

Manufacture of Thinners & Solvents (Properties, Uses, Production, Formulation with Machinery Details)

Author: NPCS Board of Consultants & Engineers

Format: Paperback

ISBN: 9789381039830

Code: NI306

Pages: 232

Price: Rs. 1,575.00 **US\$** 150.00

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Usually ships within **5** days

Solvents are defined as chemicals compound that are introduced during manufacture of the paint itself and before packaging, in order to maintain all components of the paint in a liquid / viscous state such as we know it. A solvent is usually a liquid but can also be a solid or a gas. Solvents find various applications in chemical, pharmaceutical, oil, and gas industries, including in chemical syntheses and purification processes.

Thinners are defined as chemical compounds that are introduced into the paint prior to application, in order to modify the viscosity and other properties related to the rate of curing that may affect the functionality and aesthetics of the final layer painting. Paint thinner, a solvent used in painting and decorating, for thinning oil-based paint and cleaning brushes. A Thinner may be a single solvent or a combination of solvent types. Often, specific thinners are required by the manufacturer of a coating to prevent damage to coating properties that may occur when an inappropriate thinner is used.

Solvents (for cleaning up or softening) and Thinners (for diluting or extending) are useful not only in painting but in other areas such as Wooden Furniture industry, Automobile industry, Ink industry, Rubber industry. As the paint industry is a major consumer of Thinners & Solvents, and is expanding at a tremendous speed, it is very obvious that the demand of thinners, too, will increase tremendously. The paints & coatings accounts for the largest share in the aliphatic hydrocarbon Thinners & Solvents market. It is also projected to be the fastest-growing application of the aliphatic hydrocarbon Thinners and Solvents market.

The book contains Properties, Uses, manufacturing of Thinners & Solvents and providing information regarding thinner formulation. It also covers raw material suppliers, photographs of plant & Machinery with supplier's contact details. Some of the fundamentals of the book are thinner in Paint Industry, Health and Safety Measures of Chemicals, Pollution Control, Waste Disposal of Hazardous Chemicals and Storage, Labelling and Packaging of Chemicals etc.

It will be a standard reference book for professionals and entrepreneurs. Those who are interested in this field can find the complete information from manufacture to final uses of Solvents and Thinners. It will be very helpful to consultants, new entrepreneurs, technocrats, research scholars, libraries and existing units.

Contents

1. Solvents

Classification of Solvents

Boiling Points

Rates of Evaporation

Polarity
Industrial Applications
Use
Chemical Composition
 I. Organic Solvents
 II. Inorganic Solvents
Chemical Structure
Behavior Toward Magdala Red
2. Application of Solvents
3. Properties of Solvents
Introduction
Molecular Weight
Boiling Point
Freezing Point
Density
Liquid Expansion Coefficient
Surface Tension and Absolute Viscosity
Flash Point and Explosive Limits
Autoignition Temperature
Electrical Conductivity
Immediate Danger to Life and Health
4. Environmental, Health and Safety Regulation
Fire
Explosive Peroxide Formation
Health Effects
Ways Solvents Can Enter Your Body
Absorption
Swallowing
What Are the Warning Signs?
Acute Poisoning
What to Do
Chronic Poisoning After Years of Repeated Exposures, the Typical Later Effects are
What to Do
How Solvents Affect the Skin
What to Do
How Much Exposure is Bad for You?
Environmental Contamination
Duties of Employers and Employees
Material Safety Data
Training
5. Manufacturing Process of Solvent
6. Uses of Solvent in Various Industries
Adhesives and Sealants
Common Use of Adhesive in Various Industry
Sealants
Common Use of Sealants in Various Industry
Aerospace
Acetone
Alcohol
Benzene
Methyl Ethyl Ketone (MEK)
Methylene Chloride
Toluene

Turpentine
Mineral Spirits
Naphtha
Linseed Oil
Asphalt Compounding
Biotechnology
Biotransformation Using Solvent-Tolerant Microorganisms
Solvent-Resistant Microorganisms
Process of Solvent Toxicity for Microorganisms
Choice of Solvent for Enzymatic Reaction in Organic Solvent
Low Water Systems
Classification of Organic Solvents
(1) Water-Miscible Organic Solvents
(2) Water-Immiscible Organic Solvents
(3) Water-Insoluble Organic Solvents
Classification of Solvents Commonly Used for Enzymatic Reactions in Organic Media
Properties of Enzymes Affected by Organic Solvents
Thermal Stability (Half-Life), $t_{1/2}$
Specificity and Selectivity, K_{cat}/K_m
Coil Coating
Cosmetics and Personal Care Products
Electronic Industry
Cleaning in Electronics Manufacturing
Factors Affecting Cleaning
Dry Cleaning
Drycleaning Solvents
Petroleum Drycleaning Solvents
Dry Cleaning Processes
Solvent Storage Tanks
Detergents
Process of Cleaning
Textile Finishing
Waterproofing
Milling
Antistatic Finishing
Fabricated Metal Products
Machining Operations
Metal Parts Cleaning and Stripping
Solvent Cleaning
Aqueous (Alkaline and Acid) Cleaning and Stripping
Abrasive Cleaning and Stripping
Water Cleaning
Waste Streams
Food Industry
Mechanical Extraction
Solvent Extraction
The Solvent Extraction Process
Flow diagram of Oilseed Extraction Process
Review of Solvents Studied for Extraction Efficiency
Iron Steel Industry
List of Solvents Released from the Iron and Steel Industry
Uses of Solvent in Ship Industry
Cleaning Operations Using Organic Solvents

Pulp and Paper
Printing Industry
Pharmaceutical Industry
7. Solvent Recycling, Removal and Degradation
Introduction
Process Description and Emissions
General Processes in Solvent Recycling Operations
Solvent Recycling Operations
Solvent Storage
Solvent Handling
Initial Treatment
Typical Fixed-Bed Activated Carbon Solvent Recycling System
Distillation and Purification
Distillation Process for Solvent Recycling
Spills
Equipment Leaks
Emission Estimation Techniques: Acceptable Reliability and Uncertainty
Direct Measurement
Mass Balance
Engineering Calculations
Emission Factors
8. Solvents Market
Industrial Solvent Market
Green Solvent and Bio-Solvents Market
9. Thinners
Introduction
Uses of Thinners
Types of Thinner Used in industries
Types of Thinner Based on the Paint with which it is Mixed
10. Manufacturing Process
Thinner Formulation
11. Formulation of Thinners
Epoxy Thinner
Composition of Ingredients
Handling and Storage
Physical and Chemical Properties
Paint Thinner
Composition of Thinner
Handling and Storage
Precautions to Be Taken in Handling
Precautions to be Taken in Storing
Physical and Chemical Properties
Acrylic Thinner
Composition/Information on Ingredients
Handling and Storage
Physical and Chemical Properties
Varnish Thinner
Composition/Information on Ingredients
Handling and Storage
Handling Precautions
Incompatible Materials
Storage Conditions
Physical and Chemical Properties

12. Thinner in Paint Industry
Odorless Paint Thinner
Requirements of the Thinners
Functions of the Thinners
Properties of Paint Thinner
Solvents Used as Paint Thinners Include
Other Solvents Sometimes Used in the Production of Paint Thinners Include

13. Health and Safety Measures of Chemicals
Health Hazards
Solvents – Thinners
How to Control Health Hazards
Environmental Control
Use Appropriate Personal Protection
Respirators
Eye and Hearing Protection
Protective Clothing
Handling and Storage
Accidental Release Measures
Precautions
Spill or Leak
Do Not Get Water Inside Containers
Fire and Explosion Hazards
Things to Do and Not to do Before Mixing Thinner in Paint
Material Safety Data Sheet
What is a Material Safety Data Sheet (MSDS)?
What is the Purpose of an MSDS?
What information is on the MSDS?
Reactivity Data
Why is an MSDS Hard to Read?
When Would We Use an MSDS?
Hazard Communication Standard
Solvents

14. Pollution Control
Environmental Concerns
Pollution Caused by Thinner
Major Emissions
Impacts on Human Health and Environment
What is Pollution Prevention?
Methods for Reducing the Pollution

15. Waste Disposal of Hazardous Chemicals and Storage
General Requirements for Storage of Chemicals
Prohibited and Restricted Hazardous Chemicals
Exposure Standards
Identifying Hazards
Hazardous Chemicals Generated or Manufactured in the Workplace
Segregate Incompatibles
Segregate Families
Flammable Liquid Storage
Classifications of Flammable and Combustible Liquids
Flammable Liquids
Combustible Liquids
Corrosive Storage
Transporting Chemicals

Hazardous Waste Disposal
General Requirements for Waste Disposal
Standard of Containers
Containers to be Resistant to the Contents
Containers should be in Good Condition
Containers to be Securely Closed
No Mixing of Incompatible Wastes in a Container
Sufficient Air Space in Containers When Storing Liquid Wastes
Disposal of Paint Related Materials
Hazardous Waste Minimization
Process Level Impacts
16. B.I.S. Specifications of Solvents and Thinners
Solvents
Thinner
17. Labelling and Packaging of Chemicals
Introduction
General Requirements of Labelling and Packaging in Accordance with the Chemical Labelling & Packaging (CLP) Regulation
General Labelling Rules
Elements of the CLP Hazard Label
CLP Labelling Requirements Versus Discretion of the Supplier
Classification of Hazardous Substance/Mixtures
Updating the Hazard Label
Labelling of Workplace Chemicals
Hazard Labels for Supply and Transport Outer and Inner Packaging Classified for Supply but not for Transport
Outer and Inner Packaging Classified for Both Transport and Supply
Single Packaging Classified Under Both Supply and Transport
CLP Rules on Packaging of Substances and Mixtures
Child-Resistant Fastening and Tactile Warnings of Danger
Child-Resistant Fastening (CRF)
Tactile Warning of Danger (TWD)
Hazard Pictograms
Shape, Colour and Dimensions
Precedence Rules
Blank Pictograms
Signal Words
Hazard Statements
Precautionary Statements
Codes for Hazard and Precautionary Statements
Code Ranges of Hazard and Precautionary Statements Under CLP
Guidance on Particular Aspects of CLP Hazard Labelling
Further Aspects to Consider for the CLP Hazard Label
Size of the Label and of the Label Elements
Minimum Dimensions of Labels and Pictograms Under CLP
18. 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 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.

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

Tue, 16 Jan 2018 17:20:23 +0530