

**Commissioner of Industries
Hyderabad
Andhra Pradesh**

Cyanoacrylate Adhesive

I. Introduction

Cyanoacrylate adhesive is a product manufactured by synthesis of an ester of Cyanoacetic acid with an aldehyde. These are generally available as methyl and ethyl cyanoacrylate formulations. The products are used for bonding various metals such as mild steel, stainless steel, aluminium, brass, copper to themselves or to each other. These adhesives can also be used for plastic, rubber, glass etc. Other major application is for bonding air craft interior parts, calculators, computer assembly, electronic parts, micro processors, medical equipments, optical lenses etc. Both the products are in liquid form and white in colour. It has been reported that the entire requirement in the country is met by way of imports.

II. Market Status and Scope

Product Specification:

Both the products are thin and water white liquids. They bond most of the metals well within 60 seconds and the following bond strengths are obtained. The purity of the product is in the range of 95-99%.

Metals	Methyl	Bond Strengths (Kg/cm)
		Ethyl (cyanoacrylates)
Mild Steel - Mild Steel	200	200
Mild Steel - Stainless Steel	150	150
Mild Steel - Copper	90	90
Stainless Steel - Stainless Steel	130	130
Stainless Steel - Copper	120	100
Stainless Steel - Aluminium	80	80
Copper - Copper	100	80
Brass - Brass	60	60

A few firms are already marketing imported materials, throughout the country under the brand names of Fevicol-Acyn, ANABOND-201 and FIT-TITE 401, 495.

The demand for the cyanoacrylate adhesive formulations in the country at present has been estimated to be in the range of Rs.300-400 lakhs. There is no indigenous production in the country.

III. Installed Capacity

The proposed project shall have an annual installed capacity of 1 Tonne of cyano- acrylate adhesive formulations per annum. The plant shall work two shifts in a day for 300 working days in a year.

IV. Manufacturing Process and Technology

The products are synthesised by condensation, polymerisation of an ester of cyanoacetic acid with an aldehyde and later modification in anhydrous environment yields the product in 80-85% overall yield and of 95-99% purity.

V. Land and Buildings

The proposed project shall require 1000 Sq.Mtrs of land for establishing the various requirements such as factory building, administrative building, stores etc. The total area for civil works comprising of the main plant and the others shall be 3000 sq/ft. The proposed budget estimate for procurement of land, site development, civil works shall be Rs.8.50 lakhs. Out of the amount allocated Rs.1.00 lakh for land and site development and the rest is for the civil works.

VI. Plant and Machinery

The major plant equipment comprises of Reaction Kettle, SS Vessels, Intermediate Process Tanks and a Filter. The entire machinery can be procured from indigenous sources. The plant and machinery cost for the proposed installed capacity will be Rs.11.00 lakhs. The technical know-how fee for the project is Rs.2.00 lakhs has been included in the project cost.

VII. Raw Materials

The major raw materials required for the manufacture of cyanoacrylate adhesives are Esters of Cyanoacetic acid, aldehyde, phosphorous pentoxide, phosphoric acid, and inhibitors. Most of the raw materials are indigenously available for procurement. The total requirement of raw materials are one tonne of Cyanoacetic acid, 1 tonne of aldehyde and small quantities of other chemicals. The cost of cyanoacetic acid ester is considered at Rs.20.00 lakhs per tonne and aldehyde at Rs.1.20 lakhs per tonne, accordingly the total raw material cost at the installed capacity is estimated at Rs. 14.78 lakhs.

VIII. Utilities

The unit shall have a connected load of 15 HP of power, the total power consumption in terms of money shall be Rs.0.96 lakhs at installed capacity. The total cost of utilities during 1st, 2nd and 3rd year is Rs.0.58 lakhs, Rs.0.67 lakhs and Rs.0.77 lakhs respectively.

IX. Manpower Requirement

The unit provides employment to 8 persons comprising of one person in the Managerial Cadre, 4 persons in the Supervisory Cadre and the rest are skilled and unskilled workers. The salary and wages are assumed to increase @ 5% annually and 10% of the salary towards fringe benefits has been considered in the estimates.

Details of Salaries & Wages:

S.No.	Particular	No.	Salary p.m. Rs.	Total Amount Rs. lakhs
ADMINISTRATION				
1.	Manager	1	8000	0.96
2.	Assistants	1	2500	0.30
3.	Mktg. Assistants	2	2500	0.60
4.	Office Boy	1	1000	0.12
PRODUCTION				
1.	Supervisor	1	5000	0.60
2.	Unskilled Workers	1	2000	0.24

3.	Watchman	1	1000	0.12
Total				2.94

X. Working Capital Requirement

The working capital requirement of the unit are calculated for the first three years of operation. The unit requires one month stock of raw materials and consumables, one month stock of packing material and utilities. The finished goods and bills receivables also considered for one month operation. The monthly expenditure for salaries and wages also included in the working capital. The margin money for individual items has been followed according to guidelines laid down by the financial institutions and banks. Accordingly the working capital requirement during 1st, 2nd and 3rd years of operation of the unit is Rs.5.38 lakhs, Rs.6.27 lakhs and Rs.7.14 lakhs respectively.

XI. Preliminary & Pre-operative Expenses

This includes preliminary expenditure to be incurred by the unit during project formulation, loan acquisition costs and pre-operative expenditure like interest during construction, salaries, travel expenditure and trial run expenditure. The preliminary and pre-operative expenses for the proposed project has been estimated as Rs.3.31 lakhs.

XII. Project Cost and Means of Finance

(Rs. Lakhs)	
Land	1.00
Buildings & Civil Works	7.50
Plant & Machinery	10.00
Other Fixed Assets	5.00
Technical Knowhow	2.00
Prel. & Pre-op. Expenses	3.31
Margin Money for W.C.	1.57
Deposits, Rent etc.	0.50
Contingencies	1.60
Total:	32.48
Means of Finance:	
Promoter's Equity	12.38
Term Loan	20.09
Total :	32.48

XIII. Cost of Production and Profitability (3rd year of operation)

Cost of Production:	(Rs. in Lakhs)
1. Raw Materials	11.82
2. Consumables	2.40
3. Utilities	0.77

4. Salary & Wages - Prodn.	1.16
5. Packing Materials	2.40
6. Repairs & Maintenance	0.22
7. Depreciation -*	0.96
8. Telephone & Posts	0.48
9. Selling Expenses	2.40
10. Admn. Salaries	2.39
11. Admn. Overheads	0.41
12. POP Expn. Written Off	0.33
13. Interest on Term Loans	2.44
14. Interest on Working Capital Loan	0.94
Total:	29.12
Net Sales @ Rs.6 lakhs per ton	Rs. 47.04 Lakhs
Profit before Tax	Rs. 17.92 Lakhs
Debt Service Coverage Ratio (DSCR) ..	2.39
Break Even Point: % at Installed Capacity ..	27.54
Cumulative Cash Surplus at the end of 5th year ..	Rs. 47.28 Lakhs