

Plan: light autoclaved concrete production

Introduction to product:

The main goal of this plan is to establish the light autoclaved concrete production factory in Lorestan Province. The ISIC code 2695512366 of the product is from the non-metallic mineral products manufacturing group (26) and concrete, cement and plaster products manufacturing subgroup (2695).

Light concrete is imported and exported under the chapters of tariff 6810 of Iran Custom regulation entitled cement, concrete and artificial rock-made objects, even reinforced materials, under the tariff 68101110 of light concrete (based on crushed shells, slag or lava grained). The main conditions on their importing is to take the permission from the department of commerce and ministry of industries and mines, paying 15% of the importing fees in 2016 (custom fee is 4% and commercial profit is 11%).

Autoclaved aired light concrete (AAC) is a type of concrete which is lightened and its volumetric unit weight range is 300-800 kg.m⁻³ due to its spongy structure. Since this concrete is not used as with typical concrete, it is produced in factory in different sizes and depending on the consumption in form of non-reinforced or reinforced panels and transported to the site. The white color of this concrete tends to the milky, pink or gray depending on its impurity. However more than 2/3 (75%) of its volume is hollow space due to the porosity, but it has good stress strength. Its low volumetric mass also caused that its thermal conductivity is reduced and is used as a good thermal insulator. The porous and uniform texture of this concrete has advantages and characteristics which are mentioned later. Low specific weight, solid and uniform structure, changeability to smaller parts, high thermal strength, fireproof feature and lack of firing, sound insulation, humidity insulation, lack of clay usage and prevention from soil destruction, lack of creating construction wastes, reduction of air pollution due to lower fuel consumption for cooling and heating the building and making use of the wastes of some industries in production process are its features.

Introducing the product's application

The AAC porous concrete products can be divided to reinforced and non-reinforced classes:

1. Light non-reinforced concrete: it non-armature type, AAC blocks in form of brick, block and typical tile are used in load carrying or non-porter application. In the blocks mixture, one can use a wide spectrum of materials such as typical cement, sand, plaster and soil, glue and so on. It is more suitable to use special glues for this concrete; because in addition to higher strength, reduced the cracks thickness and smoothens the walled blocks surface and as a result, there is no need to lining.
2. Reinforced light concrete: the autoclaved aired concrete-made reinforced panel can be classified in 3 classes: a) reinforced panels for ceiling and floor, b) reinforced panels non-porter walls system, c) reinforced panels for load-carrying walls and ceiling system (vertical panels).

Plan suggested sites

The raw materials necessary for this plan are silica sand, cement, aluminum powder, lime and concrete lubricator among which silica sand highly contributed to the plan. All raw materials required for this plan are provided from local sourced and in order to reduce the production costs, it will be better establish the factory near the silica sand sources.

Raw, auxiliary materials and consumables

This concrete is reinforced in chemical reactions between silica (SiO_2) and lime (CaO) like lime sand. Hydrated lime or cement is prepared from silica sand or quicklime. Therefore, this product is based on the lime or cement and its production formula is also different based on the cement of main source of the lime. The autoclaved concrete structure is consisted of the following raw materials:

1. Silica-based materials (silica sand or silica ash or fume)
2. Cement
3. Lime
4. Porous-making materials (e.g. aluminum powder)
5. Water
6. Additives

Sales plan and target market

The products price as the factory price for sale is as follow. Based on the lack of sufficient supply and demand level, the target market will be local industries.

Table1. Sales price

#	Description	practical capacity(t)	nominal capacity(t)	unit price	Annual Sale (mRial)
1	light autoclaved concrete production	180,000	162,000	1,250,000	225,000
Total		180,000	162,000		225,000

Annual nominal and practical capacity

Based on the investigations of diverse units as well as the plan economic studies, it is confirmed that the optimal production capacity is about 180000 m^3 per year. Considering unpredicted and unexpected factors of process stop as well as maintaining and repairing processes, the plan practical capacity for this unit is 90% of the nominal one equivalent to 162000 m^3 .

Manufacturing procedure and technology

AAC light concrete production process is in a fashion that, at first, the water required for casting which is about 55% of the all dry materials is introduced to the mixer and then silica materials (or sand) is mixed to form sludge. Next, lime and cement and finally the aluminum powder

(mixed with water elsewhere, previously) are introduced with high speed to the mixer (in particular cases, calcium sulfate is added).

Investment costs

The fixed investment costs for this plan is 281 billion Rials and the working capital is equivalent to 14 billion Rials estimated.

Description	Total Cost(m.Rial)	%
Land purchase	7,000	2%
Site preparation and development	2,381	1%
Civil works, structures and buildings	36,424	12%
Machinery and equipment	207,416	70%
Branches And Installation	10,276	3%
Vehicles	800	0%
Service equipment	87	0%
official equipment	387	0%
Other and unpredicted costs (5% of above costs)	13,239	4%
Total FIXED ASSETS	278,009.59	94%
pre-production expenditures	2,915.18	1%
TOTAL FIXED INVESTMENT COSTS	280,924.77	95%
Working capital in 100% of capacity	14,139.91	5%
Other assets	0	0%
TOTAL INVESTMENT COSTS	295,064.67	100%

Plan production costs

The annual cost of this plan is 115.3 billion Rials estimated.

#	Description	Total Cost(m.Rial)
1	Raw and packing material	59,787
2	Personnel's salary	9,938
3	Energy	9,449
4	Building and livestock insurance	534
5	Repair, maintenance and spare parts	10,308
6	Marketing and Advertising	900
7	Unpredicted	900
8	Depreciation	23,486
Total operational and non-operational production costs		115,302

Economic indices

<i>Description</i>	<i>Amount-measurement scale</i>
<i>NPV</i>	<i>147318 m Rial</i>
<i>IRR</i>	<i>31.00%</i>
<i>PBP</i>	<i>2.56 years</i>

Plan and Budget Organization of Lorestan province

PROJECT PROFILE – SUMMARY SHEET

Project Introduction

1. Project title: **light autoclaved concrete production**

2. Sector: non-metallic mineral products manufacturing group
Sub sector: concrete, cement and plaster products manufacturing

3. Products/Services: **light autoclaved concrete**

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

5. Project description:

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6. Annual capacity: 180000 t/year

Project Status

7. Local / internal raw material access 100 %

8. Sale: 100% locally
- Anticipated export market 0 %

9. Construction Period 24 month
Beginning of activity
In-site beginning of activity:
End of project:
Commercial activity beginning:

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	97495.77	31000 R for each Dollar	3.15	5.92	9.07
Working Capital	14114.60		0.46	0	0.46
Total Investment	111610.37		3.60	5.92	5.92

- Value of foreign equipment/machinery 5.92 million dollar
- Value of local equipment/machinery 0.77 million dollar
- Value of foreign technical know- how million dollar
- Value of local technical knows- how million dollar
- Net Present Value (NPV): 147318 Million Rial for 10 Year, discount rate: 20%
- Internal Rate of Return (IRR) 31%
- Payback Period (PP) 39%

General Information

12. Project Type : Establishment Expansion and completion

13. Company Profile:

-Name (legal /natural persons):

-Company Name:

-Address:

-Tel: Fax:

-E-mail: Web site:

-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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