

Form1.

Summary of plan of bone gelatin production

1. Introduction to products or services

1.1. The goal of plan

The main goal of this plan is to establish the bone gelatin production unit. This plan will be exploited from 2018 with 75 personnel and 70% of the practical capacity in 3 working shifts of 8 hours and 300 day annually and will reach its 100% of the practical capacity by 2020.

1.2. Characteristics and advantages

Gelatin is a protein product which is obtained from different sources such as livestock protein sources and collagens like bone and strap tissues, pig skin, non-edible fished meat, fish flesh and other protein sources; but since sources such as fish meat and birds meat are edible directly and costly, generally the gelatin is produced from skin, meat and bone wastes or non-edible protein sources which are produced as granulated powder. Based on viscosity, gelatin is graded in **bloom**. The more is the Bloom number; more would be the grade and price. Generally, gelatin is produced as powder or granulated material. It is brownish yellow and it is relatively odorless and tasteless and is transparent fragile, physically. Gelatin is soluble in warm water, glycerol and acetic acid and insoluble in organic solvents. Gelatin absorbs water in 30-35°C about 5-10 time more than its weight and becomes a liquid jelly. The jelly point of gelatin of the fish is lower than that of gelatin obtained from pig and cow. Gelatin is an amphoteric material, meaning that neither is acidic nor is alkaline. Its isoelectric point is 4.8-9.4. Gelatin produced in acidic process has higher isoelectric point than the one produced in alkaline process.

1.3. Custom fees

Table1. Bone gelatin custom fees and tariffs

Description	Tariff code	Fees
Gelatin	3503000	26

1.4. ISIC code

The plant considered is for producing gelatin powder. The ISIC code related to this product is 1549 in the department of industry, mine and commerce systems in subgroup of food product (not classified elsewhere) and its measurement scale is ton.

Table2. Product ISIC code

ISIC code	Description	Scale
1549412576	Edible soluble gelatin powder	Ton

1.5. Introduction to products application

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Gelatin is applied to different industries widely. Generally, the gelatin consumptions are as follow:

Food application:

Among its major applications is in preparing sweets, candy, marmalade, ready-to-use deserts and so forth. Also, it is used in dairy and meat products and frozen foods as protecting colloids. In deserts, about 8-10% of the dry weight of the desert is gelatin. 0.3-0.5% of yogurt, 2-3% of the sweets is also of gelatin.

Medical applications

Gelatin is used in soft and hard gelatin capsule as cover and in binder as carrier in form of the absorbable gelatin film, absorbable spongy gelatin in eye drop as well as protein complement in foods for malnutrition. The reason for making use of gelatin in medical industries is that gelatin is one of the purest and most completed proteins. Also, it is absorbed quickly. Majority of amino acids necessary for body cells are in gelatin and the only amino acids containing sulfur are not contained in gelatin. Generally, there are 18 amino acids in gelatin; i.e. from 10 essential amino acids there are 9 contained in gelatin.

Industrial applications

Gelatin is used in industries such as glue, military, money paper, anti-humidity tools and so forth. The gelatin based animal glues are used for sticking 2 organic parts such as fruit and vegetable to each other. Also, in textile industries, gelatin is used as a rigid material, coating, cotton, leather and silk and wool complement. In paper industries, this is used as self-copying papers. Therefore, a thin layer of the gelatin is distributed on the back of paper. This gelatin is in form of microcapsules.

When the paper is under pressure, these capsules are broken and the gelatin transfers to the other paper which is in form of copying the first paper on the other. In photograph, gelatin is used in photo paper (colored and gray scale) as well as film production (35 mm films, APS, radiology and so forth).

2. Suggested sites

Based on surveys, the cities such as Aligudarz and Khoramabad are suitable sited for establishing this unit

3. Raw, auxiliary materials and consumables

The raw materials include cow bone, active coal, aluminum sulfate, aluminum sodium hydroxide, cellulous pulp, chloridric acid, oxygenated water, lime, sodium hydroxide and packing.

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4. Sales plan and target market (local and foreign)

The target market at first is to supply locally in sections and then for additional production, the export would be done to Iraq and other eastern neighbors.

Table3. Products production and sales plan

Description	2018	2019	2020	2021	2022
Production capacity	70%	80%	90%	100%	100%
Production level (ton)	350	400	450	500	500
Sales level (m.Rial)	1400	160000	180000	200000	200000

5. Annual nominal and practical capacity

Nominal capacity

The Nominal capacity is the production in ideal situation. This capacity is registered by the machineries manufacturers and is based on the engineering and designing principles.

5.2. Practical capacity

The practical capacity is the maximum available capacity in typical situation which is considered as a percentage of the nominal one. Based on the fact that machineries are not capable of producing with 100% of capacity, considering the time for repair, maintain, failure and etc., the practical capacity for this unit is 500 ton annually.

6. Production procedure and technology



7. Investment costs

7.1. Fixed investment

Table4. Investment costs

No.	Description	Costs			
		Dollar	Rial	Rial	Total

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2	Land	0	0	1500	1500
3	Landscaping	0	0	1380	1380
4	Building construction	0	0	14935	14935
5	Machineries and equipment	4266500	147322	0	147322
6	Branches and installation	0	0	4720	4720
7	Vehicles	0	0	3208	3208
8	Service and official equipment	0	0	270	270
9	Other and unpredicted costs (5% of above costs)	0	0	8667	8667
10	Pre-exploiting costs	0	0	23100	23100
11	Total fixed investment costs	4266500	147322	57779	205102
12	Working capital in 100% of capacity	0	0	23753	23753
13	Total investment costs	4266500	147322	81533	228855

7.2. Working capital

Table5. Working capital

No.	Description	Day	1 st year	Base year
1	Raw and auxiliary materials	60	5135	7335
2	Current and produced products inventory	30	5257	6963
3	Debts	30	5257	6963
4	Cash	30	2080	2492
Total			17729	23753

8. Production costs

Table6. Production costs

Description	Total costs (m.Rial)
Raw and packing material	44012
Energy	9637
Repair, maintenance and spare parts	7728
Personnel's salary	15240
Unpredicted (6%)	4597
Depreciation	16256
Insurance	341
Sales and official costs	2000
Total operational and non-operational production costs	99810

9. Economic indices

Description	Amount-measurement scale
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NPV	951796 m Rial
IRR	31.97%
PBP	4.92 years equal to 2020

Plan and Budget Organization of Lorestan province

PROJECT PROFILE – SUMMARY SHEET

Project Introduction

1. Project title: bone gelatin production

2. Sector : producing foods and drinks

Sub sector: producing other foods not classified elsewhere

3. Products/Services: gelatin powder production

4. Location: ... Free zone Economic special zone Industrial Estate Main Land

5. Project description:

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6. Annual capacity: 500000 kg

Project Status

7. Local / internal raw material access %

8. Sale : 80% locally

- Anticipated export market 20 %

9. Construction Period 24 month

Beginning of activity: 03/2016

In-site beginning of activity: 03/2016

End of project: 02/2017

Commercial activity beginning: 03/2017

Project Status

10. Project Status :

- Feasibility study available? Yes No
- Required land provided? Yes No
- Legal permissions (establishment license, foreign currency quota, environment, etc) taken? Yes No
- Partnership agreement concluded with local/foreign investor? Yes No
- Financing agreement concluded? Yes No
- Agreement with local / foreign contractor(s) concluded? Yes No
- Infrastructural utilities (electricity, water supply, telecommunication, fuel, road, etc) procured? Yes No
- List of know-how, machinery, equipment, as well as seller / builder companies defined? Yes No
- Purchase agreement for machinery, equipments and know- how concluded? Yes No

Financial Structure

11. Financial Table

Description	Local Currency Required			Foreign Currency Required Million Dollar	Total Million Dollar
	Million Rials	Rate	Equivalent in Million Dollar		
Fix Capital	57779	34530	1.67	4.27	5.94
Working Capital	23753	34530	0.69	0.00	0.69
Total Investment	81533	34530	2.36	4.27	6.63

- Value of foreign equipment/machinery 4.27 million dollar
- Value of local equipment/machinery 0 million dollar
- Value of foreign technical know- how 0 million dollar
- Value of local technical knows- how 0 million dollar
- Net Present Value (NPV): 95179.6 million Rial for Year
- Internal Rate of Return (IRR) 31.97%
- Payback Period (PP) 4.92 Year (2020)

General Information

12. Project Type : Establishment Expansion and completion

13. Company Profile:

- Name (legal /natural persons) : Sepinud Shargh institute of strategic studies
- Company Name : engineering consultation
- Address : unit 5, No. 3, Boostan 3 St., Pasdaran, Tehran
- Tel: 02122584901 Fax: 02122580343
- E-mail: info@sepinud.com Web site: www.sepinud.com
- Local entrepreneur : private sector public sector other

Please attach follow documents if available

- Pre-feasibility study ■
- Feasibility study □
- Legal permissions (establishment license, foreign currency quota, environment, etc) □

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