

1 GARLIC POWDER

1.1 Introduction

Garlic powder, which is mainly used as a condiment in food preparation, also serves as a carminative and gastric stimulant in many medicinal preparations.

In India, though garlic is grown abundantly and is consumed as such (part of it is also exported), very little efforts have so far been made to produce dehydrated or powder form garlic with the result that nearly 20 per cent of the crop is wasted due to respiration, transportation and microbiological spoilage during ordinary storage of garlic bulbs. Based on a process developed by the NRDC, Garlic powder produced is a techno-economically viable proportion under small sector.

1.2 Objective

The primary objective of the model report is to facilitate the entrepreneurs in understanding the importance of setting up unit of garlic powder. This model report will serve as guidance to the entrepreneurs on starting up such a new project and basic technical knowledge for setting up such a facility.

1.3 Raw Material Availability

The raw material would not be a problem as MP production of garlic is quite significant.

GARLIC	Area (Ha)	Prod (MT)
2003-04	33,196.00	137,763.40
2004-05	42,292.00	178,472.24

1.4 Market Opportunities

Garlic powder aids in digestion and absorption of food. It posses anthelmintic and antiseptic properties. It is only because of these properties it is used in a number of medicinal preparations. Manufacturing and marketing of garlic powder is a well established industry in European countries and U.S.A. . It is because of the above mentioned properties and uses of garlic powder, that it has made a prominent position in the food processing industry.

1.5 Project description

Applications

As a condiment it is used for flavoring tomato ketchup, sauces, salad dressings, meat sausages, gravies, chutneys, pickles and curries etc.

Capacity of the Project

The rated capacity of the project is 310 Mt per annum.

Manufacturing process

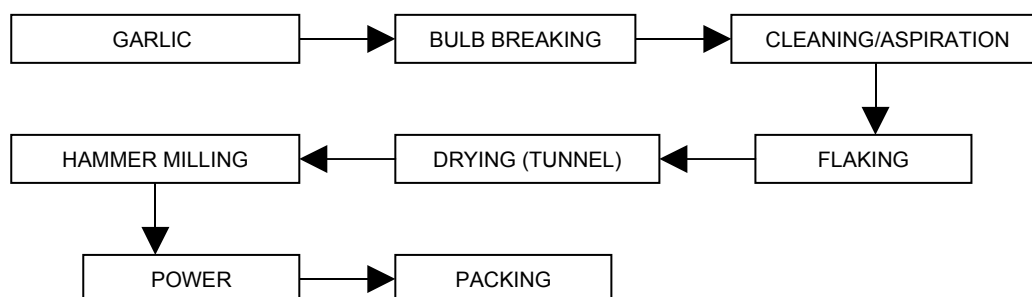
This process is based on Central Food Technology Research Institute, Mysore which is an improved process for the production of dehydrated garlic powder free from husk.

Garlic bulbs are broken into individual cloves by passing between rubber-covered rollers which exert pressure to crack the bulbs without cruding the cloves. The loose 'papery shell" is removed by screening and aspiration. The cloves are then sliced or pressed between rolls to form flakes. The slices or flakes are dried in tunnel driers or continuous belt drier. In case of tunnel drying the slices are loaded on wooden trays (5-6 kg. m² tray area)

Trays are stocked on cars which are conveyed to a 2-stage tunnel drier. In the first concurrent flow stage air temperatures from 750 to 900C may be used and in the stage countercurrent flow of air lowers the temperature from 550 to 00. In 10-15 hours product is dried to 5-7 percent moisture, where upon they are scrapped from the trays. The dried slices are transferred to the drying bins. Belt dryer can also be used where slices are automatically sped on a continuous stainless steel perforated belt. The temperature of the air at the inlet is about 6 per cent in about 6 hours of drying. After drying the pink skin that adheres to the fresh clove can be removed by screening and air aspiration.

Dehydrated garlic can be powdered in an air classifier hammer mill. It is packed in polyethylene bags immediately to prevent absorption of moisture.

PROCESS FLOW CHART OF GARLIC POWDER



1.6 Project component and cost

Major components of the projects and their costs are described in the table hereunder:

1.7 Land and Building

Particulars	Unit	Qty	Cost/unit	Total
LAND & BUILDING				25.75
Land	SqM	500	250.00	1.25
Land Development				
Land Area		500	500.00	2.50
Building				
Production Block				
Main Production Area	SqM	250	5,000.00	12.50
Store cum packing room & Sales Counter	SqM	150	5,000.00	7.50
Contingencies		10%		2.00
PLANT & MACHINERY				57.50
Plant and Machinery	LS	1	5,000,000.00	50.00
Contingencies		15%		7.50
MISCELLANEOUS FIXED ASSETS				11.50
Misc. Assets	LS	1	1,000,000	10.00
Contingencies		15%		1.50
PRE-OPERATIVE EXPENSES				17.00
Establishment		1	850,000	8.50
Professional Charges		1	250,000	2.50
Security Deposits		1	600,000	6.00
TOTAL				111.75

1.8 Plant and Machinery

The total cost of the plant and machinery is Rs. 57.50 Lakhs.

1.9 Building

The main production block will cost around Rs. 22 lakhs.

1.10 Miscellaneous Assets

A provision of Rs. 11.50 lakhs would take care of all the requirements.

1.11 Preliminary & Pre-operative Expenses

A provision of Rs. 17 lakhs would take care of pre-production expenses like establishment, professional charges, security deposits etc.

1.12 Working capital assessment

ITEMS	Year 1	Year 3	Year 5
STOCK OF RAW MATERIAL & PACKING MATERIAL	26.40	36.47	36.47
SUNDRY DEBTORS	61.47	84.90	84.90
TOTAL	87.87	121.37	121.37
MARGIN	21.97	30.34	30.34
MPBF	65.90	91.02	91.02
INTEREST ON WC	7.25	10.01	10.01

1.13 Mans of finance

EQUITY CAPITAL			25.00%	33.43
MOFPI SUBSIDY	25%	50.00	25.00%	33.43
TERM LOAN				
FINANANCIAL INSTITUTIONS		10.00%	50.00%	66.86
-Payable half yearly Installments	10	6.70		
TOTAL			100%	133.72

1.14 Cash flow statement

PARTICULARS	Year 1	Year 3	Year 5	Year 7
SOURCES OF FUNDS				
EQUITY CAPITAL	-	-	-	-
SUBSIDY				
NET PROFIT	11.85	29.42	26.55	24.78
(INTEREST ADDED BACK)				
DEPRECIATION	7.55	7.55	7.55	7.55
PRELIMINARY EXP.W/O	2.43	2.43	2.43	2.43
INCREASE IN TERM LOAN	-	-	-	-
INCREASE IN BANK BORROWINGS- WC	65.90	4.89	-	-
TOTAL	87.74	44.29	36.53	34.76

1.15 Projected balance sheet

PARTICULARS	Year 1	Year 3	Year 5	Year 7
LIABILITIES				
EQUITY CAPITAL	33.43	33.43	33.43	33.43
RESERVES & SURPLUS	31.34	57.51	87.16	117.72
TERM LOAN	60.16	33.36	6.56	0.00
BANK BORROWINGS-WC	65.90	91.02	91.02	91.02
TOTAL	190.84	215.32	218.17	242.17

1.16 Projected profit and loss account

Particulars	Year 1	Year 3	Year 5	Year 7
INCOME	286.84	396.18	396.18	396.18
EXPENDITURE	265.01	356.78	359.65	361.42
VARIABLE	203.90	277.87	277.87	276.99
FIXED	61.11	78.91	81.78	84.43
GROSS PROFIT	21.83	39.40	36.53	34.76
PROFIT BEFORE TAX	(2.08)	15.06	14.88	14.76
RETAINED PROFIT	(2.08)	15.06	14.88	14.76

1.17 Key indicators

NET PRESENT VALUE at current Inflation (Rs. in lakhs)	165.33
INTERNAL RATE OF RETURN %	29.49
AVERAGE DSCR	1.56
BREAK EVEN POINT %	87.61
PAY BACK PERIOD (YEARS)	4.82

1.18 Manpower Requirement

PARTICULARS		NO.
SUPERVISORY STAFF		
	ADMN/MKTG OFFICER & ACCOUNTANT	3
	PRODUCTION SUPERVISORS	2
WORKERS		
	MAINTENANCE SUPERVISOR	1
	SKILLED WORKERS	6
	SEMI-SKILLED LABOUR	10

1.19 Assumptions

LOAN			
Contingencies on Building			10%
Contingencies on Equipment			15%
Term Loan			50%
Rate of Interest on Term Loan			10%
Subsidy Considered	Subject to ceiling		25%
Expected time of Installation		Months	10
Moratorium		Months	6
CAPACITY			
Rated Capacity Per Annum	90% of Installed capacity	TPA	310
Number of Operational Days	DAYS		210
Working Hours Per day	Hrs		16
Yield			40%
CAPACITY UTILIZATION			
Year I			65%
Year II			85%
Year III			90%
SALES PRICE			
W S Price			142000
OTHER EXPENSE			
Commission			10.0%
Marketing Expenses			2.5%
POWER			
Connected Load	HP		150
DEPRICIATION AS PER COMPANY'S ACT			
BUILDING			3.34%
PLANT & MACHINERY			10.34%
MISC. FIXED ASSETS			7.07%
LAND & SITE DEVELOPMENT			1.63%
MAINTENANCE			
BUILDING			1.00%
PLANT & MACHINERY			3.00%
MISC. FIXED ASSETS			2.00%
LAND & SITE DEVELOPMENT			1.00%

The actual cost of projects may deviate on change of any of the assumptions.