106-E, Kamla Nagar, New Delhi-110007, India.
Tel: 91-11-23843955, 23845654, 23845886, +918800733955
Mobile: +91-9811043595

Email: npcs.ei@gmail.com, info@entrepreneurindia.co
Website: www.entrepreneurIndia.co

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

Code: NI249	Format: paperback
Indian Price: ₹1675	US Price: \$150
Pages: 512	ISBN: 9789381039205
Publisher: NIIR PROJECT CONSULTANCY SERVICES	

Description

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.

Content

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-Chioroaniline

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 Irk (Lecuo 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 Cerimetric 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 Anthraguinone) 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 **Nullear 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 Coase 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 (Diarylide 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

CI. 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

CI. Pigment Yellow 13

C.I. Pigment Yellow 14

CI. Pigment Yellow 17 (Diarylide Yellow AAOA)

CI. Pigment Yellow 81 (Diarylide Yellow H10 G)

Heterocyclic yellow organic pigments

CI. Pigment Yellow 24 (Flavanthrone Yellow)

CI. 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 a 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 far 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 Painting 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/Dlacetate
- (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 Dlacetate and Nylon dyed with Diperse 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

The Infra-Red Identification of Pigments

Calculation

About NIIR Project Consultancy Services (NPCS)

NIIR Project Consultancy Services (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. Its various services are: Prefeasibility study, New Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Preparation of Project Profiles and Pre-Investment and Pre-Feasibility Studies, Market Surveys and Studies, Preparation of Techno-Economic Feasibility Reports, Identification and Selection of Plant and Machinery, Manufacturing Process and/or Equipment required, General Guidance, Technical and Commercial Counseling for setting up new industrial projects and industry. NPCS also publishes various technology books, directories, databases, detailed project reports, market survey reports on various industries and profit making business. Besides being used by manufacturers, industrialists, and entrepreneurs, our publications are also used by Indian and overseas professionals including project engineers, information services bureaus, consultants and consultancy firms as one of the inputs in their research.

NIIR PROJECT CONSULTANCY SERVICES 106-E, Kamla Nagar, New Delhi-110007, India. Tel: 91-11-23843955, 23845654, 23845886, +918800733955 Mobile: +91-9811043595 Email: npcs.ei@gmail.com, info@entrepreneurindia.co

Website: www.entrepreneurIndia.co