Rheological Properties  
Additives/Extenders  
Applications  
Application Procedures  
COMMERCIAL USES: Compounding and Formulating  
Adhesives  
27. Polyvinyl Alcohol  
Chemical Nature  
Physical Properties  
Manufacture  
Physiological Properties  
Federal Drug Administration (FDA) Status  
Biochemical Oxygen Demand (BOD)  
Biodegradation  
Modifiers  
Handling and Storage  
Application Procedures  
COMMERCIAL USES: Compounding and Formulating Adhesives  
Paper and Paperboard Sizing  
Paper and Paperboard Coatings  
Pigmented Coatings  
Greaseproof Coatings  
Textile Finishing  
Binder Applications  
Cast Film  
Molded Articles  
Emulsions and Dispersions  
Cosmetics  
Chemical Derivatives  
COMMERCIAL USES: Processing Aids  
Textile Warp Sizing  
Temporary Binder  
Casting Slips  
Steel Quenchant  
Miscellaneous Coating Applications  
Materials Stabilization  
INDUSTRIES USING POLYVINYL ALCOHOL  
Textile Industry

Paper Industry  
Adhesives Industry  
Cast-Film Industry  
Building Products Industries  
Packaging Industry  
Chemical Industry  
Cosmetics Industry  
Ceramics Industry  
Steel Industry  
Materials Binding  
FORMULATIONS  
Textile Warp Sizing: Slasher Operation  
Textile Warp Sizing: Size-Bath Formulas  
Preparation Procedure  
Adhesives  
Tubes and Cores: Spiral Winding  
28. Polyvinyl Pyrrolidone  
Chemical Nature  
Physical Properties  
Manufacture  
Rheological Properties  
Toxicological Properties  
PVP Films  
Compatibilities  
Future Developments  
APPLICATIONS OF PVP  
29. Starch  
GENERAL INFORMATION  
Structure and Properties  
Starch Supplies  
Manufacture of Starch  
Starch Modifications  
Applications of Starches  
30. Tamarind Gum  
Chemical Nature  
Physical Properties  
Manufacture  
Biological/Toxicological Properties  
Electrochemical Properties  
Rheological Properties  
Additives/Extenders  
Handling  
Applications  
By Result  
Application Procedures  
Future Developments  
COMMERCIAL USES  
Processing Aids  
INDUSTRIES USING TAMARIND GUM  
FORMULATIONS  
Latex Manufacture



AN ISO 9001 : 2015 CERTIFIED COMPANY

Other Uses

LABORATORY PROCEDURES

Viscosity Method

31. Xanthan Gum

GENERAL INFORMATION

Chemical Structure

Physical Properties

Solution Properties

Suspensions

Emulsions

Dispersions

Application Procedures

Handling and Storage

Reaction with Galactomannans

Toxicology and Safety

COMMERCIAL USES: Food

Xanthan Gum

Xanthan Gum with Locust Bean Gum

COMMERCIAL USES: Industrial

Xanthan Gum

Xanthan Gum with Locust Bean Gum

32. Flame Retardants for Textiles

Flame Resistance

Durability

Test Methods

Types of Retardants

Application Techniques

Fire-Retardant Fiber Blends

Mutagenicity

---

**NIIR PROJECT CONSULTANCY SERVICES (NPCS)** is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Market Research, Manufacturing Process, Machinery, Raw Materials, Project Feasibility, Investment Opportunities, Technical Consultancy and Startup Help.

NPCS also publishes process technology books, technical books, startup books, directory, business database, detailed project reports and market research reports.

Our Detailed Project Report aims at providing all the critical data required by entrepreneurs for starting new business ventures.

---

**NIIR PROJECT CONSULTANCY SERVICES**

106-E, Kamla Nagar, New Delhi-110007, India

**Email:** [npcs.india@gmail.com](mailto:npcs.india@gmail.com) **Website:** <https://www.niir.org/>