

Entrepreneur India

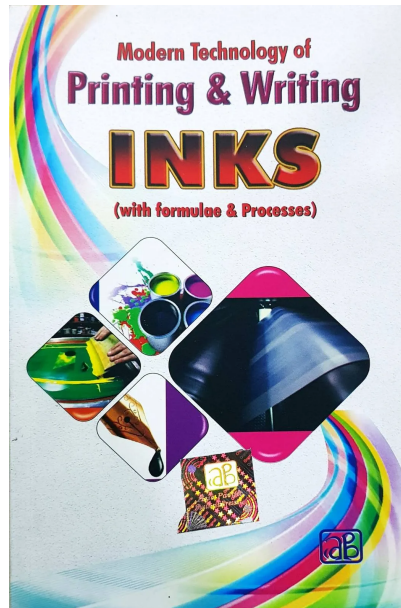
106-E, Kamla Nagar, New Delhi-110007, India.

Tel: 91-11-23843955, +91 9097075054

Mobile: +91-9097075054

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

Website: www.entrepreneurIndia.co



Modern Technology of Printing & Writing Inks (with Formulae & Processes) 2nd Revised Edition

Code	NI75
Format	paperback
Indian Price	₹1475
US Price	\$150
Pages	480
ISBN	9788178330822
Publisher	Asia Pacific Business Press Inc.

Description

Ink is a liquid or paste that contains pigments or dyes and is used to colour a surface to produce an image, text, or design. Ink is used for drawing or writing with a pen, brush, or quill. Thicker inks, in paste form, are used extensively in letterpress and lithographic printing. Ink can be a complex medium, composed of solvents, pigments, dyes, resins, lubricants, solubilizers, surfactants, particulate matter, fluorescents, and other materials. The components of inks serve many purposes; the ink's carrier, colorants, and other additives affect the flow and thickness of the ink and its appearance when dry.

India is among the fast growing printing & writing ink markets globally spurred by the rapid expansion of the domestic print markets. Backed by a strong demand from key end user segments such as package printing, newsprint, publishing and other commercial printing, the printing ink market in India has registered strong growth over the years. The printing ink industry is fragmented with hundreds of manufacturers and a large number of players in the unorganised sector.

Printing ink sector in India witnessed a growth of around 7.5% per annum during the Past years. Printed packaging accounts for around 27% of the demand for printing inks in India followed by newspapers at 20%. Commercial printing/promotional and printed advertising together account for around 19% of the demand. Other key end user segments for printing inks include books and stationery. With the print sector forecast to grow at around 8% per annum, in coming years, printing ink segment is expected to grow strongly.

This handbook is designed for use by everyone engaged in the printing & writing ink industry and the associated industries. It provides all the information required by the ink technical for the day-to-day formulation of inks. It supplies the details of the manufacturing methods, including large-scale production, and gives guidance on achieving quality assessment and total quality management specifications. The book also describes properties and uses of the raw materials used in the formulation of printing & writing inks.

The major content of the book are the colour and colour matching, raw materials, printing inks, ink formulations, applications problems, writing inks, project profile, how to estimate, order & handle ink, testing of writing & miscellaneous inks, testing of printing inks, rollers, waterborne inkjet inks. The book contains addresses of raw material suppliers, plant & machinery suppliers with their Photographs.

This book will be a mile stone for the entrepreneurs, existing units, libraries etc.

Content

1. INTRODUCTION

Visual Characteristics of Inks

The colour of Inks

The Transparency and opacity of printing inks

The gloss of printing inks

The nature of Printing Inks As Determined By The printing Process

Flexographic and gravure inks

Lithographic and letterpress inks

Screen Inks

The drying characteristics

Absorption drying

Oxidation drying

Evaporation drying

Chemical drying

Radiation induced drying

The Adhesive Nature of Printing Inks

The Resistance properties of Printing Inks

Lightfastness

Heat resistance

Abrasion resistance

Product resistance

Weathering

2. THE PRINTING PROCESSES

The Letterpress Process

Press Configurations

The Platen press

Flat-bed cylinder press

Rotary presses

Letterpress forme production

Original plates

Line Plates

Halftone plates

Duplicate plates

Make-ready:

Substrates

Applications

Rotary Ink

Quickset Ink
High-gloss Ink
Moisture-set Ink
Water-Washable Ink
New Ink
Miscellaneous Job Ink
The Offset Lithographic Process
The Printing unit
The damping system,
The offset blanket
Press Configurations
The small offset press
Larger sheet-fed presses
Web offset presses
Blanket-to-blanket press
Common-Impression drum presses
Three-cylinder presses
Lithographic platemaking
Presensitised surface plates
Wipe-on Plates
Deep-etch plates
Multi-metal plates
Electrostatic imaged plates
Chemical diffusion transfer plates
Photodirect plates
Laser exposed plates
Direct image plates
The lithographic plate
Process control
Platemaking control
Control in colour printing
Inkduct pre-setting and control
Substrates and inks
Ultra-violet (UV) curing inks 25
Infra-red radiation 25
Inks for lithography
Dry offset of Letterst
Fundamentals of Lithography
Lithographic Problems
The Gravure process
The printing unit

The inking system
Doctor blades
The impression roll
Drying system
Press Configurations
Gravure cylinder preparation
Conventional etching
Single bath etching
Halftone Process
Double positive system-halftone gravure
Halftone gravure
Mechanical engraving
Lasergravure
Press control systems
Substrates and inks
Applications
Gravure Inks
The Flexographic Process
The printing unit
Press configurations
Flexographic platemaking
Rubber plates
Photopolymer plates
Plate mounting
Applications
Flexographic Inks
Flexographic Problems,
The screen printing process
Press configurations
Screen Stencil Manufacture
Mounting the Screen
Application of the stencil
After treatment
Substrates and inks
Application
Electrostatic Printing
Copper Plate and Die Stamping
Non-Impact Printing processes
Ink-jet Printing
Continuous jet
Impulse or drop on demand

Electrophotography
Print Recognition
Letterpress
Flexography
Lithography
Offset Letterpress
Gravure
Screen Printing
Non_Impact printing
Substrate Selection
General Paper properties
Runnability
Printability

2. COLOUR AND COLOUR MATCHING

The Physical nature of Colour
Light Sources
The Perception of colour
The eye
Defective colour vision
Chromatic adaptation and colour constancy
Metamerism
Dichrosim
Illumination quality and levels
Additive and Subtractive Colour Mixing
The additive primaries
The subtractive primaries
The CIE System
Origins of colour in Printed Material
Pigments
Dyes
Origins of colour
Transparency and opacity
Colour Strenghtss
Substrate effects
Colour Index Classificaton
Graphic Reproduction
Three-colour printing
Four-Colour printing
Under colour removal

Masking
Half-tone dots
Dot gain
Dot Generation
The Measurement of Colour
Colorimeters
Densitometer
spectrophotometers
Optical geometry
The Recording of Colour data And the Specification of colour
Colour Difference
Colour Matching
Selection of raw materials
Matching techniques
The colour circle
Procedures
Oil Inks
Liquid Inks
Instrumental Colour match Prediction

3. RAW MATERIALS

Pigments
Yellow Pigments
Diarylide Yellows
Ironoxide yellows
Tartrazine yellow lake
Chrome yellows
Cadmium yellows
Fluorescent yellow
Orange Pigments
DNA Orange
Pyrazolone orange
Diarylide orange
Fast Orange 52G
Benzimidazolone orange HL
Ethyl lake red C
Red Pigments
Para Red
Naphthol Red (Or Permanent Red Frre)
Toluidine Red

Permanent Red 'R' (Chlorinated Para Red)
Carmine F.B.
Naphthol F4R
Naphtho Red LF
Permanent Red FRL
Bordeaux FRR (F4R)
Naphthol Red
Naphthol Red Light
Naphthol Red Dark
Lithol reds
Bon Red (Lack red C Bon)
Lake Red C
Lithol Rubin 4B
BON Maroon
PMTA Pink, rhodamine 6 G
Molybdate Orange, Chrome Scarlet, Orange Chrome
Calmium Red
BON Arylamide Red, Naphthol Red FGR
Quinacridone MagentaY
Naphthol Carmine FBB
Copper Ferrocyanide Pink
Naphthol Red F5RK
Benzimidazolone Carmine HF3C
Naphthol Rubine F6B
Benzimidazolone Carmine HF4C
Rubine Red 6B
Quinacridone Magenta B
Benzimidazolone Red HF2B
Naphthol Red F6RK
Azo Magenta G
Anthraquinone Scarlet
Quinacridone Violet
Benzimidazolone Bordeaux HF 3 R
Green Pigments
Blue Pigments
Violet Pigments
Brown Pigments
Black Pigments
White Pigments and Extenders
Pearlescent Materials
Metallic Pigments

Fluorescent Pigments
General Properties of Pigments
Acid Dyes
Basic Dyes
Solvent Dyes
Disperse Dyes
Drying Vegetable Oils
Linseed oil
Tung oil (China wood oil)
Oiticica oil
Dehydrated castor oil
Other oils
Marine oils
Non-drying oils
Non-drying vegetable oils
Resins
Natural Resins
Shellac
Manila copal
Asphalts
Starch and dextrin
Gum arabic
Synthetic resins
Pure phenolic resins
Rosin-modified phenolic resins
Pigment Interactions
Hard resin interactions
Film-forming properties
Hydrocarbon resins
Polystyrene resins and copolymers
Terpene resins
Silicone resins
Alkylated urea formaldehyde resins
Alkylated melamine formaldehyde resins
Polyamide resins
Poly (amide imide) resins
Chlorinated rubber
Cyclised rubber (isomerised rubber)
Vinyl resins
Polyvinyl alcohol

Ketone resins
Acrylic resins
Epoxide resins
Polyisocyanates and polyurethanes
Nitrocellulose, N/C (Cellulose nitrateCN)
Ethyle cellulose
Ethyl hydroxyethyl cellulose (EHEC)
Cellulose acetate propionate (CAP)
Cellulose acetate butyrate (CAB)
Sodium carboxymethyl cellulose (CMC)
Chemical constitution
Section V: Solvents
Hydrocarbon Solvents
Low boiling petroleum distillate-alipatic
White spirt
Paraffin oil (kerosene0
High boiling petroleum distillates-aliphatic
Hydrocarbon solvents- naphthenic
Aromatic hydrocarbons
High boiling aromatic solvents
Alcohols
Glycols
Ketones
Esters
Section VI : Plasticisers
Section VII: Waxes
Synthetic waxes
Polyethylene waxes
Polytetrafluoroethylene
Halogenated hydrocarbon waxes
Fatty acid amides
Petroleum waxes
Slack wax
Scale wax
Fully refined paraffin wax
Pettrolatum or petroleum jelly
Microcrystalline waxe
Ceresin wax
Montan wax
Montan esters
Natural waxes

- Beeswax
- Carnauba wax
- Miscellaneous natural waxes
- Section VIII : Driers
- Liquid Driers
- Cobalt
- Paste Driers
- Section IX Miscellaneous Additives
- Chelating Agents
- Antioxidants
- Surfactants
- Anionic Surfactants
- Cationic surfactants
- Non-Ionic surfactants
- Amphoteric surfactants
- Deodorants and Reodorants
- Pure Chemicals
- Alkalis
- Defoaming Agents
- Laking Agents
- Tannic Acid
- Tannic acid substitutes
- Raw Materials For Radiation Curing Systems
- Pigment Selection
- Prepolymers
- Epoxy acrylates
- Polyester acrylates and unsaturated polyesters
- Urethane acrylates
- Reactive Diluents
- Photoinitiators
- Additives and Inhibitors

4. PRINTING INKS

- Manufacture of Inks and varnishes
- General Requirements
- The Manufacturing Processes
- The manufacture of oleo-resinous systems
- Deaeration and potting
- The manufacture of polyer/solvent systems
- Varnish manufacture

Cavitation mixer
Rotor/stator mixer
Manufacture of additives
Liquid ink manufacture
Ball mills
Bead Mills
Chips
Pigment chip manufacture
Manufacture of dye-based inks
Mixing Equipment
Butterfly mixers (Change pan)
Rotor and stator high speed mixers.
The 'star' impeller type
The high-speed disperser
The fixed or on-line mixer
High-speed mixing
Milling Equipment
Three-roll mills
Floating-rolling system
Development of single cst rollers
Bead mills.
Open sieve mill
Closed sieve mill
Gap separation mill
John mill
Tex mill
Dyno mill
STS mill
Electronically controlled Copra mill
Boa 500 mill (Buhler Brothers Ltd)
Co-ball mill
Microflow mill
Ball milling
Disadvantages of ball mills
Handling, Storage and manufacture of uv Inks
Manufacture of newspaper Inks
Modern production trends
Computerisation
Costs of production and related subjects
Maintenance strategy in the printing ink industry
On failure maintenance

'Fixed time' maintenance
'Condition based maintenance
Computers and maintenance
The future
Plant control system
Further plant features
Manufacturing plant

5. INK FORMULATIONS

Letterpress Ink
Platen ink for absorbent papers
Cylinder press ink of uncoated papers
Quick-set inks of cated paper
Letterpress ink dryign by oxidation
Water-reducible inks
Process inks
Newspaper Coloured Inks
Rotary black inks for newspapers
Formula A: General-Purpose low mist black
Formula B : Ink rail
Formula C : Page-Pak
Formula D : Keyless Inking (Indirect flexo)
Lithoraphic Inks
Typical inks and Varnishers
Inks and varnishes for sheet-fed paper printing
Sheet-feed label inks
Small -offset
Inks and varnishes for sheet-fed carbon board printing
Ink for sheet-fed impervious substrate printing
Inks for web-offset paper printing
Coldset
Heatset
Gravure Inks
Publication Inks
Inks for catalogue printing
Packaging inks for paper and board lables
Metallic lable inks
Paper wrapper inks
Carton Inks
Foil inks

Foil board laminates
Inks for polyethylene film
Inks for treated polypropylene films
Coated polypropylene films
Cellulose films
Polyester films
Wallcoverings
Inks for paper
Vinyl coated wallcoverings
Speciality systems
Metallic inks
Aluminium-based inks
Pearlescent inks
flexographic Inks
Sye-based inks
Pigmented inks for specific substrates
Paper and board
Nitrocellulose coated films
PVdC Co-polymer coated film
Polyolefin films
Metal and metallised substrates Aluminium foil
Metallic inks
Screen Inks
Inks for paper and board
Thin film screen inks
Ultra thin film screen inks
Oxidation drying gloss inks
Inks for Impervious surfaces
Metal signs
Metal containers
Inks for sheet plastic
inks for glass
Inks for Plastic containers
Polythene containers
PVC containers
Textile Inks
Daylight fluorescent Inks
Process inks
Uv and Electron Beam curing Inks
Inks for day offset application on plastics and metal
Ultraviolet curable silk screen

Ultraviolet curable varnish and coatings

Non-Mipact Printing

Electrostatic imaging

Inks for jet printing

Typical ink formulations

Inks for the Electronics Industry

Printed circuit products

Inks for Wallcoverings

Textile Transfer Inks

Sterilisation Inks

Metal Decorating Inks.

Decoration of sheets

Printing a pre-formed container

letterset Printing

6. APPLICATION PROBLEMS

Stocking in the Pile or Rewind

picking

Fill In

Poor Binding and Rub

Setoff

Piling and Caking

Trapping

Show Through and Strike Through

Ink Not Following the Fountain

Ink flying and Misting

Ghosting, Shadow, Streaks, and Slurs

Ink Drying on rollers

Plate Wear

Crystallization

7. WRITING INKS

Manufacture of Writing Inks

Packing

Inks for writing and Fountain Pens

Ferrogalo-tannate inks

Standard Copying and Record Ink

Standard Writing ink

Iron gallate Inks : (Ink Powders and Tablets)

Manufacture of Inks Tablets
Action of Hydrochloric Acid and Sulphuric Acid in Inks
Pormulae for Various Blue-Black Inks
Manufacture fo iron gallo-tannate inks
Manufacture
Aging of writing
Dating a document
Dye based Fountain Pen Inks
Washable Inks
Quick drying Inks
Alkaline Writing Inks
blue Alkaline Writing Inks
Prussian Blue Inks
Ball Point Pen Inks
Stamp-Pad Inks
Basic dyes
Acid dyes
Method of Manufacture
Inks for Recording Instruments
Drawing Inks-Black and Coloured
Black Drawing Inks
Coloured Drawing Inks
Marking Inks
Preparation of silver Inks
Aniline black Inks
Inks containing other metals
Coloured marking Inks ;
Ink for Multiple Copies purposes
Hectograph Inks;
Method of Preparation
Stencil Duplicating Inks
Inks of Hectograph Carbon Papers, Carbon Papers and Typewriter Ribbons
Inks or Carbon Papers
Hectograph Carbon Papers
Stencil Sheets
Felt, Pen, Sign Pen, Fibre Tip Inks
Mothod of Manufacture
Al;cohol Based Inks
Hydrocarbon Based Inks
Invisible or Sympathetic Inks
Inks for Special Materials

Inks for Plastics
Ink for Marking Photographs
Ink for stamping oiled stencils
Inks for Glass and Porcelain
Ceramic Inks
Ink for Metals
Time Card Ink
Meat Stamping Ink
Show Card Inks
Embossing Inks
Ruling Inks
Artist Colours
Colour Combination
a) Water Pints

8. PROJECT PROFILE

9. HOW TO ESTIMATE, ORDER & HANDLE INK

Estimating Ink Requirements
Ordering Ink
Handling Inks

10. TESTING OF WRITING & MISCELLANEOUS INKS

Writing Inks
Sedimentation Test
Hue and Intensity
Clogging Test
Stability Test
Total Solids
Iron Content
Gravimetric Method
Determination of Corrosion
Ball Point Pen Inks
Stamp pad Inks
Determination of Glycerol Content
Assessing the performance of stamp-pad ink
Drawing Inks
Opacity or Transparency

Mold Growth
Marking Inks
Stencil Inks
Viscosity
Drying time
Presence of toxic and noxious materials
Caution
Presence of Aniline Oil
Miscibility with thinner
Stability
Skinning property
Duplicating Inks
Test for Lead

11. TESTING OF PRINTING INKS

Specific Gravity
Viscosity
Penetration
Molecular Refraction
Refractive Index
Covering Power and Gloss
Evaporation Rate
Acid Number
Saponification Number
Iodine Number
Detection of Chinawood Oil
Detection of Rosins and Resins
Testing of Pigments
Light Resistance
The Resistance of Pigments of Bleeding
Resistance to Acids and Alkalies
Particle Size of Pigments 375
Wettability and Absorption
The Testing of Finished Inks

12. ROLLERS

Inks and Rollers Used

13. DIRECTORY

India Standards on Inks and Allied Products

List of Suppliers fo Printing & Writing Ink Machinery

List of Suppliers of Raw Materials to Ink Industries

List of Major Manufacturers fo Printing Inks In India

Directory of Ink % Allied Products Manufacturer's In India

About Niir

NIIR Project Consultancy Services (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. Its various services are: Pre-feasibility 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.