

# Paints, Pigments, Varnishes and Enamels Technology Handbook

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Paints, varnishes, pigments and enamel industry is gaining ground at a rapid pace in modern time accompanied with closed advance in surface coating technology. They are formulated for specific purposes: outside house paints and exterior varnishes are intended to give good service when exposed to weathering; interior wall paints are formulated to give excellent coverage. A pigment is a material that changes the color of reflected or transmitted light as the result of wavelength selective absorption. This physical process differs from fluorescence, phosphorescence, and other forms of luminescence, in which a material emits light. Varnish is one of the important parts of surface coating industry. Varnish is a transparent, hard, protective finish or film primarily used in wood finishing but also for other materials. They are used to change the surface gloss, making the surface more matte or higher gloss, or to provide the various areas of a painting with a more unified finish. Varnishes are also applied over wood stains as a final step to achieve a film for gloss and protection. Some products are marketed as a combined stain and varnish. Paint is any liquid, liquefiable, or mastic composition which after application to a substrate in a thin layer is converted to an opaque solid film. It is most commonly used to protect, colour or provide texture to objects. The paint industry volume in India has been growing at 15% per annum for quite some years now. As far as the future growth prospects are concerned, the industry is expected to grow at 12 to 13% annually over the next five years. Enamel paint is paint that air dries to a hard, usually glossy, finish, used for coating surfaces that are outdoors or otherwise subject to wear or variations in temperature; it should not be confused with decorated objects in painted enamel, where vitreous enamel is applied with brushes and fired in a kiln. The technology is required to produce different type of new paints and varnishes based on different type of uses. The paint and coatings industry plays an integral role in sustainability; coatings protect the objects we depend on every day, preserve our possessions, so they last longer and provide for a sustainable future. They are indispensable products that extend the useful life of everyday objects by acting as a protective barrier. These newer products have enabled paint manufacturers to improve the performance properties of their paints and coatings and so satisfy the more stringent requirements of our modern industrial society. The future for industrial paints, pigments, varnishes and enamels is bright. In the next few years its value will go up gradually in line with the global trend.

This book basically deals with testing of raw materials for coatings, paint testing, color in paint, maintenance paints, principles of effective maintenance painting, emulsion paints, exterior or interior paints, exterior or interior multicolor paints, exterior swimming pool paints and enamels, interior ceiling paints, metal paints, marine paints, enamel paints, interior fire retardant paints, interior gloss paints, interior semi gloss white enamel (acrylic), paint formulation, the manufacture of natural copal varnishes, the manufacture of spirit varnishes etc.

The present book covers the various formulae and processes of paints, pigments, varnishes and enamels. This book is very suitable for new entrepreneurs, existing units, technocrats, technical institutions etc.

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Chrome Yellows  
Zinc Yellows  
Basic Zinc Chromate  
Strontium Yellow  
Nickel Titanate Yellow  
Nickel Azo Yellow  
Cadmium Yellow  
Yellow Iron Oxide  
Hansa Yellow  
Benzidine Yellow  
Vat Yellows  
Chrome Orange  
Molybdate Orange  
Cadmium Orange  
â€œMercadiumâ€• Orange  
Benzidine Orange  
Dinitraniline Orange  
Vat Dye Orange  
Chrome Greens  
Chromium Oxide  
Hydrated Chromium Oxide

## Copper Phthalocyanine Green

### 29. PIGMENT DISPERSION

Definition

Method

Equipment

Mill Base Formulation

Setting up a Laboratory Formula

Equipment Setups and Limitations

Tank Configuration

Premixers

Conclusions

### 30. PLASTICIZERS

History

Theory

Properties

Compatability

Efficiency

Permanence

Stability

Odor, Taste, Toxicity, Color, etc.

Classification of Plasticizers

Monomeric Chemical Plasticizers

Polymeric

Oil and Fatty Acid Derivatives

### 31. OXYGENATED SOLVENTS

Ester Solvents

Ketone Solvents

Glycol Ether Solvents

Alcohols

Other Solvents

Solvent Properties

Resin Solubility

Evaporation Rate

Solvent Strength

Flash Point

Odor

Water Sensitivity

Pounds per Gallon

Formulation of Solvent Systems

Nitrocellulose

Vinyl Copolymer Resins

Acrylics

Epoxy

### 32. WOOD COATINGS

Procedure

Blister-Resistant Oil-Based Primer

### 33. PAINT AND VARNISH REMOVERS

Paint Removal

Formulation  
Solvent Paint and Varnish Removers  
Solvents  
Co-solvent  
Activators  
Chemical Removers  
Nonchlorinated Solvent Paint Removers  
Removal of Epoxies  
Mechanism of Paint Removal  
Methods of Paint Removal

## 34. THE MANUFACTURE OF PAINT REMOVERS

# 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.

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