Islamic Republic of Iran
Ministry of Economic Affairs and Finance
Organization for Investment
Economic and technical Assistance of Iran

PROJECT PROFILE – SUMMARY SHEET

Project Introduction
1. Project title: **Fireproof thermoplastic polyurethane (TPU)**
2. Sector : Production of chemical substances and products (24) and subgroup of production of plastic material in an initial form and production of artificial rubber (2413) Production of pig iron and steel (2710)
3. Products/Services: **Production of Fireproof thermoplastic polyurethane**
4. Location: Free zone ☐ Economic special zone ☐ Industrial Estate ■ Main Land ☐
5. Project description: The main goal of this plan is establishment of a production unit of Fireproof thermoplastic polyurethane**.**
6. Annual capacity: 500 tons in a year.

Project Status	
7. Local / internal raw material access inside a country or province: most of materials are supplied in the country and in some cases, imported materials are used ,too.	
8. Sale: Anticipated internal market:100% Anticipated export market: %	
9. Construction Period (from beginning of activity to commercial activity): 24 months	
Schedule	Beginning of activity: In-site beginning of activity: End of project: Commercial activity beginning:

10. Project Status:

- Feasibility study available?	Yes ☐	No ■
- Required land provided?	Yes ☐	No ■
- Legal permissions (establishment license, 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, equipment and technology concluded?	Yes ☐	No ■

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Financial Structure

11. Finance

Description	Required Local Currency			Required Foreign Currency (Thousand Dollar)	Total in Thousand Dollar
	Million Rials	Rate	Equivalent in Thousand Dollar		
Fix Capital	29,045	87000 Rials for each Dollar	334	207	541
Working Capital	17,210		199	0	199
Total Investment	64,282		739	0	739

- Value of local equipment/machinery: ….. thousand dollars
- Value of foreign equipment/machinery: **207** thousand dollars
- Value of foreign technology: …. thousand dollars
- Value of local technology: ..… Million dollars

- Net Present Value (NPV): **32925,65** Million Rials for 10 Years, discount rate: 20%
- Internal Rate of Return (IRR): **31,94%**
- Payback Period (PP): **34,25%**

General Information

12. Project Type: Establishment ■ Expansion and completion ☐

13. Company Profile:
-Name (legal /natural persons):
-Current activity of company:
-Address:

-Tel: Fax:
-E-mail: Web site:

-Legal structure of company: private sector ☐ public sector ☐ other☐

Plan name: Production of Fireproof thermoplastic polyurethane

Product introduction

The aim of carrying out of this plan is establishment of production factory of polyurethane Lorestan province. Product ISIC code and its tariff Code are as follows.

No.	ISIC Code	Code Title	Tariff Code
1	2413412430	polyurethane	39095000
2	2413512431	sponge grade polyurethane	
3	2413412432	shoes grade polyurethane	
4	2413512496	pashtsy grade polyurethane	
5	2413512541	Insulating grade polyurethane	
6	24131270	polyurethane	
7	24291313	polyurethane paste	
8	24301160	polyurethane fibers	
9	25201719	polyurethane soft foam	
10	25201720	polyurethane hard foam	
11	25201337	polyurethane panel	

Introduction of product applications

TPUs are tactically and militarily used based on polyether for covering tha safety wires and cables. All kinds of its polyether -based TPU prevent corrosion and low voltage connections due to appropriate resistance to hydrolysis and microbial factors. Some of wide applications of TPU for covering a veriety of cables and wires are as follows:

- Cables used in sea for extraction of petroleum and gas
- High voltage cables in building sites
- Long and trailing cable in mine industry

- Cable for lawn mowers and other agricultural equipment
- Telephone cables
- Controlling cables for investigations
- Brake system for cars
- Able for spaceships
- High voltage cables for subways
- Anti -static controlling cables for electronic equipment

Proposed places for plan

According to benefits of establishment in industrial estates and areas, industrial estates of Lorestan province are suggested for conducting the project.

Raw ,auxiliary,Consuming materials

No	Raw , auxiliary and packing materials	Unit	Consumption rate per year	Unit price (Rial)	Annual cost (m/r)
1	polytetra methylene ether glycol	ton	55	900,000,000	49,500
2	diphenyl methane di-isocyanate	ton	170	700,000,000	119,000
3	1 and 4 butan DL	ton	110	1,150,000,000	126,500
4	3 methyl propane	ton	10	400,000,000	4,000
5	melamine cynaurat	ton	225	500,000,000	112,500
6	additives	ton	50	300,000,000	1,500
7	Nylon and carton packing material	ton	10	100,000,000	1,00
total					414,000

Sales plan and target markets

NO	Description	nominal Capacity (ton)	practical Capacity (ton)	Unit price (rial)	Annual sale (m/r)
1	fireproof thermoplastic polyurethane	500	450	970,000,000	485,000
Total		500	450	-	485,000

Annual nominal and practical capacities

Entry capacity of production unit is 500tons in two 8-hour shifts in 300 working days in a year. Practical capacity of this plan, regarding the unpredicted factors of stop working and also repair and maintenance, is considered 450 tons with 90% efficiency of nominal capacity.

Production method and desired technology

Thermoplastic polyurethanes can be produced in several methods and different processes. Components of these polyurethanes either during several steps and in pre-polymeric method and in one discontinuous process or during one step and in single-multiplication method and in one continuous process are turned into thermoplastic polyurethane polymers of desired properties. In industry, they are often produced in single-multiplication method and using some continuous processes such as strap process or extruder process and based on industrial and semi-industrial scale. In polyurethane synthesis, stoichiometric ratio of matrials participating in reaction which is usually named molar ratio, is very important for controlling reaction and physical properties of final product. Because ratio of participating materials OH to NCO i.e the ratio in reaction in terms of stoichiometric ratio with 100% efficiency react with each other, so the type of polymer structure can be determined with choosing different molar ratio.

Different methods of polymerization of thermoplastic polyurethanes components and usual production processes in industry are:

1. Pre-polymeric method
2. Semi-pre polymeric method
3. Single- multiplication method

The plan investment costs

The fixed plan investment costs is estimated to be 47,071,85 million Rials and the working capital is estimated to be 17,210,17 million Rials**.**

The plan investment costs

Description	Required				Total (million rials)	%
	currency (dollar)	rial equivalent	rial (m.r)	required total		
Land	0	0	2,100	2,100	2,100	3%
Landscaping	0	0	1,079	1,079	1,079	2%
Building	0	0	14,900	14,900	14,900	23%
Machinery and equipment	207,200	18,026	0	18,026	18,026	28%
Installations	0	0	1,655	1,655	1,655	3%
Laboratory equipment and supplies	0	0	200	200	200	0%

Description	Required				Total (million rials)	%
	currency (dollar)	rial equivalent	rial (m.r)	required total		
Vehicles	0	0	2,300	2,300	2,300	4%
Workshop equipment	0	0	91	91	91	0%
Service and administrative equipment	0	0	785	785	785	1%
Unexpected and miscellaneous	0	901	1,156	2,057	2,057	3%
Total fixed assets	**207200**	**18,927,72**	**24,266,47**	**43,194,19**	**43,194,19**	67%
Pre-exploitation costs	0	0	3,877,66	3,877,66	3,877,66	6%
Total fixed investment costs	**207200**	**18,927,72**	**28,144,13**	**47,071,85**	**47,071,85**	73%
Working capital	0	0	17,210,17	17,210,17	17,210,17	27%
Other assets	0	0	0	0	0	0%
Total plan investment costs	**207200**	**18,927,72**	**45,354,30**	**64,282,02**	**64,282,02**	**100 %**

The plan production costs

The annual production costs are estimated to be 457806,12million Rials.

No	Description	Cost (million rials)	cost in practical capacity (million rials)
1	Raw, auxiliary and packing materials	414,000	372,600
2	Production salary and wage	6,052	5,870
3	Water, electricity, fuel and communication	1,022	941
4	Insurance	76	76
5	Repair and maintenance	1,774	1,6332
6	Marketing and ads	9,700	8,924
7	Production unpredicted and miscellaneous	21,146	19,455
8	Depreciation	4,036	4,036
Total		**457806,12**	**413533,18**

Economic indices

Table 1. Economic indices

Description	Value-measurement scale
NPV (net present value)	**32925,65million rials**
IRR(internal rate of return)	**31,94%**
PBP (period of return of capital)	**2,3years**

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