Handbook on Natural Dyes for Industrial Applications (Extraction of Dyestuff from Flowers, Leaves, Vegetables) 2nd Revised Edition

Author: Dr. Padma S Vankar

Format: Paperback **ISBN**: 9789381039755

Code: NI195 Pages: 432

Price: Rs. 1,575.00 **US\$** 42.56

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Usually ships within 5 days

Dyeing is the process of imparting colors to a textile material. Natural dyes are friendly and satisfying to use. They are obtained from sources like flowers, leaves, insects, bark roots etc. however, they are not readily available and involve an extraction process. With the advancement of chemical industry, all finishing procedures of textile materials have been growing constantly and, sustainable and ecological production techniques have become extremely crucial.

This is a single book which has information related to extraction of dyestuff from 19 common flowers, weeds, bark or leaves and its application on cotton silk and wool fabrics for textile industry.

The Handbook describes the step wise methodology of extraction, mordanting, dyeing with photos of the actual plants part used for extraction of Natural dye. Shade cards have been incorporated so that the full gamut of colors can be visualized from each dyestuff.

Major contents of the book are nature of material to be dyed, history of natural dyes, promotion of natural dyes, sources of natural dyes, mordanting the textiles for natural dyeing, quality standards for vegetable dyes, methods of dye extraction, dyeing methodology, chemistry of dye, some recent publications on natural dyes. This handbook is designed for use by everyone engaged in the natural dye manufacturing and explains different methods of dye extraction. Also contains addresses of machinery suppliers with their photographs.

It will be a standard reference book for professionals, entrepreneurs, those studying and researching in this important area.

About Author

The Author Dr. Padma S Vankar, works as Principal Research Scientist, in Facility for Ecological and Analytical Testing (FEAT) at Indian Institute of Technology, Kanpur. She has been engaged in the screening and characterization of newer natural dyes for the past 10 years. She also works in the area of designing synthetic strategies for Eco-friendly dyes using microwave heating system. Using innovative technology for natural dyeing has been her main emphasis. The author has conducted several workshops throughout India in order to popularize natural dyeing.

Contents

PART I

1. HISTORY OF NATURAL DYES

Promotion of Natural Dyes

Sources of Natural Dyes

Constitutional Aspects

Requisites of a True Dye

Types of Dye

Chemical Entities Responsible for Colors

Classification Based on Chemical Nature

Classification Based on Colors

Classification Based on Colors

2. BASICS OF NATURAL DYEING

Advantages of Natural Colors/Vegetable Dyes

Natural Dyeing Principles

- 1. Nature of Material to be Dyed
- 2. Measurements of Mordants and Dyestuffs
- 3. Temperature
- 4. Agitation
- 5. Natural Dyes are Unpredictable
- 6. Wet Fibers Look Darker
- 7. Rinsing
- 8. Using Natural Dyes

Mordanting

Mordants

Mordanting of Cotton

Preparation of Fabric for Dyeing

Modifier

рΗ

Safety Measures Required in Natural Dyeing

Disposal of Mordants and Dyes

Vat Dye

Overdyeing

3. MORDANTING THE TEXTILES FOR NATURAL DYEING

Treatment of Fabric Before Dyeing

Methods of Mordanting

Common Mordants used in Natural Dyeing

4. STANDARDIZATION OF VEGETABLE DYES

Quality Standards for Vegetable Dyes

5. METHODS OF DYE EXTRACTION

Methodology

Subcritical Water Extraction

PART II

ΑI

Alkanet

Balsam

Bougainvillea

Canna

Carthamus

Cassia Fistula

Cineraria

Cosmos

Eucalyptus Bark

Osbeckia Chinensis

Parkia Javanica

Pomegranate

Sappan Wood

Tectona Grandis

Terminalia Arjuna

Tulsi

6. DYEING METHODOLOGY

Materials

Selection of Plant Sources for Dye Extraction

Extraction of Colorants

Aqueous Extraction

Solvent Extraction

Equipment used for Dyeing and Analysis of Dyed Fabric and their Principle

Sonicator

Ultraviolet and Visible Spectrophoto-meter

Fourier Transform Infra Red Spectroscopy

Gas Chromatograph Mass Spectrometer

Inductively Coupled Plasma Optical Emission Spectrometer

Gas Chromatograph

Xenoster

Wash Wheel

Perspirometer

Crock Meter

Material to be Dyed

Specification of the Fabric

Physical Characteristic of Cotton

Chemical Composition of Cotton Fiber

Chemicals and Reagents Used

Methodology

Preparation of Cloth For Dyeing

Desizing

Scouring

Bleaching

Treatment of Fabric Before Dyeing

Pre Mordanting

Post Mordanting

Dyeing

Assesments Of Eco Friendliness

Assessment Of Antimicrobial Properties

7. CHEMISTRY OF DYE

Basic Concept of Dyes Color

Relation Between Color and Constitution

Characterization of Natural Dyes

Solubility Studies

- 1. Thin Layer & Column Chromatographic Studies
- 2. Ultra Violet-visible Spectrophoto-metric Studies
- 3. Fourier Transform â€" Infra-red Studies
- 4. High Performance Liquid Chromato-graphic Studies
- 5. Gas Chromatographyâ€"Mass Spectro-photometric Studies

Mordants used in Dyeing

Mordant

Tannins and Tannic Acid

Metal Salts or Metallic Mordants

Oil Mordants

Techniques used for Dyeing

Mechanism of Dyeing

Fastness Properties

Fastness Properties of Dyed Materials

Evaluation of Eco-friendliness

Companies Selling through Natural Dyes through Internet

Estimates of Dye Requirements

Some Important Natural Dyes

Blue Dyes

Red Dyes

Yellow Dyes

8. SOME RECENT PUBLICATIONS ON NATURAL DYES BY THE AUTHOR

1. Dyeing Cotton, Silk and Wool with Brassica Oleracea or Purple Cabbage

Introduction

Vegetable Chosen

Studies on Cotton, Silk and Wool

Chemicals Used

Nature of the Colorant

Extraction of Colorant

Optimization of Extraction Condition

Extraction Amount and Time Required

Extraction Temperature

pH of Extraction Medium

Mass to Liquor Ratio

Determination of pKa

Chemical Characterization of the Colorants

Treatment of Fabric before Dyeing

Dyeing

Color Measurements

Results and Discussion

References

2. Dyeing Wool Yarn with Hibiscus Rosa Sinensis (Gurhhal)

Abstract

Introduction

Materials and Methods

Materials

Flower Color Chosen

Studies on Wool

Chemicals Used

Methods

Extraction of Colorant

Scouring of Wool

Mordanting

Dyeing

Measurement of Color Strength

Chemical Composition of the Colorant

Results and Discussion

Optimization of Mordants with K/S and Color Hue Changes

Fastness Properties

Conclusion

References

3. Sonicator Dyeing Cotton and Silk with Ixora Coccinea Flower

Abstract

Keywords

Introduction

Materials and Methods

Materials

Flower Color Chosen

Substrates

Chemicals

Methods

Extraction of Colorant

Preparation and Optimization of Aqueous Extract of Ixora

Chemical Composition of the Colorant

Scouring of Cotton and Silk

Mordanting

Dyeing

Measurement of Color Strength

Optimization of Mordants with K/S and Color Hue Changes

Results and Discussion

Fastness Properties

Conclusion

References

4. Dyeing with Celosia Cristata Flower on Modified Pretreated Wool

Introduction

Flower Colour Chosen

Studies on Wool

Chemicals Used

Extraction of Colourant

Pretreatment

Mordanting

Dyeing

Chemical Composition of the Colorant

Results and Discussions

References

5. Dyeing Silk and Wool with Plumeria(Pink) Flower

Abstract

Keywords

Introduction

Materials and Methods

Materials

Flower color chosen

Substrates

Chemicals

Methods

Extraction of colorant

Preparation and Optimization of Aqueous Extract of Pink Plumeria

Chemical Composition of the Colorant

Scouring of Cotton, Silk and Wool

Mordanting

Dyeing

Sonicator Dyeing

Measurement of Color Strength

Optimization of Mordants with K/S and Color Hue Changes

Results and Discussion

Fastness Properties

Conclusion

References

6. Dyeing Cotton, Silk and Wool with Cayratia CarnosaGagn. or Vitis Trifolia

Introduction

Fruits Chosen

Studies on Cotton, Silk and Wool

Chemicals Used

Extraction of Colorant

Pretreatment

Mordanting

Dyeing

Chemical Composition of the Colorant

Measurement of Color Strength

Fastness Properties of Dyed Fabrics

Results and Discussions

References

7. Dyeing with Nerium Oleander Flower on Pretreated Wool

Introduction

Materials and Methods

Materials

Flower Color Chosen

Studies on Wool

Chemicals Used

Methods

Extraction of Colorant

Scouring of Wool

Mordanting

Dyeing

Measurement of Color Strength

Chemical Composition of the Colorant

Results and Discussion

Fastness Properties

Conclusion

References

8. Dyeing Terricot and Cotton Fabric with Lac Dye in Sonicator

Abstract

Introduction

Extraction

Dyeing Properties of Lac Dye

Results and Discussion

References

9. Commercial Viability of Dyeing Cotton with Aqueous Extract of Lawsonia (Heena) Using Ecofriendly

Mordants
Introduction
Materials and Methods
Fastness Testing
Dyeing Cost
Results and Discussion
For Eco-friendliness
Pesticides
Characterisation of Eco-Friendliness
Conclusion
References
10. Photographs of Machinery with Supplier's Contact details

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 varies 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

Tue, 16 Apr 2024 23:53:41 +0530