

ELECTRONIC GRADE CHEMICALS

The term electronic grade chemicals is used to refer to chemicals used in electronic industry, particularly in semi-conductor/ micro processor fabrication or simply "fab". Semiconductor / chip manufacture consumes large volume of specialty chemicals like:

- Photo resists (resins)
- Etchants (solvents, acids, bases and other chemicals)
- Cleaners (solvents)
- Dopants (high purity metals / non metals)
- Metallic conductors (Aluminium / copper / silver / gold)
- High purity gases

The main criteria for all these products are the degree of purity. The impurities here are counted in parts per trillion "ppt".

Proposal:

Large investments are in planning in fab city at Hyderabad. Semiconductor / chip / microprocessor manufacture is also likely to be taken up by other companies. This is the right time to enter this market.

Product mix:

Many of the chemicals used in chip manufacture like photo resists and dopants are specialties. Products like etchants and solvents are mostly highly purified commercial products. It is suggested that Initial concentration should be on these products. One advantage here will be that, the off spec products can be marketed to industrial segments that have higher tolerance limits.

Electronic grade

Solvents	500,000 liters
Acids and Bases	500,000 Kgs
Miscellaneous products	100,000 Kgs

Analytical reagent grade

Solvents	300,000 liters
Acids and Bases	300,000 Kgs
Miscellaneous products	200,000 Kgs

Market:

Apart fro chip manufacture, electronic grade chemicals (of lesser purity) are required in manufacture of Photo voltaic cells and modules and printed circuit boards. These are high value products. These can be exported.

There is a large market for Analytical reagent grade chemicals from the bulk drug industry in Andhra Pradesh.

It may however be noted that this is highly competitive market with several players (including MNCs). Success will depend on carving out Niches for some products.

Manufacturing process:

The processing involved revolves round eliminating impurities by operations like distillation, chromatography, membrane filtration, fractional crystallisation and chemical processes like precipitation.

Some times it may be necessary to manufacture the products from highly purified raw materials or through an alternate route to that followed in commercial operations.

The manufacturing operations are to be carried out in clean room conditions

Technology:

The technology requirements are on two fronts

- Purification
- Testing

Consultation with National laboratories and other institutions is needed to finalise the purification and testing methods for each product.

Plant and Machinery:

Stirred tank reactors, filters, distillation units and sophisticated testing equipment form part of the plant and machinery. The processing machinery is to be supported with necessary utility equipments. The materials of construction of the processing equipment are to be chosen in such a way that they do not contribute to impurities.

Raw materials:

Commercial grade solvents, acids and bases, highly purified water, are the main raw materials.

Utilities:

Power, steam, Nitrogen gas and cooling water are the utilities required.

Project cost:

Rs. 5 crores

Turnover and profitability:

Annual turnover of Rs.38 crores can be achieved.

Profit margin can be as high as 20 %

Suggested location:

Any chemical zone in Hyderabad.

Entrepreneur profile:

This project is suitable for technocrats. Marketing is also important

Apitco's consultancy:

1. Market survey
2. Technology tie-up
3. Project planning