Total cost of producing 6,00,000 sq. ft. of Jutoid comes to Rs. 1,29,291.

Cost of production per sq. ft. 3 ½ annas.

AIR ENTRAINING AGENT FOR THE PRODUCTION OF FOAM CONCRETE

Air entraining agents are employed for the production of light-weight concrete, used in factories for thermal insulation or where lightness is demanded irrespective of cost.

While there is a very substantial demand for light-weight concrete as a constructional material, particularly in factories, its use in the country is limited on account of the non-availability of air-entraining agents locally.

As a result of the work carried out in the Central Laboratories, a process has been developed for the production of an air-entraining agent from hair and other proteinous waste materials.

The total capital invetsment in a unit of production with a capacity of 125 gal. per day to give 2000 cu. ft. of light weight concrete is estimated to be about Rs. 17,000 with an average cost of Rs. 4/4/- per gal. of the air-entraining agent.

The process consists of the following unit operations: cooking under pressure and filtering.

Equipment and Raw Materials

Pressure cooker (150-litre capacity), plate and frame filter press with hand pump, tanks (200-litre capacity), and kettle (100-litre capacity).

Pre-Construction Cost Estimation

(Production capacity: 37,500 gal. per annum or 125 gal. per day)

		Rs.	Rs.
Capital expenditure			
Equipment	..	12,000	
Building	..	16,000	
			28,000
Direct expenses per annum			
Raw materials	..	87,228	
Direct wages	..	7,920	
Containers	..	37,500	
Power	..	4,000	
Contingencies	..	5,000	
Depreciation @ 10%		2,800	
			1,44,448
Indirect expenses			
Establishment		6,120	
Promotion of the project @ 2½% on Rs. 67,000 (capital expenditure plus running expenditure for 3 months)		1,675	
			7,795
Selling expenditure	..	..	1,800
Interest on capital @ 4% on Rs. 67,000			2,680
Insurance @ 2 ½ % on Rs. 1,15,228	..		2,880
Cost of production of 37,500 gals. per annum of air-entraining agents			1,59,603

Average cost-Rs. 4/4 per gal.

PRINTING AND OTHER OIL-BASED INKS

Printing and other oil-based inks are mainly composed of a pigment material and a vehicle, usually a drying oil, in which the pigment is distributed in a finely divided state. But to prepare a stable composition of the proper consistency, adhesion, flow, colour and brilliancy involves a specialised technique and rigid control of the process and formulation. The introduction of automatic printing machine demands still greater perfection and uniformity in ink composition. The manufacture of ink is, therefore, a highly developed art, but on account of its large and universal demand, good quality printing and other inks are produced in almost all advanced countries. Pakistan, however, does not have a well established ink manufacturing industry, with the result that almost all types of printing and other inks required in the country are being imported. Investigations were, therefore, taken up in the Central Laboratories of the Council of Scientific and Industrial Research on various types of oil-based inks, such as stamp cancelling, duplicating and news inks. As a result of these investigations it has deen possible to evolve various compositions for these inks, which dry mainly by absorption. They are almost exclusively based on indigenous raw materials and compare favourably with the best quality imported inks of each of these categories.

The estimated demand of the various kinds of inks based on the figures of import is as given below :—

1.	Postal ink ..	10,000 lbs.	approx.
2.	Duplicating ink ..	50,000 ,,	,,
3.	News printing ink ..	100,000 ,,	,,

A unit with a production capacity of the above indicated quantities of inks is estimated to require the total capital investment of about Rs. 2,00,000.

The average cost of the ink in a unit of this size would be about Rs. 1/2 per lb. inclusive of overhead expenses, as compared to the prevailing market price of these inks indicated below :—

1. Postal ink	..	Rs. 4/-/- to 5/-/- per lb.
2. Duplicating ink	..	Rs. 9/-/- to 10/-/- per lb.
3. News ink	..	Rs. 4/-/- to 8/-/- per lb.

Process and Equipment

The process consists essentially of preparing a stabilising varnish which is thoroughly mixed with other ingredients, the whole mass being then passed through a roller mill.

The equipment required is : edge runner, mixer, single and triple roll mills, straining and sieving machine, filling machines, and storage tanks, pumps, electric motors, laboratory testing equipment, etc.

All of these have to be imported from abroad.

Raw Materials

The raw materials involved are : rosin, oil (vegetable and mineral oils), pigment and chemicals.

All the raw materials are available in the country, except carbon-black, which represents only about 6.5% of the total value.

Pre-Construction Cost Estimation

Production Capacity

News ink	..	1,00,000 lbs./annum
Duplicating ink	..	50,000 lbs./annum
Stamp cancelling ink	..	10,000 lbs./annum

Capital expenditure		Rs.	Rs.
Equipment	..	1,17,000	
Building	..	41,200	
			1,58,200
		Say ..	Rs. 1,60,000
Direct expenses per annum			
Raw materials	..	59,000	
Direct wages	..	14,220	
Containers	..	40,000	
Power	..	3,000	
Contingencies	..	5,000	
Depreciation @ 10%	..	16,000	
			1,37,220
Indirect expenses			
Establishment	..	21,900	
Promotion of the project @ 2½% on Rs. 2,00,000 (Capital expenditure plus running expenditure for 3 months).	..	5,000	
			26,900
Selling expenses	..	..	4,200
Interest on capital @ 4% on Rs. 2 lacs			8,000
Insurance @ 2½% on Rs. 2,19,000			5,475
Total cost of production of 1,60,000 lbs. of inks	..	..	1,81,795