

Entrepreneur India

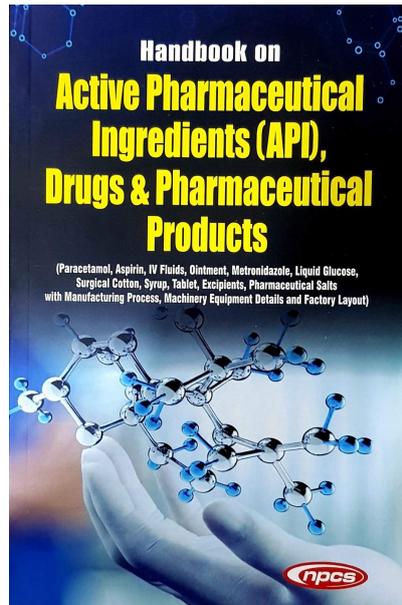
106-E, Kamla Nagar, New Delhi-110007, India.

Tel: 91-11-23843955, +91 9097075054

Mobile: +91-9097075054

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

Website: www.entrepreneurIndia.co



Handbook on Active Pharmaceutical Ingredients (API), Drugs & Pharmaceutical Products

Code	NI355
Format	paperback
Indian Price	₹2495
US Price	\$225
Pages	552
ISBN	9788195830435
Publisher	NIIR PROJECT CONSULTANCY SERVICES

Description

Handbook on Active Pharmaceutical Ingredients (API), Drugs & Pharmaceutical Products(Paracetamol, Aspirin, IV Fluids, Ointment, Metronidazole, Liquid Glucose, Surgical Cotton, Syrup, Tablet, Excipients, Pharmaceutical Salts with Manufacturing Process, Machinery Equipment Details and Factory Layout)

An active pharmaceutical ingredient (API) is the active substance in a pharmaceutical drug that produces its therapeutic effect. APIs can be synthetic chemicals or natural sources such as plant extracts. APIs are components of drugs, the majority of which are manufactured by pharmaceutical companies. Drugs, on the other hand, are dosage forms that contain an API and are distributed to patients for use. Pharmaceutical products are any compounds used in the medical industry to diagnose, treat, cure, or prevent diseases. These products are typically formulated as drugs, vaccines, biologics, and medical devices, which can either be prescribed by a doctor or bought over-the-counter (OTC). They come in various forms such as tablets, capsules, syrups, ointments, creams, solutions, suspensions, implants, patches, and powders. Pharmaceutical products are manufactured under strict guidelines and must adhere to various regulations such as Good Manufacturing Practices (GMP).

The global market for Active Pharmaceutical Ingredients (API), Drugs & Pharmaceutical Products is expected to grow rapidly over the next few years. This growth will be driven by rising demand for improved healthcare services and an increasing number of new treatments. The market for active pharmaceutical ingredients is anticipated to rise at a CAGR of 5.90%. The development in the production of active pharmaceutical ingredients (APIs) as well as the increased incidence of chronic diseases including cancer and cardiovascular conditions are both responsible for the expansion. Government regulations that are supportive of API manufacturing, together with shifting geopolitical conditions, are accelerating market expansion.

The pharmaceutical products market has grown steadily in recent years, and is expected to continue to do so. This growth is driven by a number of factors, including increased demand for new drugs, changing disease patterns and aging populations in some countries, as well as the emergence of innovative drugs and technologies. The market is being shaped by the rise of emerging economies and their increasing healthcare needs. This has led to increased investment in drug research and development, as well as an increase in the number of multinational companies setting up operations in various countries.

Furthermore, generic drugs are becoming increasingly popular as a way of reducing healthcare costs. Generic drugs are copies of brand-name drugs, which are manufactured by generic drug companies. They offer an effective alternative to branded drugs and are often much cheaper. As a result, generic drugs are increasingly being used in countries across the world, leading to an increase in the global pharmaceutical products market.

Overall, the global market for pharmaceutical products and drugs are set to continue to grow in the coming years. New products, innovative technologies and emerging markets will drive growth, and this will bring both opportunities and challenges for the industry.

The books' main subjects include Active Pharmaceutical Ingredients (API), Drugs, Aspirin, Paracetamol, IV Fluids, Ointment, Metronidazole, Liquid Glucose, Surgical Cotton, Syrup, Tablet, Excipients, Pharmaceutical Salts with formulations, factory layout, and images of machinery with contact information for suppliers.

A thorough guide to manufacturing and business operations in the Active Pharmaceutical Ingredients (API), Drugs & Pharmaceutical Products industry. The Active Pharmaceutical Ingredients (API), Drugs & Pharmaceutical Products manufacturing industry is full with opportunity for producers, traders, and business owners, and this book is your one-stop resource for all the information you require. The only complete manual on the creation of commercial Active Pharmaceutical Ingredients (API), medications, and pharmaceutical products is this one. It offers a wealth of information on how to do things, from concept through equipment acquisition.

Content

1. INTRODUCTION

- 1.1 The Pharmaceutical Sector
- 1.2 Research, Development and Exploration
- 1.3 Ahead-of-Clinical Trials
- 1.4 Product Validation
- 1.5 The Value and Significance of Pharmaceutical Quality
- 1.6 Use

2. HOW TO A START PHARMACEUTICAL MANUFACTURING

- 2.1 Steps to Set up a Pharmaceutical Manufacturing
 - 2.1.1 Choose an Appropriate Name for the Company
 - 2.1.2 How Do Register?
 - 2.1.3 Manufacturing License Procedure and Documents Required
 - 2.1.4 Goods and Service Tax (GST) Registration
 - 2.1.5 Machineries and Analytical Equipments

3. TYPES OF TABLET AND ITS MANUFACTURING PROCESS

- 3.1 Types
 - 3.1.1 Pills
 - 3.1.2 Caplets
 - 3.1.3 Orally Disintegrating Tablets (ODT)
 - 3.1.4 Film Coated Tablets (FCT)

- 3.2 Tableting Formulations
- 3.3 The Making of the Tablets
 - 3.3.1 Tablet Compaction Simulator
 - 3.3.2 Tablet Presses
 - 3.3.3 Tablet Coating
- 3.4 Tablet Manufacturing Processing
 - 3.4.1 Sizing
 - 3.4.2 Powder Blending
 - 3.4.3 Granulation
 - 3.4.4 Drying
 - 3.4.5 Tablet Compression
 - 3.4.6 Coating and Polishing Machines
 - 3.4.7 Tablet Testing
 - 3.4.8 Tablet Deduster
 - 3.4.9 Fette Machine
 - 3.4.10 Physical Features of Compressed Tablets
 - 3.4.11 Packaging

4. TABLET COATING PROCESS

- 4.1 Principles of Tablet Coating
- 4.2 Primary Components Involved in Tablet Coating
 - 4.2.1 Tablet Properties
 - 4.2.2 Coating Process, Design & Control
 - 4.2.3 Coating Equipment
- 4.3 Traditional Coating Techniques
 - 4.3.1 Sugar Coating
 - 4.3.2 Film Coating
 - 4.3.3 Enteric Coating
 - 4.3.4 Press Coating
- 4.4 Equipment
 - 4.4.1 Standard Coating Pan
 - 4.4.2 Perforated Pan Coating
 - 4.4.3 Fluidized Bed Coater
- 4.5 Principle of Operation
- 4.6 Process Advantages
- 4.7 Advantages of Tablet Coating

5. PARACETAMOL TABLET MANUFACTURING

- 5.1 Chemistry
- 5.2 Mechanisms of Actions
- 5.3 Pharmacokinetics
- 5.4 Physical Properties
- 5.5 Formation of Paracetamol

- 5.6 Types of Paracetamol
- 5.7 Synthesis of Paracetamol
 - 5.7.1 Phenol Route
 - 5.7.2 p-Nitrochlorobenzene Route
 - 5.7.3 Nitrobenzene Route
 - 5.7.4 Hoechst-Celanese process (p-Hydroxyaceto-phenone Hydrazine Route)
- 5.8 Paracetamol on the Pharmaceutical Market
- 5.9 Process of Tablet Manufacturing
 - 5.9.1 Dry Mixing
 - 5.9.2 Drying
 - 5.9.3 Wet Granulation
 - 5.9.4 Binder Solution Preparation
 - 5.9.5 Compression
- 5.10 Evaluation Parameters of Tablet for Process Validation
 - 5.10.1 Content Uniformity
 - 5.10.2 Weight Variation
 - 5.10.3 Thickness
 - 5.10.4 Hardness
 - 5.10.5 Friability
 - 5.10.6 Dissolution Test
 - 5.10.7 Disintegration Test
- 6. METRONIDAZOLE TABLET
 - 6.1 Medical Uses
 - 6.1.1 Bacterial Vaginosis
 - 6.1.2 Trichomoniasis
 - 6.1.3 Giardiasis
 - 6.1.4 Dracunculus
 - 6.2 Materials and Procedures
 - 6.2.1 Wet Granulation
 - 6.2.2 Dry Granulation
 - 6.2.3 Direct Compression
 - 6.2.4 Tablet Evaluation
 - 6.2.5 Weight Uniformity Test
 - 6.2.6 Crushing Strength/Hardness Test
 - 6.2.7 Friability Test
 - 6.2.8 Content Uniformity Test
 - 6.2.9 Disintegration Test
 - 6.2.10 Dissolution Test
- 7. ASPIRIN MANUFACTURING
 - 7.1 Introduction

- 7.2 Chemical Properties
- 7.3 Synthesis
- 7.4 Physical Properties
 - 7.4.1 Polymorphism
- 7.5 Uses
 - 7.5.1 Ache and Enlargement
 - 7.5.2 Treating Heart Attacks
 - 7.5.3 Preventing Heart Attacks and Strokes
- 7.6 Raw Materials
- 7.7 Manufacturing Process
 - 7.7.1 Weighing
 - 7.7.2 Mixing
 - 7.7.3 Dry Screening
 - 7.7.4 Compression
 - 7.7.5 Testing
 - 7.7.6 Bottling and Packaging
- 8. IV FLUIDS PRODUCTION
 - 8.1 Introduction
 - 8.2 Types of IV Fluids
 - 8.3 Crystalloids
 - 8.3.1 Isotonic IV Fluids
 - 8.3.2 Hypotonic IV Fluids
 - 8.3.3 Hypertonic IV Fluids
 - 8.4 Colloids
 - 8.5 Human Albumin
 - 8.6 Dextrans
 - 8.7 Etherified Starch
 - 8.8 Gelatin
 - 8.9 Plasma Protein Fraction (PPF)
 - 8.10 Intravenous Fluids Used
 - 8.11 Effects of Dehydration
 - 8.12 Manufacturing Process
 - 8.12.1 Preparation of Distilled Water
 - 8.12.2 Solution Creation
 - 8.12.3 Filling and Filtration
 - 8.13 Intravenous Solutions Market
- 9. OINTMENT MANUFACTURING
 - 9.1 Introduction
 - 9.2 Types
 - 9.2.1 Non Medicated Ointments
 - 9.2.2 Medicated Ointments

- 9.3 Ointments According to Penetration
- 9.4 Advantages
- 9.5 Ointment Applications
- 9.6 Type of Preparation
 - 9.6.1 Ointment Prepared by Trituration
 - 9.6.2 Ointment Preparation by Chemical Reaction
 - 9.6.3 Preparation of Ointments by Emulsification
- 9.7 Properties of the Ointment Manufacturing Plant
- 9.8 Advantages of Ointment Manufacturing Plant
- 9.9 Manufacturing Procedure of Ointment
- 9.10 Parts of Ointment Manufacturing Plant
- 10. LIQUID GLUCOSE MANUFACTURING
 - 10.1 Molecule of Glucose (Glucose Chemical Structure)
 - 10.2 Specifications of Glucose
 - 10.3 Formula of Glucose and Fructose
 - 10.3.1 Formula for D-Glucose
 - 10.3.2 Carbon Anomer in Glucose
 - 10.3.3 Carbohydrates have an Open Chain Structure
 - 10.3.4 Formula for a Fructose Molecule
 - 10.3.5 Fructose has a Cyclical Structure
 - 10.3.6 Structure of Glucose in Cycles
 - 10.3.7 Glucose's Furanose Structure
 - 10.4 Glucose's Chemical Properties
 - 10.4.1 Glucose Oxidation to Create Sugar Acids
 - 10.5 Manufacturing Process
- 11. SURGICAL COTTON PRODUCTION PROCESS
 - 11.1 Required Raw Materials and Their Availability
 - 11.2 Process of Fabrication
 - 11.3 Machinery & Equipment Required for the Manufacturing
 - 11.3.1 Blower Room Device
 - 11.3.2 Bleaching Intensity
 - 11.3.3 Hydraulic Extractor
 - 11.3.4 Dryer
 - 11.3.5 Lapping Device
 - 11.3.6 Carding Device
 - 11.3.7 Rolling Device
 - 11.3.8 Cutting Device
 - 11.3.9 Packaging Equipment
 - 11.4 Business Outlook and Trend
- 12. HOW TO START A BUSINESS OF SURGICAL COTTON

- 12.1 Machine Required
- 12.2 Necessary Raw Materials to Create Surgical Cotton
- 12.3 Registration and Licensing
- 12.4 Documents Needed to Apply For a Licence to Operate a Business Manufacturing Surgical Cotton
- 12.5 Fabrication of Surgical Cotton
- 13. PRODUCTION OF SYRUP
 - 13.1 Benefits of Syrups
 - 13.2 Why Syrups Used?
 - 13.3 Ingredients in Syrups
 - 13.4 Formulation of Sugar Based Syrups
 - 13.4.1 Sucrose Solutions in Aqueous Forms: Stability
 - 13.5 Advantages of Sucrose
 - 13.6 Syrup Preparation
 - 13.6.1 A Heat-Assisted Solution
 - 13.6.2 Agitation-based Solution without Heat
 - 13.6.3 Percolation
 - 13.7 Dextrose Based Syrup
 - 13.8 Utilizing Solubilization in the Formulation of Syrup
 - 13.9 Synthesis of Artificial Syrups
 - 13.9.1 Sugar-Free Syrups
 - 13.10 Sorbitol-Based Syrup
 - 13.11 Application of Syrups
 - 13.12 Method of Preparation for Syrups
 - 13.13 Process
- 14. VARIOUS TECHNIQUES FOR MAKING PHARMACEUTICALLY ACCEPTABLE SALTS
 - 14.1 Why are Some Drugs Available in Salt Form?
 - 14.2 Salt-Selection Strategy
 - 14.3 Preparation of Salts of Basic Drug Substances
 - 14.3.1 Hydrochlorides
 - 14.3.2 Nitrates
 - 14.3.3 Phosphates
 - 14.3.4 Succinates
 - 14.3.5 Maleates
 - 14.3.6 Citrates
 - 14.3.7 Tartrates
 - 14.3.8 Gluconates
 - 14.3.9 Lactobionates
 - 14.3.10 Lauryl Sulfate Salts
 - 14.3.11 Glutamates
 - 14.3.12 Acetamidobenzoates

- 14.4 Preparation of Salts of Acidic Drug Substances
 - 14.4.1 Potassium and Sodium Salts
 - 14.4.2 Calcium Salts
 - 14.4.3 2-Aminoethanol Salts
 - 14.8.4 Lysine Salts
- 15. HOW IS ACTIVE PHARMACEUTICAL INGREDIENT (API) MANUFACTURED
 - 15.1 Pharmaceutical Industry's Use of API
 - 15.2 Applied API
 - 15.3 Different APIs
 - 15.3.1 Chemical Synthetic Drug
 - 15.3.2 Natural Chemical Drug
 - 15.4 Some API Products
 - 15.4.1 Streptomycin
 - 15.4.2 Metformin
 - 15.4.3 Doxycycline
 - 15.4.4 Neomycin
 - 15.5 Production Process
 - 15.5.1 Handling of Feed
 - 15.5.2 Responses
 - 15.5.3 Mixture Reactors
 - 15.5.4 Reactor Loop
 - 15.5.5 Bulk Autoclave
 - 15.5.6 Natural Process
 - 15.5.7 Fermenters
 - 15.5.8 Recovery
 - 15.5.9 Distillation
 - 15.5.10 Membranes
 - 15.5.11 Crystallization
 - 15.5.12 Filtration
 - 15.5.13 Centrifugation
 - 15.5.14 Drying
 - 15.6 API Production and Demand
 - 15.7 API Market Outlook
- 16. WHAT IS AN ACTIVE PHARMACEUTICAL INGREDIENT (API)
 - 16.1 Medicine Elements
 - 16.2 APIs' Potency
 - 16.3 Best API Producers
 - 16.4 Where are APIs manufactured?
 - 16.5 Rules
- 17. EXCIPIENTS AND ACTIVE PHARMACEUTICAL INGREDIENTS
 - 17.1 Abbreviations

- 17.2 Excipients
- 17.3 Properties of Selected Excipients
- 17.4 Fillers/Binders
 - 17.4.1 Lactose
 - 17.4.2 Polyvinylpyrrolidone
 - 17.4.3 Hydroxypropylmethylcellulose
 - 17.4.4 Starch
- 17.5 Coloring Agents
 - 17.5.1 Tartrazine
- 17.6 Sweeteners
 - 17.6.1 Saccharin
 - 17.6.2 Aspartame
 - 17.6.3 Sucralose
 - 17.6.4 Sorbitol
- 17.7 Alcohols
 - 17.7.1 Benzyl Alcohol
 - 17.7.2 Polyethylene Glycol
- 17.8 Preservatives
 - 17.8.1 Sodium Benzoate
 - 17.8.2 Benzalkonium Chloride
- 17.9 Lubricants
 - 17.9.1 Magnesium Stearate
- 18. GOOD MANUFACTURING PRACTICE FOR ACTIVE PHARMACEUTICAL INGREDIENTS
 - 18.1 Regulatory Applicability
 - 18.2 Scope
 - 18.3 Quality Management
 - 18.3.1 Principles
 - 18.3.2 Production Activities Responsibilities
 - 18.3.3 Product Quality Review
 - 18.4 Personnel
 - 18.4.1 Employee Qualifications
 - 18.4.2 Personnel Hygiene
 - 18.5 Buildings and Facilities
 - 18.5.1 Design and Building
 - 18.5.2 Utilities
 - 18.5.3 Water
 - 18.5.4 Sanitation and Upkeep
 - 18.6 Process Equipment
 - 18.6.1 Design and Building
 - 18.6.2 Cleaning and Maintenance of Equipment

- 18.6.3 Computerized Systems
- 18.7 Documentation and Records
 - 18.7.1 System of Documentation and Specifications
 - 18.7.2 Record of Equipment Cleaning and Use
 - 18.7.3 Records of Raw Materials, Intermediates, API Labelling and Packaging Materials
- 18.8 Materials Management
 - 18.8.1 General Controls
 - 18.8.2 Receipt and Quarantine
 - 18.8.3 Sampling and Testing of Incoming Production Materials
 - 18.8.4 Storage
 - 18.8.5 Re-Evaluation
- 18.9 Packaging and Identification Labelling of APIs and Intermediates
 - 18.9.1 General
 - 18.9.2 Packaging Materials
 - 18.9.3 Label Issuance and Control
 - 18.9.4 Packaging and Labelling Operations
- 18.10 Storage and Distribution
 - 18.10.1 Warehousing Procedures
 - 18.10.2 Distribution Procedures
- 18.11 Rejection and Re-Use of Materials
 - 18.11.1 Rejection
 - 18.11.2 Reprocessing
 - 18.11.3 Reworking
 - 18.11.4 Recovery of Materials and Solvents
- 18.12 Glossary
 - 18.12.1 Acceptance Criteria
 - 18.12.2 Active Pharmaceutical Ingredient (API) (or Drug Substance)
 - 18.12.3 API Starting Material
 - 18.12.4 Batch (or Lot)
 - 18.12.5 Batch Number (or Lot Number)
 - 18.12.6 Bioburden
 - 18.12.7 Calibration
 - 18.12.8 Computer System
 - 18.12.9 Computerized System
 - 18.12.10 Contamination
 - 18.12.11 Contract Manufacturer
 - 18.12.12 Critical
 - 18.12.13 Cross-Contamination
 - 18.12.14 Deviation

- 18.12.15 Drug (Medicinal) Product
- 18.12.16 Drug Substance
- 18.12.17 Expiry Date (or Expiration Date)
- 18.12.18 Impurity
- 18.12.19 Impurity Profile
- 18.12.20 In-Process Control (or Process Control)
- 18.12.21 Intermediate
- 18.12.22 Lot
- 18.12.23 Manufacture
- 18.12.24 Material
- 18.12.25 Mother Liquor
- 18.12.26 Packaging Material
- 18.12.27 Procedure
- 18.12.28 Process Aids
- 18.12.29 Process Control
- 18.12.30 Production
- 18.12.31 Qualification
- 18.12.32 Quality Assurance (QA)
- 18.12.33 Quality Control (QC)
- 18.12.34 Quality Unit(s)
- 18.12.35 Quarantine
- 18.12.36 Raw Material
- 18.12.37 Reference Standard, Primary
- 18.12.38 Reference Standard, Secondary
- 18.12.39 Reprocessing
- 18.12.40 Retest Date
- 18.12.41 Reworking
- 18.12.42 Signature (signed)
- 18.12.43 Signed (signature)
- 18.12.44 Solvent
- 18.12.45 Specification
- 18.12.46 Validation
- 18.12.47 Validation Protocol
- 18.12.48 Yield, Expected
- 18.12.49 Yield, Theoretical
- 19. ACTIVE PHARMACEUTICAL INGREDIENT (API) CHEMICALS
- 19.1 Method of Biomasses Conversion in APIs Synthesis
- 19.1.1 Chemical Approach
- 19.1.2 Biotechnological Approaches
- 19.2 Some Important Types of API Chemicals
- 19.2.1 Shikimic Acid

- 19.2.2 Succinic Acid
- 19.2.3 Erythritol
- 19.2.4 Clavulanic Acid
- 19.2.5 Rifampicin
- 19.2.6 Pregabalin
- 19.2.7 Ectoine
- 20. LIST OF IDENTIFIED PRODUCTS FOR PRODUCTION LINKED INCENTIVE (PLI) SCHEME
- 21. ACEBUTOLOL
 - 21.1 Manufacturing Process
- 22. ACETAZOLAMIDE
 - 22.1 Manufacturing Process
- 23. ALLOPURINOL
 - 23.1 Manufacturing Process
- 24. AMPHETAMINE PHOSPHATE
 - 24.1 Manufacturing Process
- 25. APALCILLIN SODIUM
 - 25.1 Manufacturing Process
- 26. BACITRACIN
 - 26.1 Manufacturing Process
- 27. BECLAMIDE
 - 27.1 Manufacturing Process
- 28. BENFURODIL HEMISUCCINATE
 - 28.1 Manufacturing Process
- 29. BROMOPRIDE
 - 29.1 Manufacturing Process
- 30. BUMADIZON
 - 30.1 Manufacturing Process
- 31. CAMAZEPAM
 - 31.1 Manufacturing Process
- 32. CARBINOXAMINE MALEATE
 - 32.1 Manufacturing Process
- 33. CEPHALOGLYCIN
 - 33.1 Manufacturing Process
- 34. CLINDAMYCIN HYDROCHLORIDE
 - 34.1 Manufacturing Process
- 35. CLOFIBRATE
 - 35.1 Manufacturing Process
- 36. CYCLOPENTAMINE HYDROCHLORIDE
 - 36.1 Manufacturing Process
- 37. DACTINOMYCIN

37.1 Manufacturing Process
38. DACTINOMYCIN
38.1 Manufacturing Process
39. DIAZEPAM
39.1 Manufacturing Process
40. DOXEPIN HYDROCHLORIDE
40.1 Manufacturing Process
41. DYDROGESTERONE
41.1 Manufacturing Process
42. EDROPHONIUM CHLORIDE
42.1 Manufacturing Process
43. ENDRALAZINE
43.1 Manufacturing Process
44. EPICILLIN
44.1 Manufacturing Process
45. EPIRIZOLE
45.1 Manufacturing Process
46. ERYTHROMYCIN
46.1 Manufacturing Process
47. FAZIDINIUM BROMIDE
47.1 Manufacturing Process
48. FELYPRESSIN
48.1 Manufacturing Process
49. FLUBENDAZOLE
49.1 Manufacturing Process
50. FLUNITRAZEPAM
50.1 Manufacturing Process
51. FURALTADONE
51.1 Manufacturing Process
52. GALLAMINE TRIETHIODIDE
52.1 Manufacturing Process
53. GENTAMICIN SULFATE
53.1 Manufacturing Process
54. GLYMIDINE
54.1 Manufacturing Process
55. GRAMICIDIN
55.1 Manufacturing Process
56. GUANFACINE
56.1 Manufacturing Process
57. HALOPERIDOL
57.1 Manufacturing Process

58. HEPARIN
58.1 Manufacturing Process

59. HOMOGENAZINE
59.1 Manufacturing Process

60. HYDROCHLOROTHIAZIDE
60.1 Manufacturing Process

61. HYDROXYSTILBAMIDINE ISETHIONATE
61.1 Manufacturing Process

62. IBUPROFEN
62.1 Manufacturing Process

63. IDOXURIDINE
63.1 Manufacturing Process

64. IFENPRODIL TARTRATE
64.1 Manufacturing Process

65. INDENOLOL
65.1 Manufacturing Process

66. IODAMIDE
66.1 Manufacturing Process

67. KANAMYCIN SULFATE
67.1 Manufacturing Process

68. KEBUZONE
68.1 Manufacturing Process

69. KETOTIFEN
69.1 Manufacturing Process

70. LACTULOSE
70.1 Manufacturing Process

71. LEVODOPA
71.1 Manufacturing Process

72. LIDOCAINE
72.1 Manufacturing Process

73. LOPERAMIDE HYDROCHLORIDE
73.1 Manufacturing Process

74. LOXAPINE
74.1 Manufacturing Process

75. MANNITOL
75.1 Manufacturing Process

76. MELPHALAN
76.1 Manufacturing Process

77. METYRAPONE
77.1 Manufacturing Process

78. MIDECAMYCIN

78.1 Manufacturing Process
79. MOTRETINIDE
79.1 Manufacturing Process
80. MUZOLIMINE
70.1 Manufacturing Process
81. NALOXONE
81.1 Manufacturing Process
82. NEFOPAM HYDROCHLORIDE
82.1 Manufacturing Process
83. NIAPRAZINE
83.1 Manufacturing Process
84. NIMETAZEPAM
84.1 Manufacturing Process
85. NOXIPTILIN
85.1 Manufacturing Process
86. OCTOPAMINE HYDROCHLORIDE
86.1 Manufacturing Process
87. OLEANDOMYCIN
87.1 Manufacturing Process
88. ORGOTEIN
88.1 Manufacturing Process
89. OXACILLIN SODIUM
89.1 Manufacturing Process
90. OXACEPROL
90.1 Manufacturing Process
91. PAPAINE
91.1 Manufacturing Process
92. PENICILLIN G BENZATHINE
92.1 Manufacturing Process
93. PHENAGLYCODOL
93.1 Manufacturing Process
94. PICOPERINE
94.1 Manufacturing Process
95. POLYESTRADIOL PHOSPHATE
95.1 Manufacturing Process
96. PYRIDINOL CARBAMATE
96.1 Manufacturing Process
97. QUINESTROL
97.1 Manufacturing Process
98. QUINETHAZONE
98.1 Manufacturing Process

99. QUINIDINE POLYGALACTURONATE

99.1 Manufacturing Process

100. QUINUPRAMINE

100.1 Manufacturing Process

101. RANITIDINE

101.1 Manufacturing Process

102. RESCINNAMINE

102.1 Manufacturing Process

103. RIMITEROL

103.1 Manufacturing Process

104. RITODRINE

104.1 Manufacturing Process

105. ROSOXACIN

105.1 Manufacturing Process

106. SALICYLIC ACID

106.1 Manufacturing Process

107. SECOBARBITAL SODIUM

107.1 Manufacturing Process

108. SINCALIDE

108.1 Manufacturing Process

109. STREPTOKINASE

109.1 Manufacturing Process

110. SULFACYTINE

110.1 Manufacturing Process

111. TALAMPICILLIN

111.1 Manufacturing Process

112. TESTOLACTONE

112.1 Manufacturing Process

113. THIAMPHENICOL

113.1 Manufacturing Process

114. TICRYNAFEN

114.1 Manufacturing Process

115. TOCAINIDE

115.1 Manufacturing Process

116. UBIDECARENONE

116.1 Manufacturing Process

117. URACIL MUSTARD

117.1 Manufacturing Process

118. URAPIDIL

118.1 Manufacturing Process

119. UROKINASE

- 119.1 Manufacturing Process
- 120. VANCOMYCIN
 - 120.1 Manufacturing Process
- 121. VERAPAMIL
 - 121.1 Manufacturing Process
- 122. VIDARABINE
 - 122.1 Manufacturing Process
- 123. VILOXAZINE HYDROCHLORIDE
 - 123.1 Manufacturing Process
- 124. VIMINOL
 - 124.1 Manufacturing Process
- 125. VINBLASTINE SULFATE
 - 125.1 Manufacturing Process
- 126. WARFARIN SODIUM
 - 126.1 Manufacturing Process
- 127. XANTHINOL NIACINATE
 - 127.1 Manufacturing Process
- 128. XIBORNOL
 - 128.1 Manufacturing Process
- 129. XIPAMID
 - 129.1 Manufacturing Process
- 130. XYLOMETAZOLINE HYDROCHLORIDE
 - 130.1 Manufacturing Process
- 131. ZERANOL
 - 131.1 Manufacturing Process
- 132. ZIMELIDINE
 - 132.1 Manufacturing Process
- 133. ZIPEPROL
 - 133.1 Manufacturing Process
- 134. ZOMEPIRAC
 - 134.1 Manufacturing Process
- 135. ZOTEPINE
 - 135.1 Manufacturing Process
- 136. ZOXAZOLAMINE
 - 136.1 Manufacturing Process
- 137. PACKAGING OF PHARMACEUTICAL PRODUCTS
 - 137.1 Packaging Requirements of Pharmaceuticals
 - 137.1.1 Moisture Protection of Solid Oral Preparations
 - 137.1.2 Abrasion
 - 137.1.3 Selection of Containers
 - 137.2 Types of Packaging

- 137.2.1 Components Based on Rubber
- 137.2.2 Glass
- 137.2.3 Plastic
- 137.2.4 Films, Foils and Laminations
- 137.3 Latest Development in Packaging
 - 137.3.1 Blister Pack
 - 137.3.2 Strip Pack
 - 137.3.3 Tamper Resistant Packaging
 - 137.3.4 2-D Barcodes / Mass Encryption Technology
 - 137.3.5 Hologram
- 137.4 Machinery for Packaging
 - 137.4.1 Strip Packing Machine
 - 137.4.2 Blister Packing Machine
 - 137.4.3 Cartoning Machine
 - 137.4.4 Ampoule Filling Line
 - 137.4.5 Syringe Filling Machine
 - 137.4.6 Liquid Filling Machine
 - 137.4.7 Automatic Labelling / Gumming / Stickers Machine
- 138. BIS STANDARDS
- 139. ISO STANDARDS
- 140. PLANT LAYOUT AND PROCESS FLOW CHART & DIAGRAM
- 141. PHOTOGRAPHS OF PLANT AND MACHINERY WITH SUPPLIER'S CONTACT DETAILS
 - Tablet Making Machine
 - Tablet Press Machine
 - Granulator Machine
 - Film Coating Machine
 - Tablet Hardness Tester
 - Surgical Cotton Bleaching Machine
 - Vacuum Tray Dryer
 - Surgical Cotton Roll Making Machine
 - Conveyor Fiber Dryer
 - Coating Pan
 - Blister Packaging Machines
 - Pharma Centrifuges Machine
 - Tray Dryer
 - Vibro Sifter Machine
 - Jacketed Stainless Steel Mixing Tank
 - Labeling Machine
 - Colloid Mill

- API Machine
- Dispax Reactor DR
- Conical Screw Vacuum Dryer for API
- Filter Press
- Dry Syrup Powder Filling & Sealing Machine
- Paste Kettle
- Storage Vessels
- Capping Machine
- Automatic Tube Filling and Sealing Machine
- Powder Sampling Rod

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.