

A Concise Guide on Textile Dyes, Pigments and Dye Intermediates with Textile Printing Technology

Author: Dr. H. Panda

Format: Paperback

ISBN: 9789381039205

Code: NI249

Pages: 512

Price: Rs. 1,675.00 **US\$** 44.95

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Usually ships within **5** days

In the past, only organic matter was available for making dyes. Today, there are numerous options and methods for the colorization of textiles. While today's methods capitalize on efficiency, there is question as to whether the use of chemicals is harmful to the environment. A reputation for harming the earth could be detrimental to a company in a society becoming more and more focused on the environment and its preservation. Today, with the invention of synthetic materials used in textiles, many new types of dyes have been developed and put into regular use. There are two basic ways to color textiles: dyes and pigments. Pigments are not a dye but rather resins mechanically bound to fibers. Dyes are divided into classes according to the types of fibers they are most compatible with. Textile printing is related to dyeing but, whereas in dyeing proper the whole fabric is uniformly covered with one color, in printing one or more colors are applied to it in certain parts only, and in sharply defined patterns. Dyes will yield the softest hand (the "hand" is the feel of the fabric) and maintain the fabric's luster but the process is expensive. Pigments are much more economical to use. Pigments are generally more lightfast, more colorfast, and give greater color control. Pigment technology has developed tremendously in the past 15 years. 85% of the textile printing in the World is pigment printing. This book contains manufacturing process and other related details about Azine dyes, Azoic dyes, Azo dyes, Thiazole dyes, Triphenylmethane dyes, scientific classification of Vat dyes, fluorination of dyes, different types of pigments, applications, usages of dyes and pigments, quality control and evaluation of pigments and many more. This book will serve as a guide to Textile Technologists, Scientists and existing as well as upcoming industries.

Contents

1. AZINE AND RELATED DYES

Methods of Manufacture

Oxazines

Dioxazines

Thiazines

Commercial Grades and Specifications

Methods of Analysis

Identification

Determination of Specific Structure

Assay Methods

Spectrophotometric Methods
Titration Methods
Miscellaneous Assay Methods
Application Methods
Application to Wool
Application to Cotton
Application to Paper
Application to Leather
Determination of Impurities
2. AZOIC DYES
Azo Coupling Components
Bases
Rapid Fast Colours
Rapidogens
Manufacturing Process
m-Nitro Aniline (Fast orange R)
Properties
Solubility
O-chloroaniline (Fast Yellow G, GC)
Properties of O-Chloroaniline
O-Anisidine (Fast Red BB
Reduction
Properties
Nitro-p-anisidine (Fast Bordeaux GP)
Purification
Nitration
Hydrolysis
Purification
Naphthol AS-OL
Physical Properties of Naphthol AS-OL
Naphthol AS G
Raw materials
3. AZO DYES
Methods of Manufacture
Methods of Analysis
Identification
Hydrolysis
Nitric Acid Split
Identification of Arylamines in Cleavage Products
Identification of Diamines in Cleavage Products
Identification of Coupling Components
Separation
Blowout Method
Adsorption Chromatography
Application Method
Assay Methods
Salt Test
Titanous Chloride Reduction
Absorption Spectrophotometry
4. THIAZOLE DYES
Direct Dyes, 918
Disperse Dyes, 924
Direct Dyes

Basic Dyes
Vat Anthraquinone Dyes
Health and Safety Factors
Disperse Dyes
Preparation of a Disperse Azo Dye
Cationic Dyes
Health and Safety Aspects
5. INDIGOSOL
Uses of Solubilised Vat Dyes
Manufacture Process Anthrasol Brilliant
Orange 1R (Leuco Sulphuric Ester of
Dibromoanthanthrone)
Test
Anthrasol Blue IBC
Oxidation to Tetraester
General Observations
Identification of Leuco Ester Vat Dyes
6. INDIGOID DYES
Methods of Manufacture
Commercial Grades and Specifications
Methods of Analysis
Identification
Classification of Dye Samples
Procedure
Classification of Dyes on Fiber's
Procedure
Identification of Individual Dyes
Spectrophotometric Identification
Separation
Column Chromatography
Paper Chromatography
Assay Methods
Vatting Method
Methanol-Hydrochloric Acid Method
Spectrophotometric Method
Titration Methods
Elemental Analysis
Halogens
Sulfur
Nitrogen
Determination of Impurities and Additives
Application Methods
7. REACTIVE DYES
History
Developments
Dyes can attach themselves to the fibre in three ways
8. TRIPHENYLMETHANE AND RELATED DYES
Methods of Manufacture
Aldehyde Method
Ketone Method
Hydrol Synthesis
Diphenylmethane Base Method
Methods of Analysis

Identification
Blowout Method
Capillary Test
Dyeing Test
Procedures
Assay Methods
Crimetric Titration
Titanous Chloride Titration
Spectroscopic Methods
Purification of Standards
9. SCIENTIFIC CLASSIFICATION OF VAT DYES
Five Membered Rings
Two Heteroatoms
Attachment at 2-position
Attachment at 1,2-position
Attachment at 2,3-position
Attachment at 1,9-positions
Vat Dyes Containing Six Membered Rings
One Heteroatom
Attachment at 1, 9-positions
Attachment at 3,4-position of benzanthrone
Six Membered Rings Containing more than one
Heteroatom (from Anthraquinone)
Attachment at 1-position
Attachment at 1,2-positions
Attachment at 2,3-position
Attachment at 1,9-position
Fused Ring System
Dyes containing larger ring systems
10. FLUORINATION OF DYES
Hydrofluoric Acid
Materials of Construction
Fluorine
Material of Constructions
Indanthrene Brilliant Violet F3RK (C.I. 63350)
Indanthrene Blue CLB
Indanthrene printing blue HFG
Nuclear Fluorination
11. PIGMENTS
Chemical Analysis
General methods
Ash and Moisture Content
Alkalinity, Acidity, and pH
Material Soluble in Water
Presence of Organic Colours and Lakes
Pigment Content of Paste in Oil
Testing of Specific Inorganic Pigments
Titanium Dioxide Composites
Carbonate White Lead
Sulfate White Lead
Silicate White Lead
Zinc Oxide
Leaded Zinc Oxide

Zinc Sulfide
Lithopone
Antimony Oxide
Extenders
Calcium Carbonate
Calcium Sulfate
Magnesium Silicate
China Clays
Mica
Other Natural Silicates
Silica
Magnesium Carbonate And Magnesium Oxide
Barium Sulfate
Red, Maroon, And Brown Pigments
Iron and Manganese Oxide Pigments
Van Dyke Brown
Cadmium Mercury Reds
Copper Reds
Red Lead
Mercuric Oxide
Yellow and Orange Pigments
Iron Oxides
Chromate Pigments
Strontium Chromate
Green Pigments
Chrome Greens
Chromium Oxides
Blue and Purple Pigments
Iron Blues
Ultramarine Blues
Blue Lead
Cobalt Blues
Black Pigments
Carbon Black
Iron Oxide Blacks
Metallic Powders
Lead Powder
Zinc Powder
Testing of Specific Organic Pigments
Physical Testing of Properties
Colour
Tinting Strength
Opacity
Particle Size
Testing for Coarse Particles
Fine Particle Distribution
Oil Absorption
Dispersibility, Texture, and Rheology
Solubility
Density
Stability and Fastness
Other Properties
Perylene and Quinacridone Reds

Perylene Red Pigments
 Preparation
 General Properties
 Perylene (Vermilian)
 Pigment Red BL
 Perylene Red
 Perylene Maroon
 Perylene Scarlet
 Perylene Red Y
 Quinacridone Red Pigments
 General Properties
 Rodamine Y (Pink toner)
 Preparation
 Properties of various red pigments compared:
 Monazo Pigments
 Naphthol red pigments
 Precipitated (metalized azos) pigments
 Non azo pigments
 Pigment Orange-2 (Mono Azo Orthonitro Aniline Orange)
 Pigment Orange-S (Mono Azo Dinitroaniline Orange)
 Pigment Orange-13 (Pyrazolone Orange)
 Pigment Orange - 16 (Dianisidine Orange)
 Pigment Orange 17: 1 (Persian Orange Lake)
 Pigment Orange-34 (Diarylde Orange, Disazo Pyrazolone)
 Pigment Orange-36 (Benzimidazolone Orange
 HL, Monoazo Acetoacetyl Type)
 Pigment Orange-38 (Naphthol Orange)
 Pigment Orange-43 (Perinone Orange)
 Pigment Orange-46 (Ethyl red Lake C)
 Pigment orange 48 and pigment orange 49
 (Quinacridone gold and quinacridone deep gold)
 Pigment Orange 51 (Pyranthrone Orange)
 Organic Yellow Pigments
 C.I. Pigment Yellow 1
 C.I. Pigment Yellow 3
 C.I. Pigment Yellow 3
 Cl. Pigment Yellow 65 (Arylide Yellow RN)
 Pigment yellow 74 is an isomer of P. Y .65 and
 possesses identical characteristics
 C.I. Pigment Yellow 98
 Diarylides
 C.I. Pigment Yellow 12
 Cl. Pigment Yellow 13
 C.I. Pigment Yellow 14
 Cl. Pigment Yellow 17 (Diarylde Yellow AAOA)
 Cl. Pigment Yellow 81 (Diarylde Yellow H10 G)
 Heterocyclic yellow organic pigments
 Cl. Pigment Yellow 24 (Flavanthrone Yellow)
 Cl. Pigment Yellow 60 (Arylide Yellow 4R)
 C.I. Pigment Yellow 100 (FD & C Yellow No. 5)
 C.I. Pigment Yellow 104 (FD & C Yellow No. 6)
 Organic Green Pigments
 C.I. Pigment Green

C.I. Pigment Green 4r (Melachite Green PTMA)
 Copper phthalocyanine green
 C.I. Pigment Green 10 (Nickel Azo Yellow: Green Gold)
 12. INTERMEDIATES FOR DYES AND PIGMENTS
 Electrophilic
 Free Radical
 13. APPLICATION, USAGES OF DYES AND
 PIGMENTS ON TEXTILES
 Introduction
 Colour Index
 Preparation of The Textile Material Prior to
 Colouration
 Dyeing of Textiles
 Substantive or Direct Dyes
 (a) Cationic Dye-fixing agents:
 (b) Copper Sulphate + Sodium or Potassium
 Dichromate + Acetic Acid:
 (c) Chromium Fluoride or Acetate + Acetic Acid :
 (d) Formaldehyde:
 (e) Diazotization and Development:
 (f) Coupling with diazotized Fast Bases:
 (g) Topping with Basic Dyes:
 (h) Back-tanning of Nylon-dyed with Direct Dyes:
 S.D.C. Classification of Direct Dyes with regard to
 levelling properties
 Basic and Modified Basic Dyes
 Acid and Metal Complex Dyes of the
 Acid Class
 Details of Dyeing
 Other Usages
 Cellulose Diacetate
 Bast Fibres
 Paper
 Leather
 Miscellaneous Uses
 Chrome and other Mordant Dyes
 Chrome Dyes
 Reactive Dyes
 Dissolving of Reactive Dyes
 Dyeing of Cotton
 Other Uses of Reactive Dyes
 Wool Dyeing
 Silk Dyeing
 Nylon Dyeing
 Reactive Disperse Class
 Dyeing Procedure
 Reactive Wool Dyes
 Dyeing Procedure
 Azoic or Insoluble Azo Dyes
 Dyeing Procedure
 Impregnation in Naphthol
 Developing Bath
 Aftertreatment

Note

Popular Azoic Combinations

New Developments in Azoic range by Hoechst

Specialized application for dyeing of Warp yarn applied during sizing for Cotton Denim, Jean etc.

Procedure

Azoic Dyestuffs on other Textile Fibres

Sulphur Dyes

Application

Standing Bath

Aftertreatment

Recent Developments

Vat, Solubilized Vat and Sulphurized Vat Dyes

Vat Dyes

Indigoid Vat dyes

Dyeing by Pigmentation procedures

Pigment Padding

Pad-steam-continuous Dyeing process

Wet-on Dry process

Wet-on Wet Process

The Standfast Molten Metal Dyeing Process

Dyeing at Elevated Temperature

Vat Acid Leuco Method

Dyeing of Vat dyes on Pure Silk

Dyeing of Vat dyes on Wool

Dyeing of Synthetics

Dyeing of Bast Fibres

Other Uses

Dyeing of Indigo

Indigo for Cotton Denims

Wool

Sulphurized Vat Dyes

Dyeing Procedure

Solubilized Vat Dyes

Application

All-jig Process

Pad-jig Process

Aftertreatment

Continuous Dyeing Process

Dyeing of other materials

Disperse Dyes

Classification of the various Disperse Dyes according to their Dyeing characteristics:

Rapid Dyeing Dyes

Dyeing of Disperse Dyes on Polyester

Dyeing Methods

Dyeing of Blends of Polyester with other fibres

Dyeing of Disperse Dyes on other fibres and Miscellaneous applications

Colouring of Smoke Clouds

Pigments (Emulsion Composition & Dry Powder)

Application

Printing of Cotton

Sequence

Dyeing of Cotton Piece Goods with Pigment emulsion

Daylight Fluorescent Pigments for Printing

Ingrain Dyes

Dyeing with C.I. Ingrain Blues 2 on Cotton

Typical examples of Dyeing Procedures

Dyeing of C.I. Ingrain Blue 1 on Cotton

(Alcian Blue 8GX - 300 (I.C.I.))

Solvent Dyes & Food Colours

Oxidation Bases

Dyeing of Aniline Black

Cotton yarn by one-bath process

Oxidation Aniline Black (also called Aged Aniline Black)

Other uses of Oxidation Bases

Mineral Khaki (Inorganic Colourant)

Sequence

Dark Olive Green/Scamic green shade for certain categories of

Cotton material for Defence services (India)

Topping with Mineral Khaki on pre-dyed material with

Vat dyes

Fluorescent Brighteners

Natural Dyes (C.I. Natural Colour Class)

Useful Information in Dyeing & Printing

(i) Liquor-to-goods ratio or Material-liquor ratio denoted as
"M.L.R."

(ii) Depth of Shade in Dyeing

(iii) Padding

(iv) Depth of Shades in Printing

Printing of Textiles

Styles in Printing

They are:

Direct Printing Styles on Cellulosics

Printing with Reactive Dyes

Printing with Pigment Printing Compositions

Printing with Azoics

Naphthol-Nitrite Padding process

Printing with "Rapid Fast" (Hoechst) Dyes

Printing with "Rapidogen" (Bayer) Dyes

Non-acid Steam Process for Rapidogens

Printing with Vat dyes

Typical Recipes

Flash-ageing method

Printing with Solubilized Vat Dyes

Non-steaming Method

Steaming Method using Ammonium Sulphocyanide

Printing Sequence

Printing with Ingrain Dyes

(a) Printing with Alcian - 'X' (ICI) dyes

(b) Printing with Phthalogen Brilliant Blue IF-3G (Bayer)

Printing with Aniline Black

(Oxidation Base Class)

Typical recipes

Printing with Alizarine Red (Mordant Class)

Typical recipes
 Printing with Direct Dyes
 Typical recipe for printing of Directs
 Basic Dyes
 Direct Printing of Selected Dyes of
 Different Classes Alongside or
 Admixed with each other
 Typical recipes (Block Prints)
 Direct Printing Style on Pure Silk
 Typical recipes
 Direct Printing Style on Wool
 Typical recipes
 (i) Reactive Dyes (All types)
 (ii) Acid Dyes
 (iii) Chrome Dyes
 (iv) Metal-complex Dyes (11) particularly Black
 Printing of Tufted Carpets
 “Vigoureux” or “Melange” Printing
 Typical recipes
 With Acid Milling and 2:1 Metal-Complex Dyes
 Direct Printing Style on Nylon
 Typical recipes
 Pigment Emulsions
 Direct Printing Styles on Polyester,
 Triacetate and Diacetate with Disperse
 Dyes
 Process after Printing
 “Melange (Vigoureux)” Printing of Polyester Sliver
 Cellulose Triacetate
 Cellulose Diacetate
 Direct Printing Styles on Acrylics
 Sequence
 Direct Printing Styles on Fabric
 From Fibre Blends
 (i) Polyester/Cellulose
 (ii) Polyester/Wool
 (iii) Cellulosic fibre/Wool
 (iv) Cellulosic fibre/Silk
 (v) Wool/Silk
 (vi) Cellulosic fibre/Diacetate
 (vii) Cotton viscose or Polynosic fibre etc
 Resist Printing Style on Cellulosics
 Resists under Naphthols
 Resists Under Vat
 Typical recipes
 Resists under Solubilized Vats
 Rapldogen Resists
 Rapid Fast Resists
 Resists under Reactives
 Reactive Dyes Resists under Reactive dyes using
 Remazol-type Dyes for the ‘Ground’ shade and
 Proclon-type Dyes as ‘Illuminants’
 Resists under Aniline Black

White Resist
 Coloured Resists under Aniline Black
 Basic Colour Resists
 Resists under Phthalogen Brill Blue IF3G (Bayer) ground
 Resists under Basic dyes
 Resists under Acid Milling dyes and 2 1 Metal Complex dyes
 dyed on Pure Silk
 Discharge Printing Style
 (a) White discharge
 (b) Colour discharge
 Discharge Printing on Dyed Cellulosics
 (a) On Direct dyes dyed ground
 (b) Discharge Printing on Naphthol Dyed Ground
 (c) Discharge printing on Reactive dyes dyed ground
 Discharge Printing of Dyed Natural Silk
 Based on Sodium, Sulphoxylate Formaldehyde (Rongolite C)
 Based on Sodium-Bisulfate + Zinc Dust
 Illuminant Dyes (for Colour discharge)
 Discharge Printing of Dyed Wool
 With Acid/Direct dyes
 Discharge Printing of Polyester Dyed with
 Disperse Dyes
 Ground shades for Discharge printing
 Pre-dyeing by pad method
 Pre-dyeing by H.T. process
 Pre-printing
 Typical examples for Discharge printing
 Procedures for Discharge Printing of Polyester dyed
 by H.T. dyeing
 Discharge Printing of Dyed Cellulose DI & TRI
 Acetate and Nylon
 Typical Recipes
 White Discharge on Cellulose Diacetate and Nylon dyed
 with Disperse dyes
 Colour Discharge of Nylon dyed with Disperse Dyes
 Discharge Printing of Nylon dyed with suitable dischargeable
 Acid, Metal-complex and some limited Direct Dyes
 Miscellaneous Applications in Dyeing
 and Printing
 Transfer printing
 Mechanical Resist Colouration
 Resist Printing of Vinyl Sulphone type Reactive Dyes by
 "Blocking" Chemically the Reactive group
 "Khadi" Printing
 Conversion Style of Printing
 Novel graded-shade effect on Cotton yarn by "Dyeing
 Polychromatic Dyeing
 Speckle Printing
 Burn-out Styles
 After treatment
 14. COLOURANTS FOR DRUG
 15. QUALITY CONTROL AND EVALUATION OF
 PIGMENTS

Quality Control
Evaluation of Pigments
Physical Properties of Pigment
Moisture Content
Procedure
Bulking Volume
Procedure
Mesh Residue
Particle Size
Solvent Stability
Aim
Importance of the test
IS Value
pH of the Pigment
Oil Absorption
Raw Materials Required
Defination of Oil Absorption
Opacity
Colour
Reduction Tone
Raw Materials Used
Other materials required
By Automatic Muller
Mass Tone
Apparatus required
Raw Material required
Dispersibility, Texture, and Rheology
Stability and Fastness
Other properties
To determine the sp. Gravity of Pigment
Method
Volumetric Method for the determination of
Copper in Cuprous Chloride
Estimation of Organically Bound Chlorine
Calculation
The Infra-Red Identification of Pigments

About NIIR

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, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study,

Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes various process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.

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

Wed, 24 Apr 2024 09:07:48 +0530