

ALAKAR PRODUCTS

S.NO: 149/6B,12,13, Nazarath Village, Tiruchendur Taluk, Thoothukudi District, Tamil Nadu.

EXECUTIVE SUMMARY

ON

REIA-EMP

OF

PROPOSED

MANUFACTURE OF TEXTILE DYE AUXILIARY CHEMICALS

NOVEMBER, 2008

1.0 PROJECT DESCRIPTION

ALAKAR PRODUCTS is looking to set up a textile dye / auxiliary chemicals manufacturing unit in the Thoothukudi District of Tamil Nadu. The proposed project will entail production of various dye/chemical used in Textile Industry.

The total Project Cost is Rs.50 Lakhs.

The Product and Production Capacity are as follows.

Description	Quantity
<u>Dyes</u> (Acid Orange, Acid Black, Black :B)	15 MT/month
<u>Textile Auxiliary Chemicals</u>	
Turkey red Oil	60 MT/month
Binders (Binder 4000 , Binder 167, Binder -1035)	60 MT/month
Softener (Soft-1055, Soft-1015)	25 MT/month

2.0 LOCATION

The proposed plant will be located at Survey No. S.NO: 149/6B,12,13, Nazarath Village, Tiruchendur Taluk, Thoothukudi District, Tamil Nadu. The proposed project location is shown in **Fig.1.1. AP** has already acquired about 3.41 Acres of land, and will be utilized as follows

S.No.	Description	Quantity(Acres)
1	Built-up Area	0.40
2	Green Belt Development	0.90
3	Utilities	0.20
4	Future Expansion	1.91
	Total	3.41

Fig.1.0 Project Location

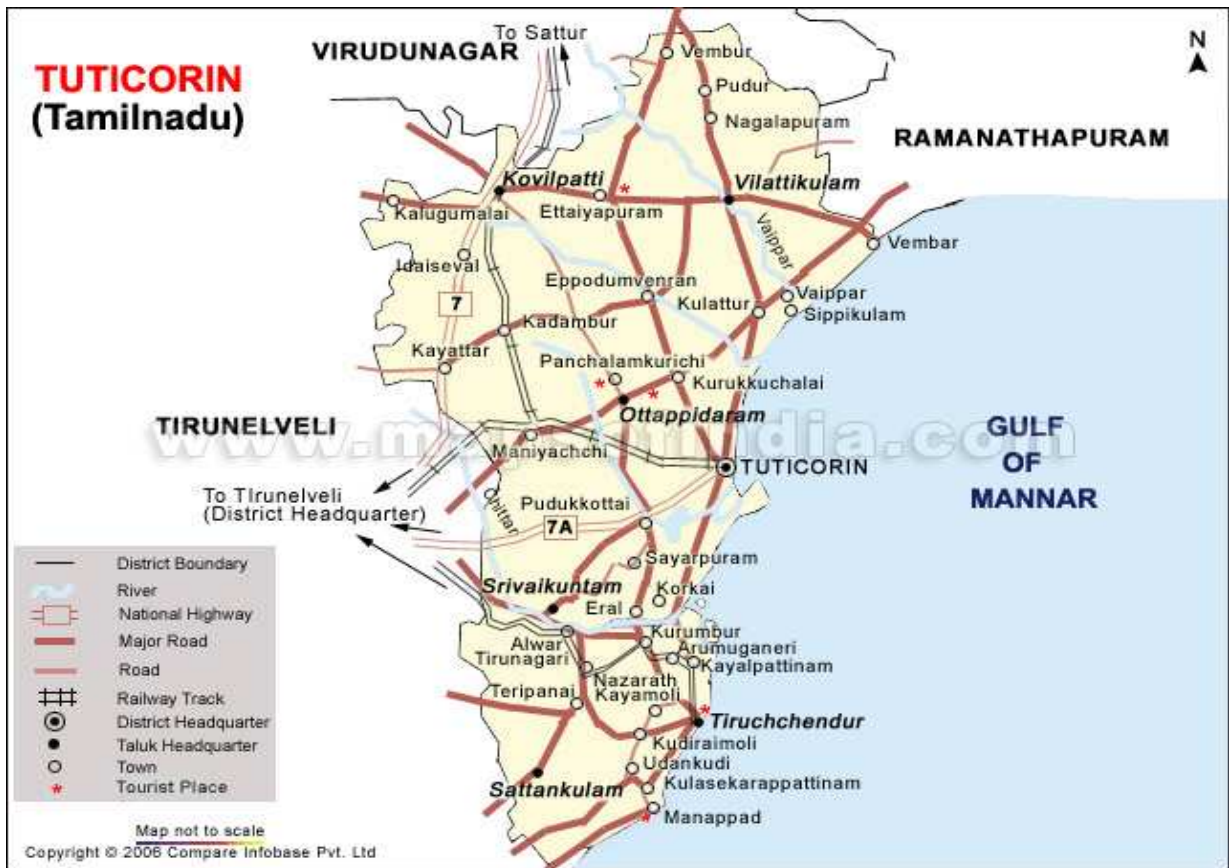
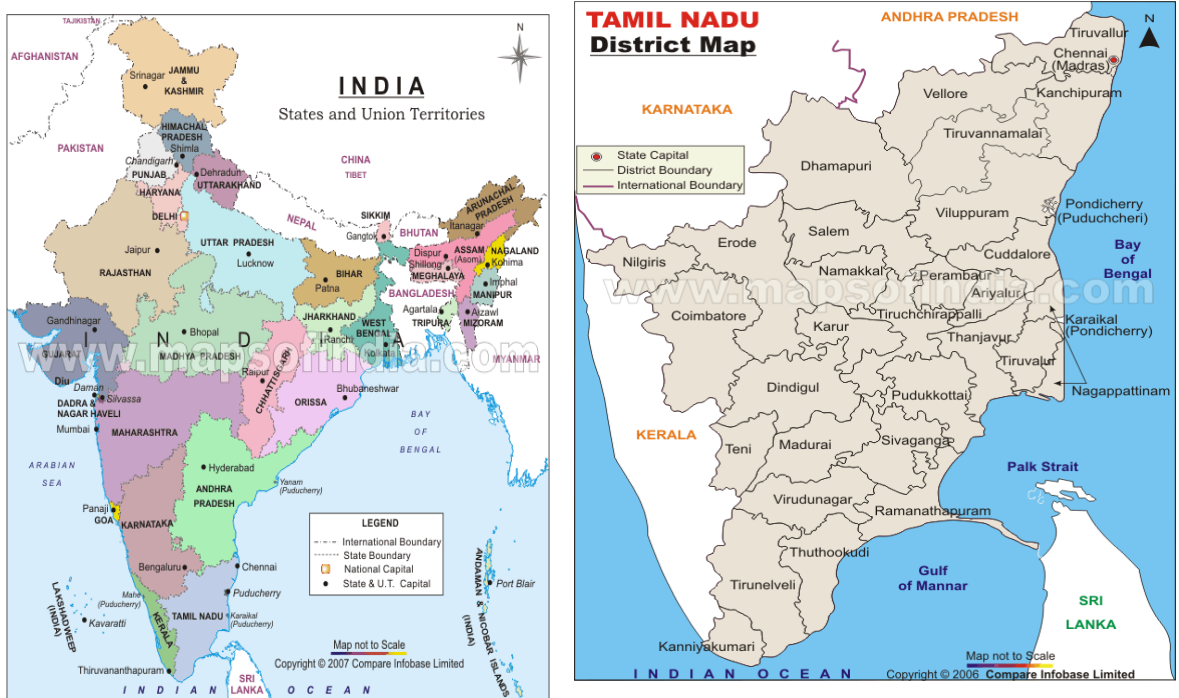


Fig.1.1a Location Map



3.0 RAW MATERIAL CONSUMPTION

The main raw material used in manufacture of “Textile Sizing Chemicals” is “Caster Oil”.

The quantities of various raw materials consumption are as indicated below

S. No.	Raw Material	Quantity (Kgs/ Month)
1.	Caster Oil	12000
2.	Sulfuric Acid	2000
3.	Caustic soda	600
4.	Linear Alkyl Benzene	2000
5.	Acrylamide	2000
6.	Glyceryl Mono Stearate	1000
7.	Acrylic acid	400
8.	Acrylonitrile	400
9.	Butyl Acrylate	1500
10.	Stearic Acid	200
11.	French Chalk (Magnesium silicate)	400
12.	Glucose	1000
13.	Hydrochloric acid	2000
14.	1.Amino 8.naphthol.3,6 disulfonic acid	2500
15.	Sodium Nitrite	1000
16.	Sodium Acetate	500
17.	Sodium Carbonate (Soda Ash)	2000
18.	Vinyl Sulfonate	200
19.	Meta Phenylene Diamine	300
20.	B.Naphthol	500
21.	Sulfanilic Acid	500
22.	Sodium Napthionate	500
23.	Dietahnolamine	400
24.	Diphenylamine	300
25.	Potassium Chloride	500
26.	Sodium Chloride	1000
27.	Sodium Silicate	2000
28.	Vegetable Fat	4000

4.0 Manufacturing Process

Turkey red Oil.

The turkey red oil is nothing but sulfonated castor oil, which will be manufactured by known quantity of castor oil sulfonated at the rate of 12% w/w using sulfuric acid. The sulfonation process is carried out at different range of temperature. The turkey red oil is formulated with other raw materials according to its application.

Turkey oil is used as lubricating agent for textile sizing.

Binder 4000

The polymerized product is prepared by Mixtures of monomers like butyl acrylate, styrene, acrylic acid emulsified with water is added to hot water in 500 litres of vessel. It is polymerized using Ammonium persulfate. The finally polymerized material is neutralized with liquor ammonia.

Binder 167

The raw material acrylonitrile and acrylic acid are mixed in 1:2 ratio and charged to vessel containing water for polymerization using potassium persulfate as catalyst. The polymerized material is mixed with emulsifier for end application.

Binder -1035

The acrylamide is added to hot water in vessel and polymerized using potassium persulfate as catalyst. Then the urea and liquor ammonia are added to polymerized material to increase binding effect.

Use of Binder basically as sizing media in printing.

Softener

The known quantity of castor oil is heated with caustic soda in water. This material is mixed with known quantity of Glycerol Mono stearate for paste form. Then this paste is homogenized with filler material French chalk for final product.

Softener

The stearic acid is melted at the temperature of 60°C and it is mixed with diethanolamine in 1:1 proportion. This mixture is heated for 3 hrs at high temperature and poured into vessel containing water and it is made to cream paste.

Acid Orange

It is diazotized by coupling β -naphthol with diazotized sulfanilic acid. In wooden vat of 1000litre, sulfanilic acid is taken with 200litres of water, then sodium nitrite is added to it at the temp of 5-8°C. then diazotized sulfanilic acid is run into solution of β - naphthol. The stirring is continued for 2 hrs along with acidification of hydrochloric acid. Finally the salted Dye is filtered through filter press and dried in oven

Acid Black

The paranitroaniline is diazotized and coupled with H-acid in acidic medium. The di amino benzene sulfanilamide is tertazodized and coupled with first coupling of meta phenylene diamine. The dye is isolated and filtered and standardized.

Black :B

In wooden Vat with capacity of 2000-3000litres, the vinyl sulfone is charged along with cold water of 500litres. And it is stirred for 1hr. then the sodium bicarbonate will be added to obtain clear solution. In another 100 litres vessel, the H acid (1Amino -8 natpthol-3,6 Disulfonic Acid) is charged with 30-35 litres of cold water and is neutralized with caustic soda for pH 6-7. The H-Acid solution is coupled by slowly adding to Vinyl sulfone solution. The sodium acetate is added to raise the pH to 7 and the salt potassium chloride is added to it. The material is filtered through filter press and dried in oven at 60-70'C temperature.

5.0 Raw Water Requirement

Water will be drawn from bore-well located inside premises. Further the unit has planned to install the complete recycling process through RO system, only water of about 5 Kld will be pumped from bore well for process make up.

The raw water requirement upon the operation of the plant will be as follows.

S.No.	Description	Quantity (m ³ /day)
1.	Process (Makeup)	4
2.	Domestic consumption	1
3.	Greenbelt development	12
	Total	17

The R.O. Rejects of small quantity will be subject to Solar Evaporation.

6.0 Work Force

There will be around **10** employees upon operation of the plant.

7.0 Energy Consumption

The details of energy required and backup D.G. Set will be as follows.

S.No.	Source	Quantity
1.	TNEB	100 KVA
2.	D.G. Sets	20 KVA

8.0 DESCRIPTION OF THE ENVIRONMENT

8.1 Ambient Air Quality Monitoring

The ambient air quality with respect to study area around the **Alakar Products** plant site forms the baseline information. The prime objective of baseline air quality survey is to assess the existing air quality of the area. This will also be useful for assessing the conformity to standards of the ambient air quality during the plant operation.

Ambient air quality monitoring was carried out for one season covering 6-locations, one in the plant site and five in different directions outside the plant site at a radius of 5 kms. The locations of sampling stations are as given in the following **Table**.

Location of Ambient Air Quality Monitoring Stations

S. No.	SA No.	Sampling Station	Direction w.r.t Site	Distance in Km.
1	SA1	Project Site	-	-
2	SA2	Thaila Puram	SW	0.7
3	SA3	CSI, Nazareth	E	1
4	SA4	Pilliayan Manai	N	1.6
5	SA5	Thoppur	S	2.4
6	SA6	Nazareth Town	NE	3.0

Summary of Air Quality Data (January-March 2008) are as follows

S.No.	Sampling Stations	Concentration in $\mu\text{g}/\text{Nm}^3$		
		SO ₂	NO _x	SPM
1	SA1	10.2	8.1	72
2	SA2	8.8	12.9	70
3	SA3	6.2	7.5	130
4	SA4	5.7	9.6	47
5	SA5	9.8	8.5	82
6	SA6	11.2	9.2	112
	Overall	5.7-11.2	7.5-12.9	47-130

8.2 WATER ENVIRONMENT

Selected physico-chemical parameters have been used for describing the baseline status of water environment and assessing the possible impacts due to the proposed increase.

For Generation of baseline data water quality was monitored once during the month. Bacterial examination was carried out to identify faecal contamination of water sources.

Total Dissolved Solids (TDS) from the samples analysed varied between 200 to 277 mg/l. The calcium and Magnesium hardness of the corresponding samples varied between 24 to 52 mg/l and 7 to 21mg/l respectively. Heavy metals in all the samples were found to be below detectable limit except for few metals which were also below detectable limits.

Total coliform was present in all the samples confirming faecal contamination. The test carried out for Pesticides and phenolic compounds proved the water in and surrounding the plant site to be nontoxic in nature.

8.3 NOISE ENVIRONMENT

Noise level assessment around **AP** plant site has been carried out with the objective of assessing the impact of total noise generated in the site on its workers and human settlements within and around plant site. The noise level in the study region was below the permissible levels of MoEF with respect to day / night.

8.4 SOIL ENVIRONMENT

The soil samples were analysed for pH, electrical conductivity, nitrogen, phosphorus, available magnesium, grain size distribution (gravel, sand, clay/silt) textural class, bulk density, plastic limit, liquid limit etc.

The soil is sandy loam in texture. The soil is slightly alkaline. The fertility value of the soil is very low with low organic matter and NPK content.

8.5 BIOLOGICAL ENVIRONMENT

The analysis of the results of vegetation in the entire study area of the **AP** plant site indicated that there was an abundance of plant community in the entire area and its distribution was heterogeneous. The distribution of terrestrial fauna was found to be uniform. The data collected revealed absence of rare and endangered species at and surrounding the **AP** plant site.

8.6 SOCIO-ECONOMIC ENVIRONMENT

Nazareth is a Christian Town created by Missionaries on the Srivaikuntam-Tiruchendur Road. The total population is only 16,960 with a literacy rate of 83%. Nazareth has good facilities for Primary, and Higher Secondary School Education. Nazareth also has a Arts & Science College, Engineering College and a Polytechnic. Area is marked by Good Roads, Hospitals, Telecommunication facilities etc.

The detailed list of population, sex ratio, pollution of scheduled castes and tribes, percentage of literacy, works, non-workers, house hold details etc of the Town Panchayat of Nazareth is tabulated as follows:

NAZARETH (TP)-URBAN

Parameter	Total	Male	Female	Percentage	Sex Ratio
Population	16960	8215	8745	100	1065
Population (0-6)	1671	878	793	10.93	903
Scheduled Castes	1585	731	854	9.35	1168
Scheduled Tribes	162	80	82	0.96	1025
Literates	14095	6934	7161	92.19	1033
Illiterates	2865	1281	1584	7.81	1237
Workers	5102	3591	1511	30.08	421
Main Workers	4691	3381	1310	27.66	387
Main Cultivators	79	70	9	1.68	129
Main Agricultural labourers	247	150	97	5.27	607
Main Workers in household industries	252	184	68	5.37	370
Main Other Workers	4113	2977	1136	87.68	11248
Marginal Workers	411	210	201	2.42	76
Marginal Cultivators	8	4	4	1.95	1000
Marginal Agricultural labourers	23	9	14	5.6	1556
Marginal Workers in Household industries	62	19	43	15.09	2263
Marginal Other Workers	318	178	140	77.37	787
Non Workers	11858	4624	7234	69.92	1564
Households			3821		

9.0 ENVIRONMENT IMPACT AND MANAGEMENT PLAN

9.1 AIR ENVIRONMENT

The sources of emission are from steam boiler and hot air boiler. The fuel proposed to be used are biomass, which is most environment friendly. The emission rate and stack details for each stack considered for air pollution is given in the following **Table**.

Stack Characteristics

Stack No		1	2	3
Material of Construction		M.S	M.S	M.S
Stack attached to		D.G. Set 20 KVA	Boiler	Hot Air Generator
Stack height Above the ground level, in m		10.0	15.0	15.0
Stack top	Round or Circular	Circular	Circular	Circular
Inside dimensions of the stack at top, mm		100	350	350
Gas quantity – m ³ /hr		1152	3000	4000
Flue gas temperature, °C		110	130	170
Exit velocity of the gas, m/s		16.0	20.0	21.0
Emission rate, g/s				
	SO ₂	114	0.05	0.015
	NO _x	50	-	-
	SPM	5	0.125	0.150

All emissions are provided with stack of adequate height as per norms.

9.2 WATER ENVIRONMENT

Changes in hydraulics and hydrological conditions comprise changes in flow, in current velocity, and direction, in water level and volume, and overall change in the water balance of an area. In the present case **AP** has proposed to treat and reuse all of the treated waste water, thus resulting in daily make up requirement of only **6.0m³/day**. This will be met from bore well within site.

9.3 NOISE ENVIRONMENT

Noise levels of all equipments in the Plant Operations will be maintained to within the permissible limits. More-over the noise level at the plant boundary will be 54 dB(A), which is in line with the National Ambient Noise Quality Standards of CPCB. Hence the impact on the noise environment due to proposed project will be negligible.

9.4 LAND ENVIRONMENT

One of the activities with large potential effects on soil and groundwater is the disposal of waste on land and in landfill sites. When waste material is disposed off on land, rainwater and surface run-off may percolate through the material and carry contaminants into soil and groundwater.

Change in soil surface and soil properties may have impacts on soil micro-organisms, natural and cultivated plants and animals, the visual landscape and amenity and on buildings and other constructions. Solid wastes are generated from ETP (ETP cake) and solar pan (RO plant rejects) which will be around 10Kg/day. These wastes will be stored in the drums at plant site and disposed to TSDF.

10.0 GREEN BELT DEVELOPMENT

About 0.9 Acres of land in the total land area of about 3.41 Acres will be developed as Greenbelt Area.

11.0 CONCLUSION

The proposed plant of **AP** will adopt extensive pollution control techniques to maintain the emission/discharges within the permissible norms and will have least impact on the ambient environment.