

Center for investment services-
Golestan Province

Financial-technical Pre-feasibility Study Brief

Plan topic: lactose powder

ISIC CODE: 15201282

**Location: Special economic zone of Atrak, golestan
province**

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1-Project introduction

1-1- project title: **product lactose powder**

1-2- projects proposed location: **iran and other country**

1-3- product & Annual production capacity:**lactose powder , 1000 ton**

1-4- Total required capital funding: (Rials, and Dollars value):

64850 million rials (total)

- Working Capital:**8847 million rials**

- Constant capital:**56003 million rials**

1-5- Type of the stock material: **milk and cheesy water(whey)**

1-6- Domestic access to stock material in percentage:**100%**

1-7- Staff requirements:**22 person**

1-8- Rate of output at the breakeven point:**49%**

1-9- Internal (gross) Rate of Return:**38%**

1-10- Technical knowledge acquirements procedures: **Internal**

2-Tecnichal details

2-1- product introduction: Lactose is a disaccharide. It is a sugar composed of galactose and glucose and has the formula $C_{12}H_{22}O_{11}$. Lactose makes up around 2–8% of milk (by weight). The name comes from *lac* (gen. *lactis*), the Latin word for milk, plus the suffix *-ose* used to name sugars. The compound is a white, water-soluble, non-hygroscopic solid with a mildly sweet taste. It is used in the food industry.

2-2- Product application: molecules, two simple sugars: one molecule of galactose (sugar with 6 atoms of carbon) and a molecule of glucose (or dextrose whenever D-glucose is indicated). Lactose is **the milk sugar**, it is naturally present in mammal milk.

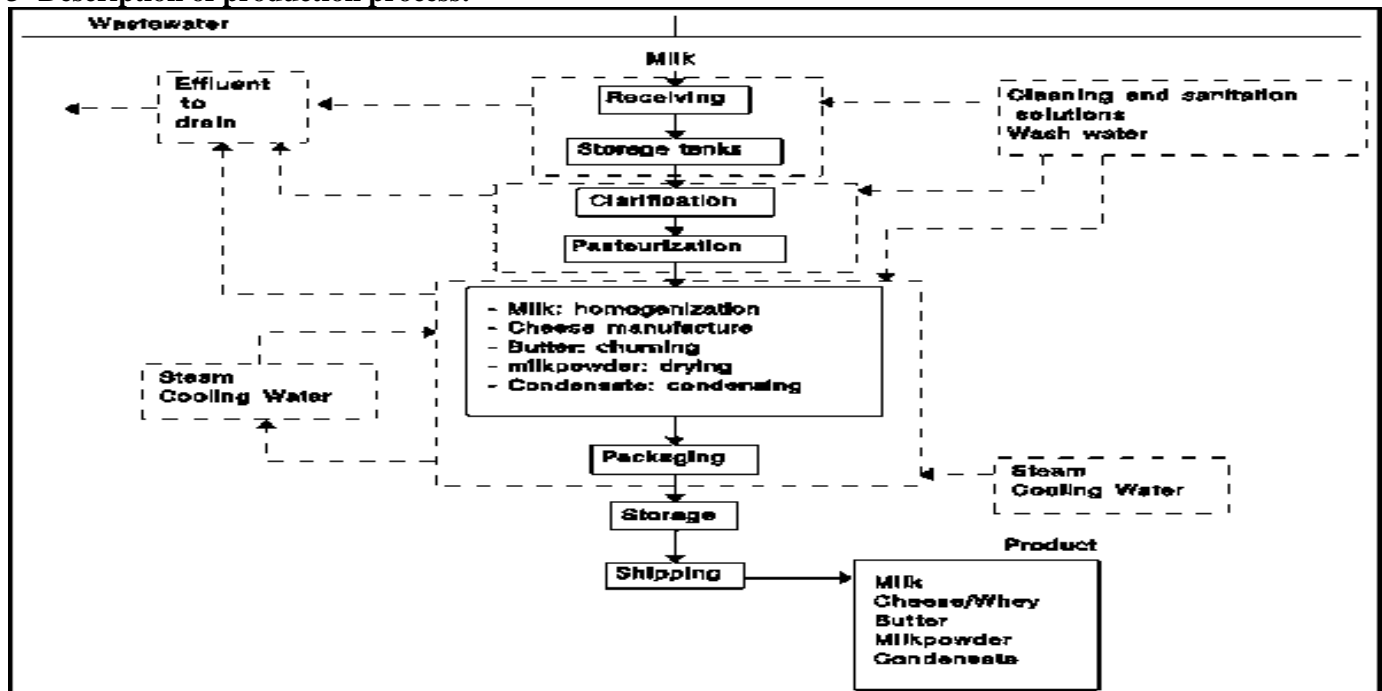
Lactose is the main component of **whey**, which is the liquid obtained from milk coagulation. It is extracted by crystallisation.

After separation of fat and caseine precipitate, whey may be obtained. **This whey has a very high lactose content.** Lactose is then evaporated and transferred to crystallisation tanks. Hard and sandy crystals of lactose hydrate are then obtained. These crystals are then separated, decanted and washed to purify lactose. Through this phase, lactose content increases.

Lactose may be digested only if it has been split beforehand into two by an enzyme: **lactase**. This enzyme is naturally present in the bowel and allows the digestion of lactose.

Different grain sizes may be obtained through an adapted crushing. Grain sizes are classified by mesh. This is the main interest of lactose. As a result, FIT may offer **the right grain size adapted to your applications.**

2-3- Description of production process:



3-Economic situation

3-1- Estimated product demand:1.9 million tons

3-2- Export rate in the past 3 years:no export

3-3- current annual local and domestic production rate: no production

3-4- Import rate in the past 3 years:1394=1.4million tons , 1395=1.5million tons, 1396=1.6million tons

4-Financial studies

4-1- Capital Expenditures (*capital outlays*):

Constant capital:

description	Value in million Rials	Value in Euros	Total sum
Land acquisition	5000		5000
Buildings construction and improvements on the land	24800		24800
facilities	3090		3090
Machinery and equipments	13650		13650
Vehicles	2800		2800
Lab, office, and safety equipments	1118		1118
10%(up) - Unexpected costs	5045		5045
percost	500		500
Total fixed capital	64850		64850

Exchange rate parity is considered Euro according to Iran Central Bank (Bank Markazi) official report.

Working Capital

description	Value in million Rials	Value in Euros	Total sum
Stock material (2 months)	6844		6844
salaries and wages (2 months)	1461		1461

Other (2 months)	542		542
sum	8847		8847
Total sum in million Rials			8847

4-2- Land acquisition:

description	Area (sq m)	Unit Value in Rials	Total sum in million Rials
Land	5000	1000000	5000

4-3- Buildings construction and improvements on the land:

description	Area (sq m)	Unit Value in Rials	Total sum in million Rials
Product salon	1000	15000000	15000
stors	500	10000000	5000
Laboratory-Workshop	100	15000000	1500
cold storage (fridge)	100	15000000	1500
Office, services building	100	12000000	1200
Improvement on the land	2000	300000	600
Sum	3800		24800

4-4- Facilities:

description	Technical details	Unit Value in million Rials	Total sum in million Rials
Generator 40exploration	1	80	80
Electrical Installations	1	1000	1000
Electrical Switchgear	1	80	160
Water supply facilities	1	200	400
Source of fuel	1	80	80
Water Source	1	150	150
Heating ,cooling installations	1	600	1200

Fuel system	1	100	100
Fire Suppression System	1	200	200
Sewage treatment system	1	600	600
sum	10		3090

4-5- Machinery and equipment:

description	quantity	Unit value in Euros	Total value in Euros	Unit Value in million Rials	Total value in million Rials	Total sum in million Rials
tank	1			100	100	100
Electric centrifugal pump	5			100	500	500
Stainless steel heat exchanger	2			400	800	800
measurements of volume	1			200	200	200
Storage tank	2			300	600	600
Electro pump	3			50	150	150
Pasteurizator	1			900	900	900
Separators	2			1000	2000	2000
Homogenizer	1			800	800	800
Three-chambered tank	4			200	800	800
Storage tanks	2			300	600	600
packer Machine	2			800	1600	1600
Terry Blender	1			150	150	150
Water cooler system	1			700	700	700
Washing System	1			800	800	800
Refrigeration equipment above zero	1			1500	1500	1500
Incubation equipment	1			800	800	800
Machines Shrink(packing	1			100	100	100
Labeling	1			50	50	50

spare pieces	1			500	500	500
sum						13650

4-6- Vehicles:

description	quantity	Unit Value in million Rials	Total sum in million Rials
Nissan Pickup		600	600
3-ton forklifts		600	600
Refrigerated truck		1600	1600
sum			2800

4-7- Lab, office, and safety equipments:

description	quantity	Unit Value in million Rials	Total sum in million Rials
lab equipment		300	300
Office Supplies		716.4	716.4
safety equipments		101.6	101.6
sum			1118

4-8- Pre implementation cost:

description	Total sum in million Rials
primary studies and establish a company	100
Preliminary cost of the project	100
Accommodations costs	200
Educational cost	100
sum	500

Product cost calculation:

4-9- Type, quantity, and cost of the stock material and required packaging:

description	unit	Consumption rate	Total value in Euros	Value in Rials	value in exchange	Total sum in million Rials
cow milk	tons	3000		12170000		36506
Whey	tons	1334		20000000		2668

plstic dishes	number	1000000		2000		2000
Nylon , label	Kilo gr	2000		80000		160
carton	number	100000		3000		300
sum						41634

4-10- Human resources:

description	quantity	Monthly wage	Monthly wage sum in million Rials	Total sum annual salaries in million Rials
Administration staff	1	40000000	40	480
Management staff	3	18000000	54	648
Office worker	3	16000000	48	576
Manufacturing labor				
- Expert	3	25000000	75	900
- Skilled	5	22000000	110	1320
- Unskilled	10	16000000	160	1920
- 50% welfare				2922
sum	25			8766

4-11- annual fuel and energy consumption:

description	unit	Consumption rate	Unit Value in Rials	Total sum in million Rials
Electricity	KWh	50000	1500	75
Water	M^3	40000	1500	60
petrol	litr	3000	10000	30
Gasoline	litr	10000	5000	50
Gas	M^3	20000	2000	40
sum				255

4-12- annual depreciation expenses and Repair and maintenance costs:

description	Asset value in million Rials	Deprecation		repair and maintenance	
		Percentage	quantity	Percentage	quantity
Buildings	24800	7	1736	2	496

construction and improvements on the land					
facilities	3090	10	309	5	155
Machinery and equipment	13650	10	1365	5	683
Vehicles	1118	20	224	5	56
Lab, office, and safety equipment	2800	20	560	5	140
10%(up) - Unexpected costs	5045	10	505		0
sum			4699		1530

4-13- Annual earnings forecast:

description	Production rate	Unit sale in Rials	Earning in million Rials	Earning in Euros	Total sum in million Rials
Edible lactose(80,200)	600	80000	48000		48000
Pharmaceutical lactose(80,200)	400	90000	36000		36000
sum					84000

- full price calculation is based on 56680 Rials per kilograms.

Sale price of the similar products available in the market is 200000 Rials per kilograms

5- project justification:

- A) Financial profitability
- B) Decrease environmental pollution
- C) Financial : 1)return on investment 2.5 years 2)IRR =38% 3)bep=38% 4)rate of return on investment 29%
- D) Increase productivity

6- qualifications, benefits, and incentives of implementing the project in the region:

- 1)Many milk factory in iran
- 2)(many)Animal husbandry , dairy industry

7- Contact information:

Project plan Consultant :

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