

**Commissioner of Industries
Hyderabad
Andhra Pradesh**

Sodium Chloride (AR & IP Grade)

1. Nature of the Product and Its Applications:

Sodium chloride also known as common salt, table salt, rock salt or sea salt is probably the oldest chemical in human history. Its earliest manufacture in the unrecorded dawn of human civilisation marks the beginning of chemical industry. Sodium chloride is mainly used as a condiment in food preparations to serve the physiological requirement of human body. Industrially sodium chloride finds extensive application in the manufacture of their sodium compounds like sodium carbonate, sodium sulphate, sodium metabisulphate, etc. Besides, this highly purified sodium chloride is mainly used in pharmaceutical preparations viz. glucose saline, isotonic solutions, etc. and also for chemical analysis in research laboratories.

Out of the various forms of salt available, sea salt is considered to be the cheapest available salt due to the low costs incurred in producing salt from sea water. However, the impurities present in sea salt, viz. magnesium sulphate, magnesium chloride, calcium sulphate, etc. limit its usage for specific industrial purposes especially in the manufacture of pharmaceutical formulations.

2. Market Potential :

High pure sodium chloride is one of the common reagents used for analytical purposes in chemical laboratories. Although the consumption of individual laboratories may be nominal, the combined requirement of all these laboratories works out to be substantial including the in-house analytical facilities of almost all the chemical units.

IP Grade sodium chloride finds extensive application in the manufacture of IV fluids. Presently, there are many units engaged in the production of IV fluids. The requirement of sodium chloride from all these units is also substantial. Though there are no hard statistics about the market information based on the end use of product or product applications there is growing demand for this product.

3. Installed Capacity :

The recommended installed capacity of the proposed unit for the manufacture of AR grade sodium chloride is 72.0 MT per annum and IP Grade Sodium chloride is 48.0 MT per annum. Thus, the total installed capacity of the both the grades put together is 120.0 MT per annum.

4. Raw Materials :

The raw materials required for the manufacture of AR & IP Grade Sodium Chloride are common salt, calcium oxide and hydrochloric acid. These raw materials are locally available with chemical dealers/agents.

5. Manufacturing Process & Technology :

Common sea salt (sodium chloride 97.02%, calcium sulphate 0.314%, magnesium sulphate 0.65% and magnesium chloride 0.965%) is ground to pass through standard sieve and it is mixed with water and stirred mechanically at room temperature. The mass is centrifuged and the residue is analysed for impurities. 76% of the magnesium, 65% of total sulphates and 44% of calcium originally present in the marine salt had been removed by washing. The loss of sodium chloride at this stage is calculated.

The residual salt from the centrifuge is dissolved in water and heated to boiling. A slurry of calcium oxide and an aqueous solution of sodium carbonate are added to the mass one after the other under continuous stirring. The precipitated mass is allowed to settle and the clear brine is decanted and filtered through a filter. The pH of the filtrate is adjusted to 6-7 by the addition of hydrochloric acid.

The filtrate is charged into a jacketed. evaporator and is heated upto 100 degree to 102 degree C under continuous stirring to crystallise the sodium chloride. The first fraction of sodium chloride was removed after 3 hours centrifuged and washed with distilled water to remove traces of sodium sulphate, if any. The wet cake is dried to yield sodium chloride - Ar Grade.

The mother liquor can be evaporated further to crystallise the salt which is useful as table salt.

6. Plant and Machinery :

6.1 Major Equipments:

Following is the list of plant and machinery required for the unit:

S.NO.	Description of Item	Quantity
1.	250 Ltrs HDPE drum with one portable stirrer with SS Rod, 1.0 HP motor, gear box for 100 rpm	2
2.	1000 Litres capacity u-shaped HDPE drum	2
3.	SS Open pan evaporator - 500 Litres with stirrer motor and gear box and MS jacket	2
4.	Centrifuge, 24" basket dia with accessories	1
5.	Nustch Filter - 500 Litrs capacity with standard nozzles	1
6.	SS Open pan dryer with MS jacket stirrer etc. capacity 100 Litrs	1
7.	Tray drier, SS 12 trays	2
8.	Sieve shaper 60 Cms X 12 Cms alongwith motor etc.	1
9.	Coal fired boiler, 200 Kg/hr with accessories	1
10.	Vacuum pump with 7.5 HP motor	1
11.	Auxillary equipment like pumps, balances, distilled water units etc.	LS
12.	HDPE holding tanks - 500 Ltrs capacity	3
13.	Pipelines and valves	LS
14.	Laboratory equipment and testing equipment	LS

6.2 Suppliers of Equipments :

1. M/s Metal Equipments,
A-32, IDA, Jeedimetla
Hyderabad

2. M/s Toshniwal Brothers P. Ltd.,
4th Floor, Deccan Towers,
Basheerbagh, Hyderabad

7. Location :

Availability of the raw materials and nearness to market are the main consideration for the location of the unit. The other factors are infrastructure facilities and availability of cheap and skilled labour.

8. Infrastructure :

Manpower : 8 Nos.
Power : 25 HP

9. Project Cost and Means of Finance :

Cost of the Project:

	Particulars	Rs. Lakhs
a)	Land & Land development (0.25 Acres)	0.75
b)	Building & Civil construction (2000 Sq.ft)	3.55
c)	Plant and Machinery	13.20
d)	Miscellaneous Fixed assets	1.00
e)	Preliminary & Pre-operative Expenses	1.46
Total fixed capital		19.96
Working Capital Margin		0.91
Total Project Cost		20.87

Total working capital required in 1 year: Rs. 2.81 Lakhs

Means of Finance : (Rs. Lakhs)
- Promoter's Contribution : 7.89
- Term Loan : 12.97

10. Annual Operating Expenses :

Assumed Operation @ 85% of Installed Capacity in 3rd year:

	Particulars	Rs. Lakhs
a)	Raw Material	6.97
b)	Packaging Material & Consumables	0.42
c)	Utilities	1.87
d)	Salaries & Wages - Prod.	1.30
e)	Factory Overheads	0.27
f)	Admn. & Management Expenses	1.11

g)	Financial Expenses :	1.58
	Interest on Term Loan	0.43
	Interest on Working Capital	
h)	Depreciation	0.76
i)Selling Expenses		0.21
		14.92

Net Sales realisation : Rs. 21.32 Lakhs
Pre-tax Profit : Rs. 6.40 Lakhs

a) Break Even Point @ 90% Cap. Utilisation : 36.36%
b) Rate of return on Investment before taxes : 30.67%