In the name of God

Pre-feasibility study form

Plan Name: Phosphoric Acid Production

Project Owner: Karimi

Consulting Company: Kavosh Consultants Co.

Project Address: Shahrekord Industrial Estate

Initial date: 2019

Update 2021

12-SUMMARY OF THE FEASIBILITY STUDY

General Specification
Name of The Project: Feasibility studies of Phosphoric acid
Project Capacity: 10000 ton per year
Personnel Number: 37 people
Working Days: 288 Days
Product Usage: Additives, Fertilizers, Water Treatment, Animal Feed, Pharmaceuticals, Medical Applications, Soap and Non Soap Cleaners
Marketing
Product Global Price: 212 Euro per ton
Domestic Demand: 8749.5 ton
Domestic Production: 456.50 ton
Import: 8,293,099 Kg
Export: 51825 Kg
Technical Study
Land Area: 10000
Building Area: 3395
Main Raw Materials: Sulfuric acid, phosphate concentrate
Supplying Place of Raw Materials: Local-Import
Power Requirement: 2,500,000 (kwh)
Water Requirement: 60000(m^3)
Fuel Requirement: 1,800,000 (m^3)
Economical & Financial Study
Fixed Investment Cost (Rail's& other Currencies): 373100 Million Rials- 1414331 Euro
Working Capital: 9498 Million Rials- 41534 Euro
Total Investment Cost: 382298 Million Rials- 1449196 Euro
Annual Sale: 190000 Million Rials- 720243 Euro
Net Present Value(NPV): 283975 Million Rials- 1076478 Euro
Break Even Point(BEP): 18353 Million Rials- 69572 Euro
Internal Rate of Return(IRR): 25%
Investment Return Period: 4 Years
Investment Sources Ratio

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Introduction

Feasibility studies are expert studies that are carried out prior to the implementation of economic investment plans. In these studies, from the market, technical, financial and economic point of view, the plan is analyzed and its results used as a basis for investor decision making.

The present report is a feasibility study of Phosphoric acid production. These studies have been prepared in the framework of feasibility studies methodology and according to the above methodology, the economic capacities and volume of investments required to execute the project will be estimated and presented so that investors and interested stakeholders can obtain all the information needed. Earn money and start investing in open-ended, open-minded economic investment. It is hoped that these auxiliary studies, however small, will contribute to the development of our country.

1 -Product Introduction

Phosphoric acid is a chemical that has a wide range of uses. Here we will discuss the structure, chemical formula, and consumption of phosphoric acid.

Properties of phosphoric acid

Phosphoric acid is a mineral acid with the chemical formula H_3PO_4. Also known as orthophosphoric acid. Its Iopac name is actually phosphoric acid trihydroxide, but fortunately it is almost never used.

It can be formed by two processes: wet and heat. The first process is more common and forms a lower purity phosphoric acid form that is acceptable for industrial use. For use in the food and cosmetics industries, purer forms are obtained by the thermal method. The X in this reaction can be a halogen (fluorine, chlorine, boron) or a hydroxide ion.

The thermal process for the preparation of phosphoric acid involves the dissolution of phosphorus pentoxide in dilute phosphoric acid. This process produces a very pure form of phosphoric acid that can be used for more sensitive applications.

Structure

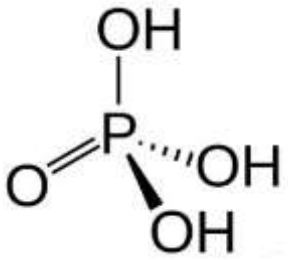
Phosphorus atoms are bonded to a phosphoric acid molecule with 4 oxygen atoms in a double bond and three other single bonds. Oxygen atoms bond to a single hydrogen atom with a single bond, so their capacity is satisfactory.

Pure unsaturated phosphoric acid is a white crystalline solid under normal conditions. This acid melts at 42.35 ° C and boils at 158 ° C. Its solid density is 2.03 g / ml and the most commonly used form is 85% solution with a density of 1.685 g / ml. Phosphoric

acid is a mineral acid that can form chains of its own molecules. This reaction typically occurs at high temperatures. The loss of water molecules gives rise to the formation of classes of phosphoric acid known as pyrophosphoric acid and meta phosphoric acid.

Metaphosphoric acid is a solid glass material and is the least aqueous form of phosphoric acid available by heating. It is often used as a desiccant because it is very absorbent (it absorbs water). Only a very strong dryer converts metaphosphoric acid to phosphorus pentoxide.

Phosphoric acid, which is the most widely used chemical in the industry with phosphoric aci of the formula H_3PO_4, is widely used in fertilizer production. It is used as an additive in carbonated beverages and in the production of phosphate fertilizers, soap and non-soap cleaners, water treatment, animal feed and pharmaceuticals, animal and poultry feed additives (di and mono calcium phosphate), phosphate detergents, Wastewater treatment, production of phosphate fertilizers (most importantly), fire-fighting surfaces and flame retardants, as well as cleaning and scaling of metal surfaces. Phosphoric acid is a weak acid and can not be dangerous in normal conditions and for a short time.



1-1-Product Name and Code (ISIC 3)

According to information obtained from the Ministry of Industry, Mining and Commerce, the ISIC code is 2411412471.

1-2-Customs Tariff Number

According to the Export and Import Regulations Book of 2019 and the Chamber of Commerce, Industries, Mines and Agriculture website, Phosphoric acid has a customs tariff code of 280920.

1-3- IMPORT AND EXPORT CONDITIONS

Basic salaries include customs duties, taxes, patents, types of duties and other remuneration received from imported goods and are equivalent to 4% of the customs value of the goods. In sum, this is the income received from the business determined by the Board of Ministers in accordance with the relevant rules. The entry fee for Phosphoric acid with tariff 280920:

Heading Subheading No.	Description	SUQ	Input rights
28092010	Phosphoric acid of a purity lower than 55%	Kg	5
28092020	Phosphoric acid of a purity more than 55%	Kg	10

1-4- REVIEW AND PRESENTATION OF STANDARDS (NATIONAL OR INTERNATIONAL)

Edible or consumable phosphoric acid in the food industry has a special standard in terms of its importance and consumption in these industries, and its test characteristics have been formulated in National Standard 2884. Industrial phosphoric acid does not have a specific standard but the calcium, iron and sulfate measurement method is specified in standards 1068, 1081 and 1080.

Global standards for phosphoric acid are as follows:

Description	Standard
Phosphoric acid analysis	ASTM E358-95
Industrial application of phosphoric acid-sulfate measurement	ISO-2997
Industrial application of phosphoric acid-phosphorus measurement	ISO-3706:1976
Industrial application of phosphoric acid-calcium measurement	ISO-3707:1976
Industrial application of phosphoric acid-chloride measurement	ISO-3708:1976
Industrial Application of Phosphoric Acid - Oxygen and Nitrogen Measurement	ISO-3709:1976
Industrial Application of Phosphoric Acid - Sampling Guide	ISO-4285:1977

1-5- REVIEWING AND PROVIDING NECESSARY INFORMATION ON DOMESTIC AND GLOBAL PRODUCTION PRICES AS WELL AS GLOBAL PRODUCT PRICES

The price of phosphoric acid per tonne in the country is about 19 million rials.

The world price of phosphoric acid per tonne is about $ 250.

1-6- EXPLAIN THE USES OF THE PRODUCT

Application of phosphoric acid in food industry

Phosphoric acid is used in the production of acidic foods and carbonated beverages such as cola. The use of phosphoric acid in the material gives it a spicy flavor to the food, and since the chemical is mass-produced, it is readily available at an inexpensive, high-volume price.

The low price and high volume of its production make it superior to natural flavors such as ginger for its spicy or citric acid flavor than lemons and its lemon extract used for pickling.

Application of phosphoric acid in detergents

Phosphoric acid is used in the production of detergents to soften water. Soft water without the calcium (II) and magnesium (II) ions that form hard water, if not eliminated, will form hard water that will dissolve in soap with insoluble sediments, which may stain the clothes during washing.

Phosphate salts from phosphoric acid are widely used in cleaners as a builder. Most of the phosphorus compounds in the mixture are solid detergents, one of which is sodium triphosphate, $Na_5P_3O_{10}$, as a water softener, providing sodium triphosphate with calcium (II) and magnesium (II) ions and forming soluble components that are complex or general. These complexes prevent the reaction of calcium (II) and magnesium (II) with soap to prevent deposition.

Application of phosphoric acid in removing iron rust

Phosphoric acid can be used directly to remove iron rust (iron oxide III) from ferrous or steel tools and to convert iron to water-soluble phosphates. After removing the iron rust, the produced iron phosphate is converted to a ferrous phosphate compound which can itself be used as a corrosion preventing agent. Phosphoric acid is used as a catalyst in the petrochemical industry.

Application of phosphoric acid in medicine

Phosphoric acid is used in dentistry and orthodontics as an etching agent to clean and rough the surface of teeth, especially where dental instruments and appliances are used. Phosphoric acid is also used as a catalyst in the manufacture of aspirin due to its high hydrogen ion content and lower contamination compared to hydrochloric acid and sulfuric acid.

Phosphoric acid with the formula H_3PO_4 is known as orthophosphoric acid in medicine and salt is orthophosphate, which is one of the main treatments in the types of kidney stones seen in type III hypercalciuria due to phosphate leakage from the kidney.

Application of phosphoric acid in agriculture

Impact on plants

Most phosphoric acid is used in fertilizer production. Phosphorus is one of the essential elements for plant growth. Organic phosphates are compounds that provide the energy needed for most of the reactions that occur in living cells. Soils rich in phosphate fertilizers promote plant growth.

When aquatic plants grow in this environment of cerebral environment they will die after a while. These dead plants now consume water to dissolve dissolved oxygen. This reduces the consumption of dissolved oxygen to a point that is insufficient to support aquatic animals.

Impact on current waters

Increasing the phosphate concentration at the water surface also increases the growth of aquatic plants. Additions of fertilizers can stimulate the growth of plants in the waters of lakes and running waters. Wastewater containing phosphate can have the same effect. Lakes that are rich in nutrients are losing out on Eutrophication.

To reduce the threat of lake eutrophication, many areas are removing phosphates from cleaners. In some cases phosphates are replaced with carbonates. In other words, new detergents are provided in a way that does not react with calcium (II) and magnesium (II) hard water ions.

1-7-EXAMINE ALTERNATIVE PRODUCTS AND ANALYZE THEIR EFFECTS ON PRODUCT CONSUMPTION

Industrial Phosphoric Acid as it is used as a raw material in the manufacture of many phosphorus-based products, it has almost no substitute for its wide range of applications and its being considered as a raw material in the chemical, textile and other industries.

Edible phosphoric acid can have alternatives such as citric acid, ascorbic acid, etc. in terms of its preservative properties in food products, but only in the vegetable oil industry for removal of existing gums, for example. Even crude oil should be used in crude oil.

In the beverage industry, phosphoric acid is added by both flavoring and preservative, which is more potent and less potent than other acids used in the food industry such as tartaric acid, citric acid and ascorbic acid. To be consumed.

1-8-STRATEGIC IMPORTANCE OF GOODS IN IRAN AND COUNTRIES OF THE REGION

With increasing world population and limited agricultural land, the productivity and productivity of crop production per unit area need to be increased in order to respond to increasing population

growth. Today, this is no longer the case with animal fertilizers. Because animal fertilizers only alter soil physics and prepare the soil for growth, they are very poor in nutrients for the plant. To increase soil productivity, the use of chemical fertilizers is a recognized necessity. Chemical fertilizers, known as three chemicals, include nitrogen, phosphorus and potassium. Nitrogen absorbs about 4% of the Earth's atmosphere NPK and is easily accessible to humans. Potassium is abundant in dandruff. But the third element, phosphorus, exists only in certain places in the reserves, with its increasing use gradually ending. It may be argued that the role of phosphorus is strategically similar to oil.

As the population grows, the world will always need more food. As the sole economic source of phosphoric acid, phosphate rock plays an important and irreplaceable role in the development of the agricultural and industrial sectors. Due to the vital role of this substance in the realm of life, the need for it has increased dramatically as the world's population has grown.

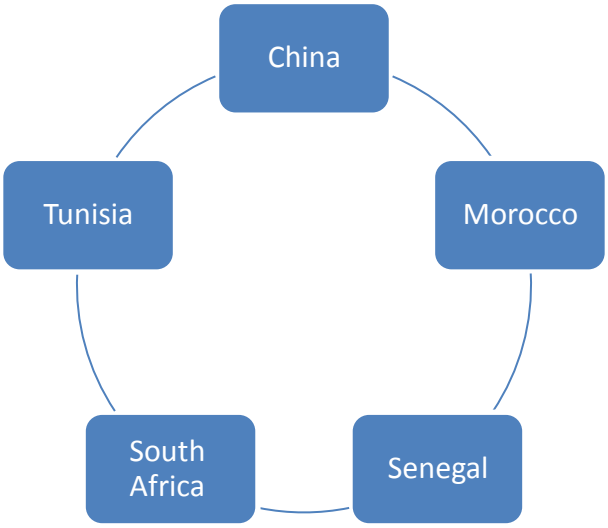
Phosphoric acid, a raw material for chemical fertilizers and detergents, has two strategic aspects:

1- Human food and nutrition
2- Health level

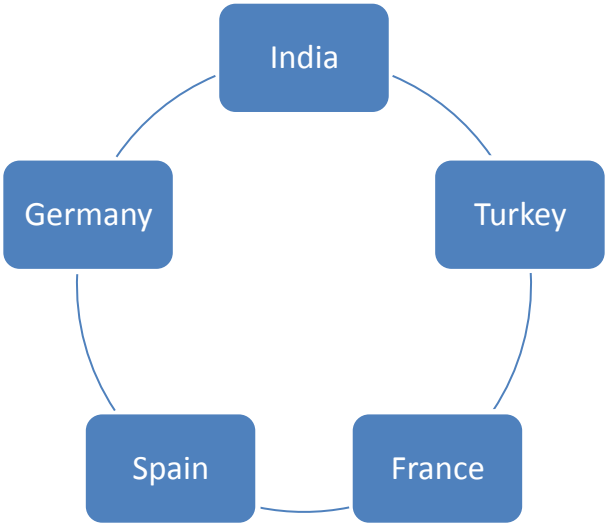
For this reason, the dimensions of this project are national. Because our country is severely restricted in the production of phosphoric acid. Because phosphate ores are imported from abroad, this dependency has been going on for years. However, as a base in the petrochemical industry, it is in serious need of phosphoric acid.

1-9-MAJOR MANUFACTURING AND CONSUMER COUNTRIES

Major Exporting Countries of Phosphoric acid in 2019:



Main countries Phosphoric acid importer (2019):



Source: Tilasto

The leading global manufacturing companies operating in this industry with full capacity can be listed as follows:

Girsa, FMC, Astaris, Thermphos

The names of the domestic companies active in this industry are given in the next section.

2- SUPPLY AND DEMAND SITUATION IN IRAN AND COUNTRIES IN THE REGION

2-1-AN EXAMINATION OF EXPLOITATION CAPACITY AND PRODUCTION PROCESS FROM THE BEGINNING OF THE THIRD DEVELPOMENT PLAN TO NOW

The following table presents the specifications and capacity of phosphoric acid production units based on statistics from the Ministry of Industry, Mining and Trade:

Rc	Name	City	Capaci
1	Persian Shimi Gostar	Boushehr	60000
2	Pars Palayesh Fajr	Fariman	5000
3	Moukerian Phosphate Parsian	Boukan	2000
4	Hayate Sabze Sobhan	Shahin Shahr va Meimeh	700
5	Sanaye Shimiaei Parchin	Pakdasht	12000
6	Kimia Daran Kavir	Behabad	160000
7	Farayand Kood va Sam Bafgh	Bafgh	70000
8	Pasargad Shimi Khavaremiane	Qorveh	10000
9	Petroshimi Razi	Bandar Mahshahr	255000

Source: Ministry of Industry, Mining and Commerce - Statistics and Information Center

2-2-CHECK THE STATUS OF NEW PROJECTS AND ONGOING DEVELOPMENT PLANS

Refer to the Industrial Data Bank of the Ministry of Industry, Mines and Commerce, status and specifications of new projects underway to produce phosphoric acid, and listed in the table below:

Rc	Name	City	Capaci

1	Faravardehaye Shimiaei Zanjan	Zanjan	23000
2	Bijan Panahi Zadeh	Bagh Malek	50000
3	Barad Exir Azma	Alborz	10
4	Zarrin Mahd Shimi	Semnan	10000
5	Pars Alvand Lorestan	Ozna	500000
6	Zagros Sanat Faryab	Boroujen	54000
7	Navateb Pars	Chalous	1
8	Arman Sina	Nazar Abad	3
9	Omran va Sanat Rata	Farahan	2500
10	Kimia Sun Rosha	qazvin	50000
11	Dorsa Shimi Kimiaye Shomal	Neka	500

Source: Ministry of Industry, Mining and Commerce - Statistics and Information Center

2-3-REVIEWING THE PROCESS OF PRODUCT IMPORTATION

According to the information in the book "Export and Import Regulations of the Customs Administration of the Islamic Republic of Iran in 2019", import of Phosphoric acid is carried out at a customs tariff of 280920. The amount of imports in the last 5 years, along with the value of the rial and the dollar, are as follows:

Year	2015	2016	2017	2018	2019
Weight (kg)	13,944,712	7,749,617	7,067,552	8,293,099	297,000
Rial value	348,916,990,670	192,798,595,627	222,500,692,951	311,913,745,269	12,022,713,512
Euro value	10,434,960	5,223,057	5,439,563	6,329,743	242,590

2-4-MONTORING CONSUMPTION TRENDS

The best way to determine the amount of phosphoric acid intake is to use supply and demand balances. So that the amount of domestic consumption is estimated as the result of the difference between supply (total domestic production and imports) and exports.

According to the latest statistics available in 2019, we imported about 297,000 Kg and produced about 575,000 tons. Consumption of this product has been increasing in recent years due to the industrial development of the country and is expected to reach 850,000 tons in the near future.

2-5-INVESTIGATE THE EXPORT PROCESS OF THE PRODUCT AND THE POSSIBILITY OF ITS DEVELOPMENT

Exports of phosphoric acid over the past five years, along with the value of the rial and the dollar, are as follows:

Year	2015	2016	2017	2018	2019
Weight (kg)	-	28,000	52,870	51,825	-
Rial value	-	996,724,503	607,820,793	1,086,955,656	-
Euro value	-	26,681	14,213	17,403	-

No statistics for exports(2019) on the website of the Chamber of Commerce, Industries, Mines and Agriculture.

2-6- PRODUCT REQUIREMENT CHECK WITH EXPORT PRIORITY

According to the existing capacities, about 1400 thousand tons of phosphate ore is needed. Currently 250,000 tons of it can be supplied domestically and the rest will be supplied through imports. Apart from chemical fertilizers, other industries are also consumers of phosphate compounds, most of which are: detergent, chemical industry, food industry, animal feed and so on. Currently, the amount of phosphate ore concentrate consumed in the active units of the National Petrochemical Company of Iran is about 600,000 tons of concentrate annually, which is used to produce about 350,000 tons of fertilizer. According to the Ministry of Agriculture, DAP consumption is estimated at about 1.5 million tonnes per year. In addition, other statistics indicate that about 300,000 tonnes of STPP is needed to produce 300,000 tonnes of detergent powder and 60,000 tonnes of calcium phosphate material in the livestock and poultry industries. One estimate is that (at 10% growth rate) about 2 million tonnes of P_2O_5 are needed in the country.

Phosphoric acid needs in different parts of the country are as follows:

Section
Food industry
Fertilizer
chemical industry

Textile Industry
Metal Industry
Metal Industry
Toothpaste

3-OVERVIEW OF TECHNOLOGY AND METHODS OF PRODUCTION AND SUPPLY IN THE COUNTRY AND COMPARISON WITH OTHER COUNTRIES

Phosphoric acid production methods in industry

Wet process

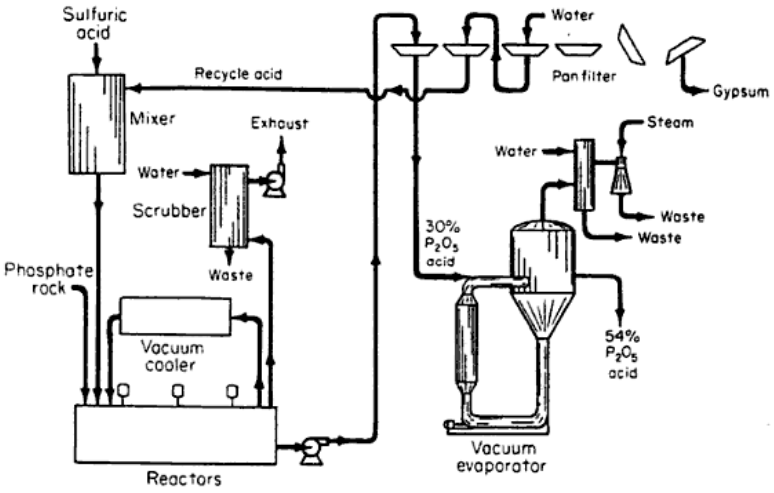
The most common way of producing phosphoric acid in the world is as follows:

The acid produced in the process is directly derived from ore and is usually produced in high volume and at a high cost and not too high purity. This type of acid is mainly used for the production of phosphate chemical fertilizers. If this acid is purified, it can be used to produce commercial phosphate chemicals. In this method phosphoric acid is obtained by the interaction of phosphate rock and phosphoric acid concentrate.

In this process, after crushing the phosphate ore by ball mills containing some dilute phosphoric acid, the resulting leachate is transferred to the reaction tanks with 55% sulfuric acid. These tanks are equipped with strong stirrers and the reaction temperature is carefully controlled. The exhaust gases are transferred from the reactor to the adsorption towers, where the H_2SiF_6 fluosilicic acid can be recovered by water. The reaction in the reactor is as follows. As can be seen, in addition to phosphoric acid, calcium sulfate is also obtained.

$$3Ca_3(PO_4)_2.CaF_2 + 10H_2SO_4 + 10H_2O \rightarrow 6H_3PO_4 + 10\ CaSO_4.\ 2H_2O + HF\uparrow$$

The leachate from the reactors is then transferred to horizontal rotary vacuum filters where phosphoric acid is separated from the cake. The cake is gypsum and discarded. The acid obtained from the filters is concentrated by evaporators which have heat exchangers. The following diagram shows the preparation of phosphoric acid in the wet method.



Thermal process

This method involves combustion of phosphorus and hydration of P_4o_{10}. The mixture of liquid phosphorus and air is injected into the combustion chamber that resembles a tower and is produced by the phosphorus oxidation reaction. The combustion chamber is a special type of steel that is deactivated with H_3PO_4. The obtained P_4O_{10} is hydrated in the next tower and the residual vapors of P_4O_{10} are converted into a rinsing unit to dilute phosphoric acid and used as a spray to lower the temperature of the first tower.

Production methods in Iran

In Iran, the effect of sulfuric acid on apatite minerals is produced by phosphoric acid. Since phosphorus and arsenic are in the same group (group 1) chemical (periodic) table and in nature are likely to exist in different minerals and only in their purity percentage difference.

As you know, arsenic is a toxic and deadly element and is a major hazard in apatite minerals from which phosphoric acid is derived and is often used in the animal feed and health industries. Of course, methods of producing phosphoric acid such as pure phosphorus combustion solve this problem, but the cost is much higher than using apatite minerals. Fluorine is another toxic substance that is an integral part of apatite minerals.

4-DETERMINING THE STRENGTHS AND WEAKNESSES OF CONVENTIONAL TECHNOLOGIES IN THE PRODUCT MANUFACTURING PROCESS

The disadvantages are the presence of arsenic, vanadium, fluoride in its apatite minerals, which in the production and use of phosphoric acid in foodstuffs should be free of these toxic substances.

The strengths of this material are its mass production at a low cost and large volume that increases its use. One example is the use of phosphoric acid to give a spicy taste to food because of its high availability and low price compared to natural flavors such as lime and ginger lemon sour extract. Spicy flavor, or citric acid, which is used to make lemon sour, is higher.

5- INVESTIGATE AND DETERMINE THE MINIMUM ECONOMIC CAPACITY, INCLUDING ESTIMATING THE VOLUME OF FIXED INVESTMENT IN RIAL AND FOREIGN CURRENCY

EXPLANATION: EXCHANGE RATE BASED ON NIMA SYSTEM - DATED 24/11/2021 - AMOUNT: 263800 RIALS

Project Investment Schedule:

Description	Cost (Million Rials)	Cost (Euro)
Land	25000	94769
Landscaping	16765	63552
Construction	21602	81888
laboratory equipment	256250	971380
Utilities	3300	12509
transportation	2970	11259
equipment and machinery	12081	45796
Office equipment	1214	4602
Miscellaneous and unforeseen	33918	127189
Total	373100	1414331

The ground specification of the project implementation is as follows:

Description	Area (m 2)	Unit Price (Rials)	Total (Million Rials)	Total (Euro)
Land	10000	2/500/000	25000	94769

The cost of landscaping is as follows:

Description	Area	Unit Price (Rials)	Total (Million Rials)	Total (Euro)
Digging and leveling	10000	1250000	12500	47384
Fencing	500	1500000	750	2843
Asphalt and pavement paving	650	1100000	715	2710
Green space and lighting	2000	1400000	2800	10614
Total			16765	63552

Building Information:

Description	Building type	Area	Unit Price (Rials)	Total (Million Rials)	Total (Euro)
Production	Niches	1500	5750000	8625	32695
Raw materials and supplies	Niches	1500	5750000	8625	32695
Office building and services	Official	200	23321000	2664	10099
Utilities	Niches	170	6500000	1105	4189
Guard		25	23321000	583	2210

Total		3395		21602	81888

Utilities:

Description	Cost (Million Rials)	Cost (Euro)
Power Supply	1200	4549
Fuel	100	379
Heating and cooling equipment	750	2843
Protective equipment and security system	320	1213
Compressed air supply	600	2274
Total	2970	11259

Transportation:

Description	Technical Specifications	Cost (Million Rials)	Cost (Euro)
Forklifts	3 ton	5500	20849
Pickup	Nissan	1206	4572
Riding	Samand	1175	4454
Tanker		4200	15921
Total		12081	45796

Equipment and Machinery:

Manufacturing machinery is the most important part of industrial investment. The machinery of each manufacturing complex determines the quality and variety of products, production technology, raw materials, and many of the methods, costs of production, and even the finished product price. Machinery selection is a critical and influential factor in the macroeconomic indicators of the plan. The cost of producing the machinery and equipment of the production line is estimated on the basis of inquiries from major manufacturing companies or reputable agencies. It also calculates the cost of procuring machinery, including shipping, installation, customs duties, and so on.

The world's leading companies producing the main equipment for the Phosphoric acid production process can be listed as follows:

Prayon Technologies, Desmet Ballestra, Guichon Valves

The price range for all of these companies is about 10 percent. The price of machines for this process is given in the table below.

Number	Name	Required amount	cost (million rials)	Rial sum (million rials)
1	Sources of phosphoric acid storage	5	24375	121875
2	Anti-acid pumps	3	1025	3075
3	Sieves and mills	2	738	1476
4	Elevators and conveyors	5	838	4190
5	Production, condensing, and refining unit reactors	5	13125	65625
6	Industrial filters	10	694	6940
7	Heaters and burners of production unit and condensing unit	5	1050	5250
8	Dust system	1	406	406
9	Sulfuric injection system	1	882	882
10	Auger sulfate flood	1	457	457
11	Hammer mill	1	423	423
12	Screen	1	539	539
13	Daily storage silos	2	406	812
14	Filling bag and accessories	1	816	816
15	Cooling Tower	1	466	466
16	Glass Exchangers	15	91	1365
17	Graphite converters	4	181	724
18	Acid sucking fan	4	363	1452
19	Gas cooling system	1	566	566
20	Sulfuric acid storage tanks	5	171	855
21	Other cases			38056
Total (Million Rials)				256250

Total (Euro)	971380

laboratory equipment:

Number	Name	Currency (Euro)	Rial Cost (Million Rials)	Rial sum million) (rials
1	laboratory equipment	12509	3300	3300
2				
Total (Million Rials)		3300		

Office equipment:

Number	Name	The required amount	Rial Cost (Million Rials
1	Management table with chair	1	80
2	Conference table and conference chair	1	65
3	Computer desk and chair	3	30
4	Office desk and chair	3	48
5	Secretary's desk and chair	1	14
6	Showcase	2	26
7	Library	1	40
8	Quad slider file	2	18
9	Waiting chair comfort	6	21
10	Dining table and chair	1 Series	20
11	Computer	6	390
12	Printer and Scanner	5	120
13	Fax	3	60
14	Telephone	8	25
15	kitchen appliances	1 Series	30
16	Fingerprint Attendance Device	1	15
17	Wireless and Internet equipment	1	32
18	Office stationery	4 Series	70
19	Central central system	1	110
Total (Million Rials)			1214
Total (Euro)			4602

Working Capital Costs:

Name	Description	Cost (Million Rials)	Cost (Euro)
Raw materials and packaging	60 Days	7925	30042
salary	30 Days	1076	9159
Energy costs	30 Days	298	1579
revolving fund	15 Days	199	754
Total		9498	41534

Production costs:

Description	Cost (Million Rials)	Cost (Euro)
Cost of raw materials and packaging	47550	180250
Salary Cost	28995	109913
Energy costs	3578	18953
Cost of maintenance	27588	104579
Unforeseen cost of production	3032	11494
Administrative and sales costs	4733	17942
Costs of financial facilities	994	3768
Insurance costs	69542	263616
Depreciation cost	500	1895
Depreciation expense before operation	426	1615
Total	110850	420205

6-THE AMOUNT OF RAW MATERIAL NEEDED ANNUALLY AND WHERE IT IS SUPPLIED

Number	Description	Consumption per unit product	Unit of consumption	Amount of Consumption Required for Total Capacity	Rial equivalent (per unit)	Place of supply	Cost (Million Rials)
1	sulfuric acid	1.6	Ton	16000	1/750/000	Internal	28000
2	Phosphate concentrate	1.9	Ton	19000	10/450/000	Import	19550
3							
Total (Million Rials)							47550
Total (Euro)							180250

Sulfuric acid is a petrochemical product provided by petrochemical commerce to consumer units. It is also sufficiently supplied by private units. Phosphate ore sources in Iran are divided into sedimentary phosphate and igneous phosphate groups with an estimated 15 million tons of igneous phosphate reserves at 12% grade in the country.

According to statistics from the Ministry of Industry, Mines and Trade, there are 20 phosphate ore mines in Bushehr, Khorasan, Kohgiluyeh and Boyerahmad provinces, Khuzestan, Tehran, Kerman, Yazd and Zanjan, most of which are in the discovery phase. For this reason, it is necessary to import this subject.

7-RISK ANALYSIS OF PROJECT IMPLEMENTATION

Studies show that in the next year the market will be in short supply and there will be a greater need for imports. So it can be said that the implementation of new projects in this field is not very risky because in addition to the domestic market there is very good potential for exporting this product to neighboring countries and if for any reason the applicant intends to do so. It should act cautiously and with the highest advantages of other industrial units in this regard and minimize project risk by examining further the strengths and weaknesses as internal factors as well as opportunities and threats as external factors.

8- HUMAN RESOURCES AND NUMBER OF JOBS

One important aspect of any industrial unit is its job creation, which is thoroughly examined in the market segment. Due to the nature of the industry and the need for 3 shifts to work, it has been attempted to select the number of personnel in a manner that addresses the production

needs of the two shifts. It has also been tried to use related specialties in different parts of production.

To calculate the amount of annual salaries and benefits, three shifts and other benefits have been added to the annual salary. For this purpose, the annual salary is set at 16.4 months per year.

Description	Gender	Number	Monthly salary per person (Million Rials)	Monthly salary (Million Rials)	Annual salaries (Million rials)	Annual salaries (Euro)
Managing Director	Man	1	80	80	1312	4973
financial manager	Man	1	65	65	1066	4041
Marketing Manager	Man	1	65	65	1066	4041
Financial, sales and administrative personnel	Female	2	55	110	1804	6839
warehouse keeper	Man	3	45	135	2214	8393
Line Administrator	Man	2	53	106	1738	6590
Technician	Man	6	49	294	4822	18277
Production worker	Man	13	45	585	9594	36368
Service	Female	3	40	120	1968	7460
Guard	Man	2	40	80	1312	4973
Driver	Man	1	40	40	656	2487
Secretary	Female	2	44	88	1443	5471
Total		37			28995	109913

9- CHECK AND DETERMINE THE AMOUNT OF WATER, ELECTRICITY, FUEL AND ...

Description	Unit	annual consumption	Cost per unit in Rials	Total Cost (Million Rials)	Total Cost (Euro)
Power Consumption	KWh	2/500/000	648	1620	6141
Water Consumption	Cubic meters	80/000	1973	157/8	5989

Gas	Cubic meters	1/800/000	1000	1800	6823
Total				3577/8	18953

10- CONDITIONS OF ECONOMIC AND COMMERCIAL SUPPORT

10-1- CUSTOMS TARIFF SUPPORT (PRODUCTS AND MACHINES) WITH GLOBAL TARIFFS

Phosphoric acid production is one of the priority projects due to the need of industries in the country. If this unit is set up, most of the machinery needed for this project can be manufactured and supplied domestically. Fortunately, there are no tariffs for exporting the product and domestic producers can export their products at no cost.

10-2- FINANCIAL SUPPORT (EXISTING UNITS AND PLANS) OF BANKS - INVESTOR COMPANIES

Regarding the financial support for the production projects in our country, it should be said that they are only at the level of providing banking facilities, which are publicly available and payable for all projects that are economically viable. However, given the priority of the aforementioned plan to launch the provision of banking facilities through Note 3 of the Budget Act, it is possible.

Long-term facilities to finance part of the investment costs for the creation or development of industrial, mining and tourism units or to provide the necessary conditions for optimal utilization of these units, the facility bank in currency and rial in the form of an Islamic contract Grants.

Terms:

1- Only financial facility projects that have the necessary technical, financial and economic justification are granted.

2- The granting of facilities to natural persons up to one billion rials shall be permitted and the payment of such facilities shall be exclusively permitted to legal persons.

3- The Bank typically finances up to 70% of the project's fixed capital investment as a facility, while 30% of the total project investment (including fixed capital and working capital) must be provided by the applicant as paid-in company capital. .

4- The repayment period of the facility is typically a maximum of 5 years. It was the Bank's authority to change this period to suit the status of the plans.

5- When applying for a facility, the applicant shall open a loan account.

6- In general, 30% of the total project investment must be financed by the investor and the bank can invest up to the remaining 70%.

Steps:

1-Acceptance: At this stage the applicant can apply to any bank branch and submit his / her application. If the plan is not on the priority list, the Bank agrees to provide the justification.

2- Compilation of project justification report: Applicant prepares justification report through Bank Consulting Engineer companies.

3- Acceptance: At this stage, the project justification report will be delivered to the branch with the required documentation.

4- Evaluation and approval: The Bank's justification report will be reviewed and if approved, the facility payment will be approved by the competent authority.

5- Contract: After providing the required documents and guarantees, the contract for granting the facility will be concluded.

6-Payment: The project progress report will be prepared at the time specified by the consulting engineer and submitted to the bank. Once the progress report has been approved by the bank, payment is made as appropriate to the progress of the plan.

11-ANALYZING AND PRESENTING FINAL CONCLUSIONS AND PROPOSALS FOR THE CONSTRUCTION OF NEW UNITS

- Due to the basic need of the country for different phosphorous products no export of domestic products is done in the country. Since Iran is a country with abundant mineral and phosphate reserves, it is necessary to carry out fundamental studies in the production of phosphoric acid in order to export its surplus consumption to foreign countries in addition to meeting its domestic needs.
- Building a phosphoric acid production plant in the country will boost other industries such as phosphate fertilizers.
- Considering the need to establish a new Phosphoric acid production unit, it is suggested that the Phosphoric Acid Producers and Chemical Fertilizers units collaborate with Phosphoric Acid Applicants to provide the required liquidity and exploit the project results.
- The plan is to start operating at 60 percent capacity in the first year and increase below capacity in the following years, respectively.
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Year	First Year	Second Year	third year	forth year	Fifth year
Capacity(%)	60 %	75 %	90 %	100 %	100 %
Production capacity (ton)	6000	75000	9000	10000	10000

prime cost	11 million rials/Per ton (42 Euro)
Selling prices of products	19 million rials/Per ton (72 Euro)
Total Sales (Million Rials)	190000 (720243 Euro)
Percentage of sales at the point head to head	20
Profit (Million Rials)	80/000 (303260 Euro)
Gross Value Added (Million Rials)	135841 (514939 Euro)
Net Value Added (Million Rials)	103994 (394215 Euro)
Ratio of gross value added to total sales	0/7
Ratio of net added value to total sales	0/54
Ratio of gross value added to investment	0/4
Net Present Value(NPV)	283975 Million Rials-1076478 Euro
Return of capital	4