

Form1. Summary of glass fiber production unit plan

1. Introduction to products or services

1.1. The goal of plan

The main goal of this plan is to establish glass fiber production unit in Lorestan province. This plan will be exploited from 2018 with 90 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

Glass fibers are very thin strings of the glass with fixed diameter and infinite length. Glass fibers are produced in diameter of 5-25 μm . they are structurally different from glass wool in that the glass wool strings' diameter is not uniform and its length is limited. Also, in glass wool production process the glass structure is fragile due to the cooling process and the glass wool is not of tensile strength. This difference makes the difference between applications of glass wool and glass fibers; such that, the fibers are used in tensile strength enhance and composite reinforcement. But, glass wool is used as thermal insulator. Of course, the glass fibers can be used as thermal insulator too. The fibers are applied to different polymer products as reinforcement factor. The composite materials are known as GRP or GFR are among the well-known glass fiber-made products. Glass fibers were produced in mass amount in 1938 by Owens-Corning Company. The glass fibers are in different forms as following:

A-glass: combined with alkaline lime in which the alkaline percentage is more than 4% for particular applications. Where high tensile strength, stability and electrical resistance is not necessary to high extent, these fibers are used.

E-glass: combined with Aluminum-Borosilicate in which the alkaline percentage at last is 2%. This fiber is used in FRP products and electronic parts which need tensile strength and electrical resistance to high extent.

C-glass: combined with alkaline lime in high percentage of oxide. This is used in environments with chemical factors with high corroding power. Therefore, they are used in composites in acidic environment.

F-glass: combined with Borosilicate with powerful dielectric properties used for electrical applications

AR-glass: combined with Zirconium silicate with strength against alkaline. This type of fibers is used in cement structure.

R-glass: combined with aluminum silicate without calcium and magnesium oxides with high mechanical strength. When high mechanical strength in acidic situation is needed, these fibers are used.

Form1. Summary of glass fiber production unit plan

SR-glass: combined with magnesium aluminum silicate and it is useful for textile or strengthening when the high tensile strength in high temperature and strength against corrosion is required.

Among above compounds, the E-glass fibers are mostly used in glass products. Today, about 99% of the glass fibers products are from E-glass and for this reason, the E-glass fibers are called general purpose fibers.

1.3. Custom fees

Table1. Glass fibers custom fees and tariffs

No.	Description	Tariff code	Fees %
1	Chopped strands with length no more than 50 mm	70191100	5
2	Roving	70191200	5
3	Others as string	70191910	5
4	In form of Staple fibers	70194990	5

1.4. ISIC code

The plant considered is for glass fibers production. The ISIC code related to this product is 2610 in the department of industry, mine and commerce systems in subgroup glass fibers and its measurement scale is ton.

Table2. Product ISIC code

No.	ISIC code	Description	Scale
1	260412315	Glass fiber	Ton

1.5. Introduction to products application

About 90% of the glass fibers are used for different matrices' strengthening. By matrix it means plaster, cement, thermoplastic polymers, resin and bitumen. One may state that producing the FRP and glass fiber constitutes the largest spectrum of the glass fibers products.

Other applications are filtration, producing fireproof textile, and printed circuits, boat and other marine vessels, their parts, industrial ropes, parts and glass fiber products, polyester sheets, humidity insulator, thermal insulator, optic fiber, sport instruments, military and aerial tools and body parts.

2. Suggested sites

Based on surveys, the cities such as Khoramabad, Dorud and Pol Dokhtar are suitable sited for establishing this unit.

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3. Raw, auxiliary materials and consumables

Raw materials are SiO_2 , Al_2O_3 , B_2O_3 , CaO , MnO , $\text{Na}_2\text{K}^+\text{O}_2\text{O}$, TiO_2 , ZrO_2 , Fe_2O_3 .

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 neighbors.

Table3. Products production and sales plan

Description	2018	2019	2020	2021	2022
Production capacity	70%	80%	90%	100%	100%
Production level (t)	8400	9600	10800	12000	12000
Sales (m.Rial)	420000	480000	540000	600000	420000

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. Nominal production of this product is 15000 t annually in 300 days.

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. Considering that machineries are not capable of 100% production, based on the time for repair, maintains and failure etc. the practical capacity for this unit is 12000 ton annually.

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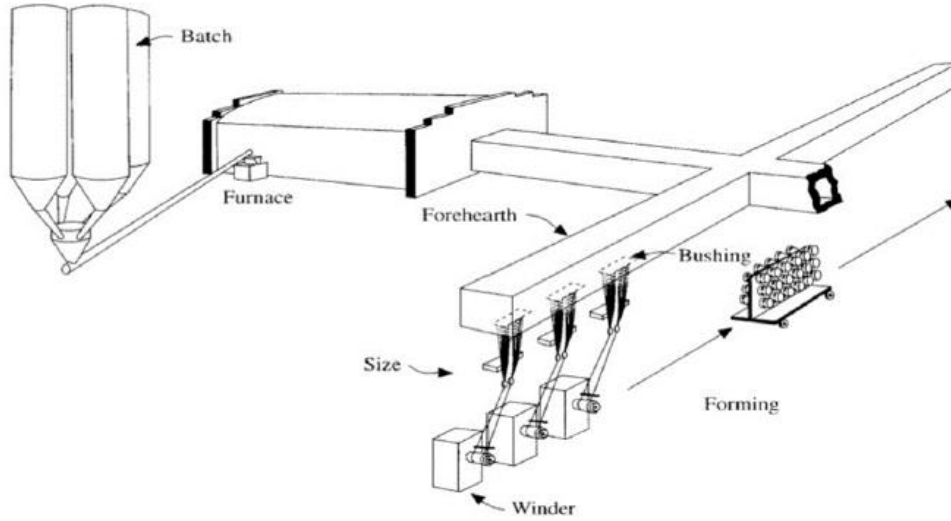


Figure1. Glass fiber production process

7. Investment costs

7.1. Fixed investment

Table4. Investment costs

No.	Description	Costs			
		Dollar	Rial	Rial	Total
1	Land	0	0	2500	2500
2	Landscaping	0	0	1868	1868
3	Building construction	0	0	20715	20715
4	Machineries and equipment	5000000	172650	17765	190415
5	Branches and installation	0	0	20752	20752
6	Vehicles	0	0	1860	1860
7	Service and official equipment	0	0	310	310
8	Other and unpredicted costs (5% of above costs)	0	0	11921	11921
9	Pre-exploiting costs	0	0	1100	1100
10	Total fixed investment costs	5000000	172650	78791	251441
11	Working capital in 100% of capacity	0	0	98822	98822
12	Total investment costs	5000000	172650	176613	349263

7.2. Working capital

Table5. Working capital

No.	Description	Day	1 st year	Base year
1	Raw and auxiliary materials	30	19293	27561

Form1. Summary of glass fiber production unit plan

2	Current and produced products inventory	30	23357	32765
3	Debts	30	23357	32765
4	Cash	30	3705	4731
Total			96712	97822

8. Production costs

Table6. Production costs

Description	Total costs (m.Rial)
Raw and packing material	330736
Energy	5670
Repair, maintenance and spare parts	11074
Personnel's salary	17341
Unpredicted (6%)	21889
Depreciation	21947
Insurance	468
Sales and official costs	6000
Total operational and non-operational production costs	415125

9. Economic indices

Description	Amount-measurement scale
NPV	265397 m Rial
IRR	40.88%
PBP	4.44 years equal to 2020

PROJECT PROFILE – SUMMARY SHEET

Project Introduction

1. Project title: glass fiber production unit establishment
2. Sector: producing other non-metallic mineral products Sub sector: glass and glass products production
3. Products/Services: glass fiber
4. Location: ... Free zone <input type="checkbox"/> Economic special zone <input type="checkbox"/> Industrial Estate <input checked="" type="checkbox"/> Main Land <input type="checkbox"/>
5. Project description: The main goal of this plan is to establish glass fiber production unit in Lorestan province. Glass fibers are among the most important raw materials used in composite industries in order to mechanically strengthen. This material is a mineral one (Silica and other minerals) and is widely used in automotive, pipe making industries and industrial insulators and building and composites (mixing the polymer and glass fiber). Based on lack of the significant producer in Iran, the main goal of this plan is to produce high-quality glass fiber locally in order to supply for the local demands and preventing from currency outflow for importation. It is necessary to note that at present, approximately all local demands are met by importing (from china in major).
6. Annual capacity: 12000 t

Project Status

7. Local / internal raw material access 100 %
8. Sale: 80% locally - Anticipated export market 20 %
9. Construction Period 2 Year Beginning of activity: 07/2016 In-site beginning of activity: 07/2016 End of project: 02/2018 Commercial activity beginning: 03/2018

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	78791	34530	2.28	5.00	2.28
Working Capital	98822	34530	2.83	0	2.83
Total Investment	176613	34530	5.11	5.00	5.11

- Value of foreign equipment/machinery 5 million dollar
- Value of local equipment/machinery 0.51 million dollar
- Value of foreign technical know- how 0 million dollar
- Value of local technical knows- how 0 million dollar
- Net Present Value (NPV): 265397 million Rial for 12 Year
- Internal Rate of Return (IRR) 40.88%
- Payback Period (PP) 4.44 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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