Pharmaceutical Medicine Wrappers and Capsule Shell Manufacturing Unit

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1. Introduction

The Pharmaceutical Medicine Wrappers and Capsule Shell Manufacturing Unit is envisaged as a comprehensive industrial project focused on the production of primary pharmaceutical packaging materials that are indispensable to the modern healthcare and drug manufacturing ecosystem. Primary packaging materials such as medicine wrappers and capsule shells come into direct contact with drug formulations and therefore play a decisive role in maintaining drug stability, efficacy, hygiene, patient safety, and regulatory compliance. Any compromise in packaging quality can result in degradation of medicines, regulatory rejection, product recalls, and reputational loss for pharmaceutical companies.

India has emerged as one of the world's largest producers and exporters of pharmaceutical formulations, supplying affordable generic medicines to more than 200 countries. With this rapid expansion of pharmaceutical manufacturing, the demand for high-quality, standardized, and compliant packaging materials has grown proportionately. Medicine wrappers such as blister foils, strip foils, and sachet laminates are extensively used for tablets, capsules, and powders, while empty capsule shells are a critical input for solid oral dosage forms.

At present, a significant portion of high-grade capsule shells and advanced pharmaceutical packaging films is either imported or sourced from a limited number of large domestic suppliers. This creates supply constraints, higher procurement costs, and dependency risks for small and mid-sized pharmaceutical manufacturers. The proposed unit aims to bridge this gap by establishing a domestic, MSME-scale manufacturing facility capable of supplying pharmaceutical-grade wrappers and capsule shells that meet national and international quality standards.

The project is designed to operate under Good Manufacturing Practices (GMP) and relevant ISO standards, ensuring consistent quality, traceability, and regulatory compliance. The unit will cater to pharmaceutical formulation units, nutraceutical manufacturers, ayurvedic and herbal medicine producers, and contract manufacturing organizations. From a developmental perspective, the project contributes to import substitution, employment generation, skill development, and strengthening of the pharmaceutical supply chain. It aligns with national initiatives such as Make in India, Atmanirbhar Bharat, MSME promotion policies, and the Production Linked Incentive (PLI) Scheme for Pharmaceuticals.

2. Industry Overview

The pharmaceutical packaging industry is an integral component of the global pharmaceutical value chain and is witnessing sustained growth due to rising healthcare demand, increased regulatory scrutiny, and expansion of pharmaceutical exports. In India, the pharmaceutical packaging market is expected to grow at a CAGR of 10–12%, driven by growth in formulations, vaccines, nutraceuticals, and over-the-counter (OTC) products.

Pharmaceutical packaging is broadly classified into primary, secondary, and tertiary packaging. Primary packaging, which includes medicine wrappers and capsule shells, is the most critical as it directly interfaces with the drug product. Regulatory authorities such as the Drug Controller General of India (DCGI), USFDA, EMA, and WHO impose stringent requirements on primary packaging materials regarding safety, cleanliness, compatibility, and traceability.

India has a strong base of formulation manufacturers but a comparatively smaller base of specialized pharmaceutical packaging manufacturers. This demand–supply gap is especially evident in segments such as vegetarian capsule shells (HPMC-based), high-barrier blister foils, and customized printed laminates. The increasing preference for vegetarian and plant-based capsules in export markets further strengthens the business case for capsule shell manufacturing.

With the expansion of pharmaceutical clusters in regions such as Haridwar, Baddi, Ahmedabad, Hyderabad, Pune, and Mumbai, there is a growing need for locally available, reliable packaging suppliers to reduce logistics costs and ensure just-in-time delivery. The proposed unit is well positioned to leverage this industrial clustering effect.

3. Products and Applications

Products Manufactured

- Pharmaceutical blister foils (Alu–Alu, Alu–PVC)
- Strip packaging foils
- Sachet and pouch laminates for powders and granules
- Printed and unprinted medicine wrappers
- Empty hard gelatin capsule shells (sizes 0, 1, 2, 3)
- HPMC (vegetarian) capsule shells

Applications

These products are used for packaging:

- Tablets and capsules
- Oral powders and granules

- Nutraceutical products
- Ayurvedic and herbal medicines
- Veterinary drugs

Major users include pharmaceutical formulation units, contract manufacturing organizations (CMOs), nutraceutical companies, government supply chains, hospitals, export-oriented pharma units, research laboratories, and small-batch manufacturers.

4. Regulatory and Quality Requirements

The unit shall comply with the following regulatory and quality standards:

- Good Manufacturing Practices (GMP)
- ISO 9001 – Quality Management System
- ISO 15378 – Primary Packaging Materials for Medicinal Products
- State FDA / Drug Controller approvals
- Pollution Control Board (Consent to Establish & Operate)
- FSSAI (for nutraceutical-related packaging, if applicable)

Clean-room operations, controlled temperature and humidity, microbial monitoring, batch traceability, and documentation systems are mandatory.

5. Raw Materials

Table: Raw Materials – Grade, Specification and Application

Raw Material	Grade / Specification	Application Area
Aluminium Foil	Pharma Grade, 20–25 micron	Blister and strip packs
PVC Film	Pharma Grade, 250 micron	Blister base
PVDC Coated Film	High barrier grade	Moisture-sensitive drugs
Paper-Poly Laminate	Food/Pharma grade	Sachet packaging
Printing Inks	Non-toxic, solvent-based	Wrapper printing
Gelatin	Pharma grade (Bovine/Fish)	Capsule shells
HPMC	Pharma grade, vegetarian	Capsule shells
Colorants	Approved pharma dyes	Capsule coloring
Purified Water	USP grade	Capsule shell processing

Table: Estimated Raw Material Consumption and Cost (Annual)

Raw Material	Annual Quantity	Avg. Rate (INR)	Annual Cost (INR)
Aluminium Foil	1,300 MT	220/kg	28,60,00,000
PVC / PVDC Films	900 MT	180/kg	16,20,00,000
Printing Inks & Solvents	Lump sum	—	2,50,00,000
Gelatin	1,200 MT	350/kg	42,00,00,000
HPMC	300 MT	800/kg	24,00,00,000
Colorants & Additives	Lump sum	—	1,20,00,000
Total Raw Material Cost			**1,14,50,00,000**

6. Manufacturing Process

Table: Manufacturing Process – Medicine Wrappers

Process Stage	Description
Raw Material Inspection	Incoming material quality verification
Lamination	Bonding of aluminium with PVC/PVDC
Printing	Batch-wise printing and branding
Curing	Ink stabilization and drying
Slitting & Rewinding	Custom width preparation
Quality Inspection	Thickness, adhesion, print quality
Packing & Dispatch	Roll packing and labeling

Table: Manufacturing Process – Capsule Shells

Process Stage	Description
Raw Material Preparation	Gelatin/HPMC solution preparation
Dipping	Capsule pin dipping process
Drying	Controlled humidity drying tunnels
Trimming	Uniform length cutting
Joining	Cap-body locking
Inspection	Weight, defect, microbial testing
Packaging	Hygienic bulk packing

7. Plant and Machinery

Machinery	Quantity	Purpose
Blister Foil Lamination Machine	1	Foil manufacturing
Rotogravure Printing Machine	1	Wrapper printing
Slitting & Rewinding Machine	1	Size customization
Capsule Shell Dipping Machine	2	Capsule formation
Drying Tunnels	2	Capsule drying
Trimming & Joining Machine	2	Capsule finishing
Air Handling Unit (AHU)	1	Clean-room control
Quality Testing Equipment	Set	Thickness, strength, microbial tests

8. Infrastructure Requirement

The project requires approximately **6,000–8,000 sq. ft.** of built-up area comprising production halls, clean rooms, raw material storage, finished goods warehouse, quality control laboratory, utilities section, and administrative office.

9. Manpower Requirement

Table: Manpower Requirement (Designation-wise)

Designation	Number	Key Responsibilities
Production Manager	1	Production planning & compliance
Quality Control Officer	1	GMP & testing
Maintenance Engineer	1	Machinery maintenance
Machine Operators	6	Machine operation
Skilled Technicians	4	Process handling
Quality Assistants	2	In-process inspection
Helpers	6	Material handling
Accounts & Admin Staff	2	Accounts & compliance
Sales & Marketing Executive	1	Client acquisition
Store & Dispatch Supervisor	1	Inventory & logistics

Table: Annual Manpower Cost

Category	Annual Cost (INR)
Managerial Staff	16,20,000
Technical & Operators	28,80,000
Helpers & Support Staff	8,64,000
Admin, Sales & Stores	8,64,000
Total Manpower Cost	**62,28,000**

10. Utilities and Operating Expenses

Table: Utility Requirement and Annual Cost

Utility	Requirement	Annual Cost (INR)
Electric Power	350 KVA	18,00,000
Water	25,000 KL/year	4,50,000
Compressed Air	Central compressor	2,00,000
HVAC & AHU	Clean rooms	6,50,000
Steam / Heating	Capsule drying	3,00,000
Total Utility Cost		**34,00,000**

Table: Other Operating Expenses

Expense Head	Annual Cost (INR)
Repairs & Maintenance	6,00,000
Quality & Testing Consumables	4,50,000
Packaging & Transportation	9,00,000
Administrative Expenses	5,50,000
Marketing & Promotion	4,00,000
Insurance & Compliance	2,50,000
Total	**31,50,000**

11. Estimated Project Cost

Table: Fixed Capital Investment

Cost Head	Amount (INR)
Land Development / Lease	8,00,000
Building & Civil Works	22,00,000
Plant & Machinery	85,00,000
Electrical & Utilities	10,00,000
Laboratory Equipment	12,00,000
Furniture & Office Equipment	5,00,000
Pre-operative Expenses	6,00,000
Total Fixed Capital	**1,48,00,000**

Table: Working Capital Margin

Component	Amount (INR)
Raw Material Stock	25,00,000
WIP & Finished Goods	15,00,000
Receivables	20,00,000
Cash & Bank	10,00,000
Total Working Capital	**70,00,000**

Total Project Cost: INR 2,18,00,000

12. Means of Finance

Source	Amount (INR)
Promoter Contribution	65,00,000
Term Loan	1,25,00,000
Working Capital Loan	28,00,000
Total	**2,18,00,000**

13. Revenue Projections

Product	Annual Capacity	Avg Price	Annual Revenue (INR)
Medicine Wrappers	1,200 MT	250/kg	30,00,00,000
Capsule Shells	600 million units	0.35/unit	21,00,00,000
Total Annual Revenue			**51,00,00,000**

14. Profitability Estimate

Particulars	Amount (INR)
Annual Revenue	51,00,00,000
Operating Cost	44,00,00,000
EBITDA	7,00,00,000
Net Profit (Approx.)	4,50,00,000

15. Break-even Analysis

The project is expected to break even at **40–45% capacity utilization**, achievable within **2–3 years** of commercial operations.

16. Conclusion

The Pharmaceutical Medicine Wrappers and Capsule Shell Manufacturing Unit is a technically feasible, financially viable, and strategically important project. With rising pharmaceutical production, increasing export orientation, and stringent regulatory requirements, the project offers sustainable growth, stable demand, and strong integration with India's healthcare manufacturing ecosystem

Disclaimer

Only a few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not imply any recommendation.