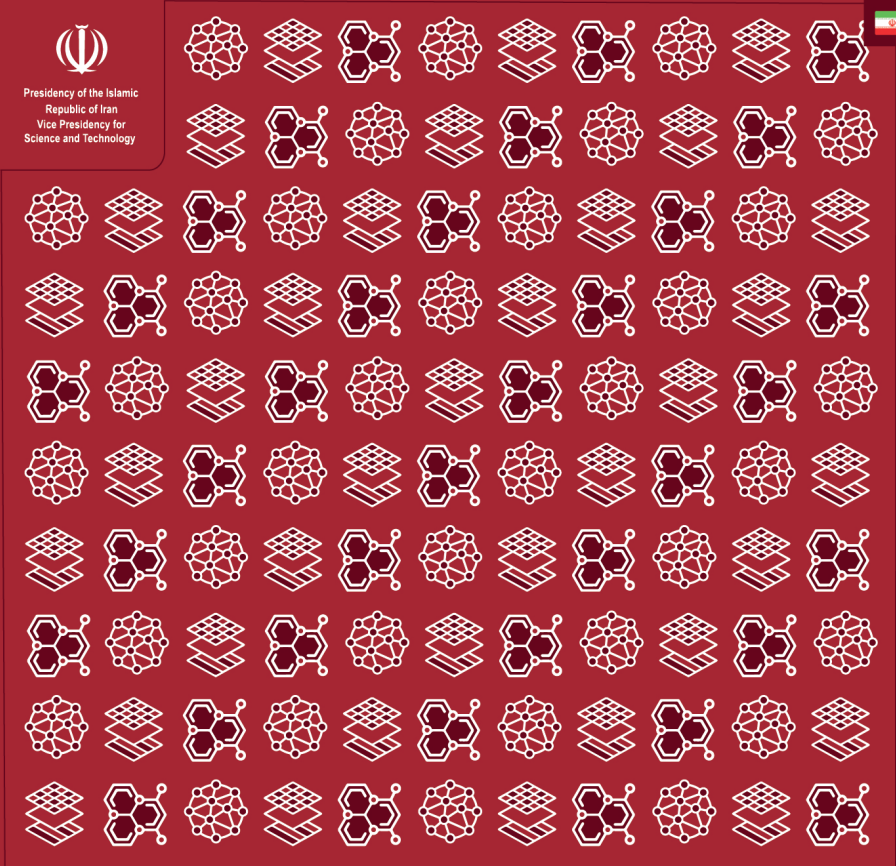




Presidency of the Islamic  
Republic of Iran  
Vice Presidency for  
Science and Technology



Ninth Volume

# POLYMERS AND COMPOSITES

*Knowledge-Based Products and Equipment*

# مجلس المدینة العلمیة

NINTH VOLUME

Knowledge-Based Products and Equipment  
**Polymers and Composites**





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www.ihit-expo.com

## Knowledge-Based Products and Equipment

### Ninth Volume: **Polymers and Composites**

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# Preface

One of the key factors in a nation's industrialization and economic complexity is technology. Complex economies can connect vast networks of individuals with relevant information to produce a variety of knowledge-based goods. Indeed, the types of goods or products that are ultimately supplied to international markets are taken into account when determining the complexity of an economy.

A knowledge-based economy is one in which the application of knowledge and information plays a significant role in shaping production and distribution, and where investments in knowledge-based businesses have drawn particular attention. Along with enhancing nations' competitiveness, the transformation of economies into knowledge-based economies has the potential to have a significant impact on international trade.

7000 knowledge-based businesses in Iran provide knowledge-based goods that are the result of the expertise and experience of professionals and university graduates. These businesses, which occasionally resemble enormous technology factories, sold more than 10\$ billion worth of goods last year and exported 1\$ billion or so to various nations. The Presidential Deputy for Science and Technology is recognized as the most significant authority for direction, leadership, and development of the technology area in Iran. It serves as a support organization for startups and knowledge-based businesses by finding and selecting these enterprises. This book, along with 19 other books, is a carefully curated selection of goods with a track record or export potential that was put together using data provided by chosen businesses for presentation to foreign clients, business people, and government and academic officials interested in using these goods. To review the company's manufacturing and distribution records, access to technical knowledge and specialized human resources, production and export capacities, and after-sales services, two specialized and commercial committees were formed separately, and each committee reviewed the products in detail with the participation of technical and commercial experts.

In this procedure, specialized committees were held with the collaboration of the experts of the center of companies and knowledge-based institutions of the Deputy for Science and Technology, headed by *Dr Reza Asadi Fard* and Coordinated by *Engineer Mojtaba Houshmandzadeh*. In addition, *Engineer Mehdi Ghaleh Noei* and *Engineer Ruhollah Estiri* presided over commercial committee meetings, which also included businessmen from the private sector, and I want to express my gratitude to these two groups for their work and assistance.

I also want to appreciate the project manager, *Zahra Afzali*, who has taken on a lot of responsibility and given close attention to the project's design and development from the beginning with innovative ideas.

I also think it's important to recognize and express my gratitude to my other colleagues for their efforts in gathering, reviewing, contacting firms, selecting, and rewriting texts, and finally editing and creating this book:

Project monitoring and editing team: *Mohammad Torabi, Fereshte Elahi*

Evaluation team: *Mohammad Ali Pour Ebrahim, Kaveh Ashjaee*

Editorial team: *Mohammad Ali Pour Ebrahim, Kaveh Ashjaee, Mohammad Matin Shirzad*

Design team: *Mohammad Hossein Pourdabbaq, Masoud Khalili*

I want to underline that the aforementioned goods may be offered in a variety of ways in the country of destination, including export of end products, export of semi-finished and assembled products at the destination, joint production in the destination country and other economic cooperation. In each of the aforementioned scenarios, the Export Development and Technology Exchange Fund is prepared to co-invest in the target countries and guarantee the purchases as a financial sponsor of knowledge-based export enterprises.

The book's conclusion also includes a list of export management firms authorized by the Deputy for Science and Technology for communication, Iran Houses of Innovation & Technology (iHiTs), located in several countries, and commercialization and technology transfer agencies. Finally, I am hoping that this book will be beneficial to the readers and provide them with a thorough grasp of Iranian technological advancements.

Regards,  
**Mehrdad Amani Aghdam**  
CEO of Export Development and Technology Transfer Fund

**Polymers and Composites**



Knowledge-based products and equipment

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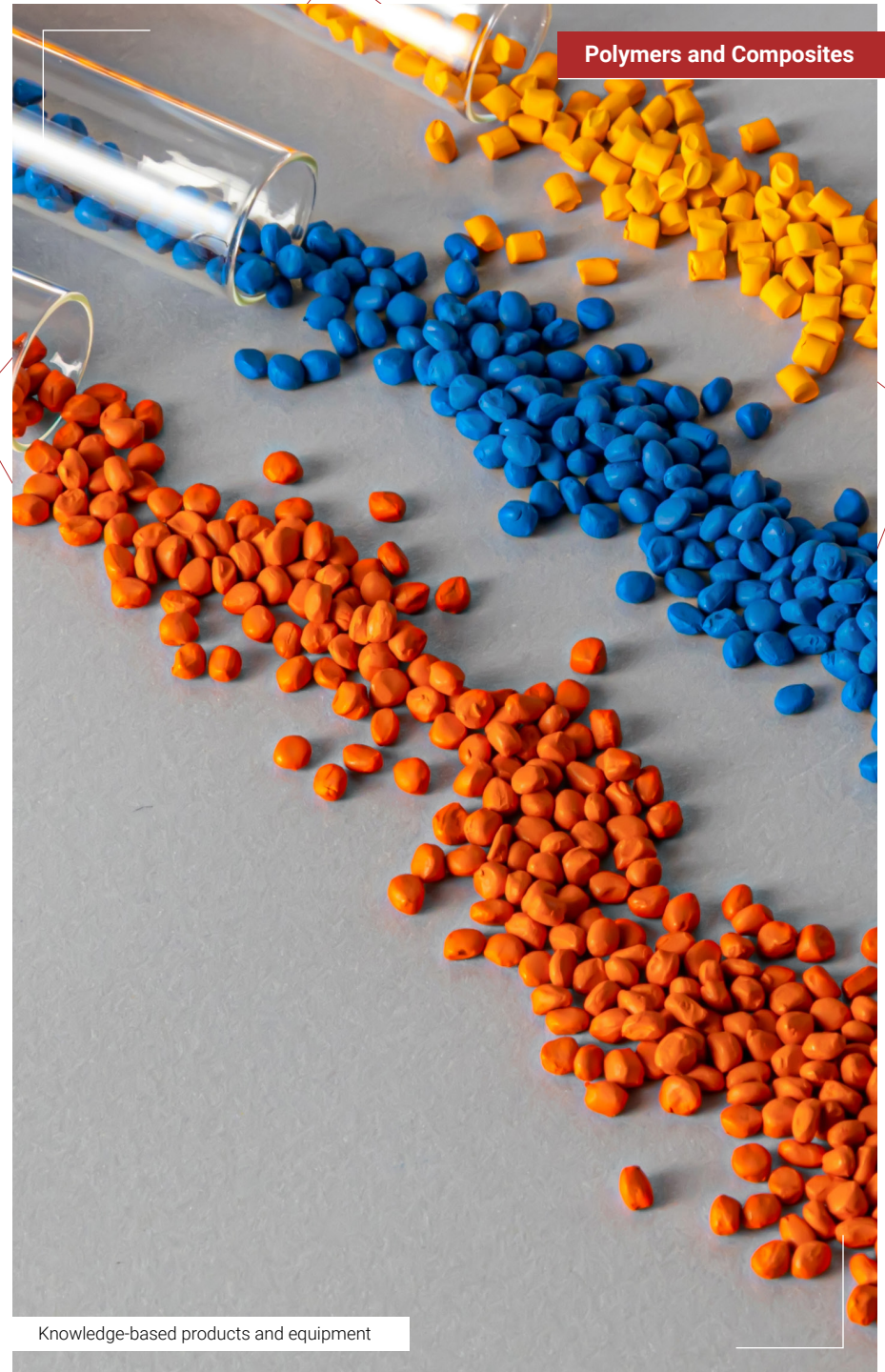


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Knowledge-based products and equipment

# Introduction

## **The Origin of Industry and Export in The Eyes of Iranians**

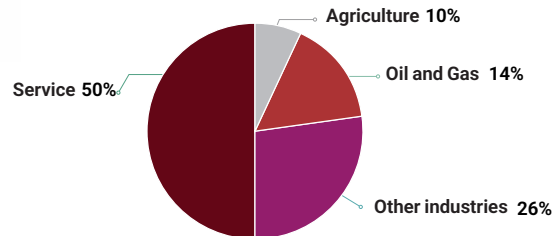
The ancient land of Iran has long been the source of knowledge and industry, and Iranians have played a significant role in the development, evolution and promotion of science and human awareness. Most historians of the world believe that most of the advances in science and human civilization are owed to Iranian civilization and the most brilliant works of art and the highest industrial levels has come from the minds of Iranians. Metalworking industries, agricultural industry, pharmacy and alchemy with themes including tile glazing, carpet dyeing, fabrics and glass were some of the industries that were considered by ancient Iranians. In parallel with the special attention to the development of industry, the history of mutual trade relations between Iranians and other civilizations in East and Central Asia, Europe and Africa has a long history, and Iranians have played a significant role in the expansion of global altruism since long ago by being on the route of the Silk Road and maritime trade.

We Iranians today, like our ancestors, consider industry, art and production in our ancient land to be a transformative and constructive place, and we consider the development of technological interactions and the trade of knowledge-based industrial products with other countries as an opportunity for friendship and the expansion of ties.

### Industry and Export in Today's Iran

Industrial development has a very important place in the plans and policies of the Islamic Republic of Iran due to the creation of value added, job creation, increase in exports and reduction in imports, and the transition from an economy dependent on oil and mineral raw materials to an industrial and manufacturing economy, especially an economy dependent on new technologies, is a grand plan that has been adopted for this purpose. Currently, 50% of Iran's gross domestic product is allocated to services and another 50% to industry and manufacturing, which includes 10% agriculture and food industry, 14% oil and gas industry, and 26% other manufacturing industries.

The Share of Various Activities in Iran's GDP

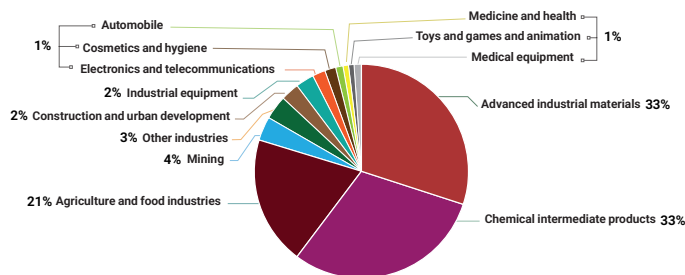


In the meantime, various industries such as pharmaceuticals, medical equipment, construction, communications and telecommunications, energy, mining, chemicals, etc. have a special share of Iran's gross domestic product, and their production, in addition to covering a considerable amount of country's domestic needs, are exported to various destinations.

According to World Customs Organization data, in 2021, the Islamic Republic of Iran had exports equal to 75 billion dollars, almost half of which is allocated to non-oil industries and processed industrial products. Advanced industrial materials, chemical intermediate products, agricultural products and food industry are all among the biggest exporting industries with more exports.

### Iran's Exports in 2021

Ref: Trade Statistics for International Business Development <sup>1</sup>



<sup>1</sup> www.trademap.org

Regarding the main export destinations of Iran, it should be noted that China, India, Indonesia, Russia, Uzbekistan, Ghana, Germany and South Africa, as well as among the regional neighbours, Iraq, Turkey, UAE, Afghanistan, Pakistan, Oman, Turkmenistan, and Azerbaijan account for the largest dollar value of imports from Iran.

### Where the New Technologies Stand in Iran's Industry

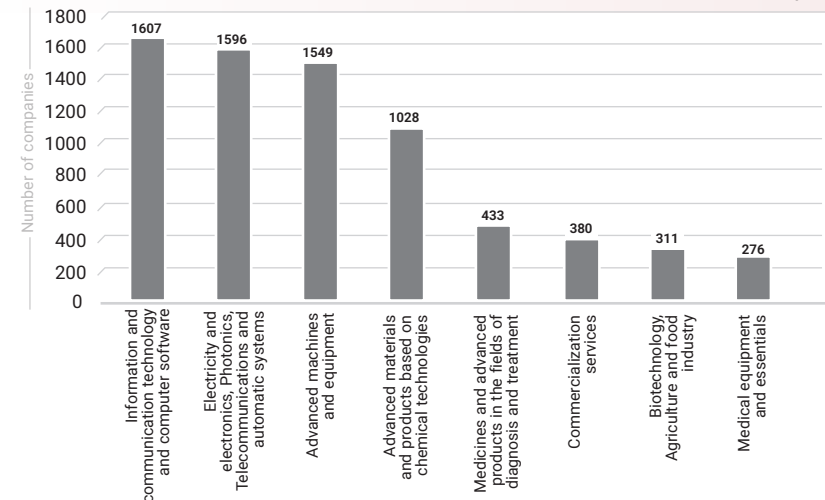
Paying attention to the development of new technologies, commercialization and its influence on manufacturing industries has caused the Islamic Republic of Iran to experience a growing progress in this field in the last decade; An issue that has taken place in Iran in the form of the development of knowledge-based enterprises. Based on this, the meaning behind knowledge-based enterprise is as follows:

A private company that produces products or provides services that have the following three features:

1. The product or service provided by the company has a high or medium to high technology level and its technical knowledge has a significant technical complexity (technology level condition).
2. The product or service design in the company is based on internal research and development or technology transfer (Research and development-based design condition).
3. The company is able to produce and provide the mentioned goods or services to the market (production condition).

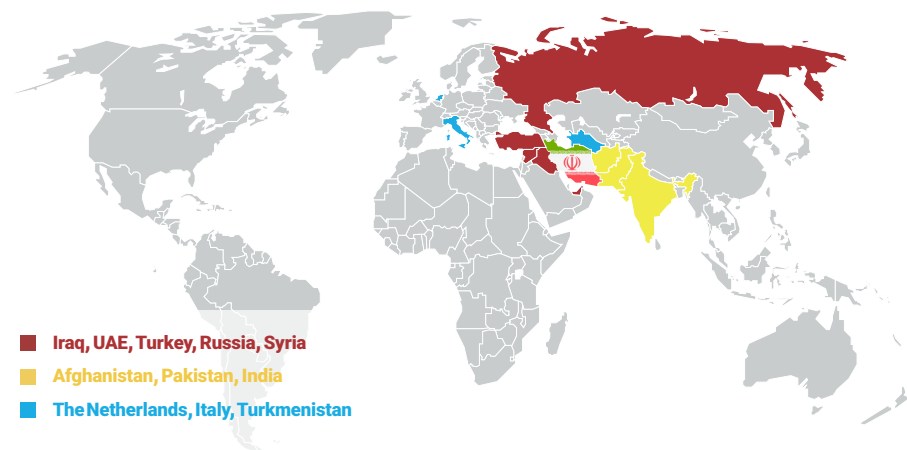
Currently, more than 7 thousand knowledge-based enterprises in Iran are producing products and providing services in the field of various technologies. These companies produce more than 15,000 products or services in total, and their direct employees, which generally include people with a high level of education, are around 250,000 people.

The Number of Knowledge-Based Companies - Technology Fields



The export of Iran's knowledge-based enterprises has been growing in the last 5 years, and these companies currently account for about %2 of Iran's non-oil exports.

**The Largest Export Destinations of Iranian Knowledge-Based Enterprises in the Last 5 Years**



**The Status of Knowledge-Based Products in Polymers and Composites**

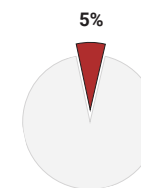
Since the majority of polymer materials (including plastics and rubbers) are produced through oil processing and the fact that oil extraction and processing are one of the largest and oldest industries active in Iran, plastics and rubber manufacturing industries are also among the industries, in which Iran has a relative advantage. Therefore, the production of polymers and polymer composites has been significantly growing in the past few decades, because processing and creating added value in extracted crude oil have always been considered by Iranian industrialists and policymakers.

According to the reports of the Central Bank, the share of the industry sector in the GDP is about %26. In relation to the position of advanced materials, it can be said that Iran's petrochemical industry is the producer of raw materials needed for the production of polymers and composites, and other industries such as electricity, steel, construction, automobiles, etc. are either the processors of polymers or consumers. In addition, polymers and polymer composites have a special place in Iran's exports. In the last few years, about 11,500 million dollars, which comprises about 15 percent of Iran's total export has been allocated to the field of chemical intermediates, a significant part of which is specific to polymers and polymer composites.

Considering the availability of the primary resources required for the production of

chemical intermediates in Iran (which also include polymers and polymer composites are part of it), as well as the dependence of other industries on this field, the foundations for the growth of many knowledge-based technologies and products have been provided in it. This process is currently under way owing to the activity of more than 650 Iranian knowledge enterprises and the supply of more than 1100 technological products. Paying special attention to creation of added value in technology chains related to oil extraction and the development of downstream petrochemical industries has caused the activity of knowledge-based companies that produce chemical intermediates including polymers and polymer composites to be accompanied by significant growth in recent years. This statement can be proved considering that this field comprises about %10 of the volume of Iran's knowledge-based production and employment. Finally, regarding the export of knowledge-based products of this field, it is worth mentioning that a total of 845 million dollars worth of products produced by knowledge-based companies active in the field of chemical intermediates have been exported outside Iran in the last 5 years.

**The Percentage of Chemical Intermediates from All the Knowledge-Based Enterprises**

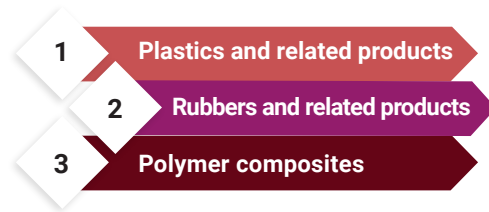


**The Main Export Destinations of Iranian Knowledge-Based Enterprises in the Field of Chemical Intermediates**



## The Division of Knowledge-Based Products in Polymers and Composites

As previously mentioned, due to the development of the petrochemical industry as the origin of the production of many polymers and composites in Iran, as well as the reliance of other industries on this industry, the foundations for the growth of many knowledge-based technologies and products has been provided in it. In this book, products have been collected that can be divided into the following categories:



The following describes each category and their subcategories in order to give a general understanding of these areas.

### 1

## Plastics and Related Products

Plastics can be molded and shaped by applying heat and pressure. This property is known as plasticity. Plastics are light, have low density, poor electrical conductivity, transparency and some other properties. In addition, plastics have a high molecular mass, and therefore they are widely used in the manufacture of many materials such as coatings, synthetic fibers, etc. Some of the most important plastics used in trade and production of various products include polyethylene, polypropylene, polystyrene, PET, PTFE, etc., and other additives such as stabilizers (to maintain a certain property in the polymer), fillers (to improve performance), softeners (in order to improve flexibility) are also used in their production process. Plastic knowledge-based products can be divided into the following groups:

- **First Section | Plastic Compound and Masterbatch:**

A masterbatch is composed of several pigments or additives such as mineral fillers or other chemicals that are optimally encapsulated into a carrier resin with the aim of producing color, improving properties or reducing the cost. Polymer compounds are a mixture of one or more polymers or different additives to increase physical, mechanical, thermal, etc. properties. Compounds and masterbatches for the production of plastics are usually available in the market in the form of granules, and in this subcategory, related knowledge-based products such as compounds based on polyamide, polypropylene, polyethylene, and polycarbonate have been included. These products contain various additives and therefore, possess special properties.

- **Second Section | Polymer Additives:**

There are materials that are used to improve or correct the properties of plastic products. Increasing hardness, color stabilization, heat insulation, glossing, reducing the weight of the finished product and reducing the use of resin in plastic compounds are among these properties, each of which requires a special additive to be created in the base polymer, and how to use the polymer additive is different depending on the type of polymer and its application. Knowledge-based polymer additives in this sub-category are mostly used in PVC.



- **Third Section | Finished polymer products:**

In this subcategory, knowledge-based products are presented that can be directly and immediately used (without the need for processing) and are in forms of film, wax, polymer containers, insulation, cable, etc. These products are made of polymers such as polyurethane, polystyrene, polyethylene, etc. and have outstanding properties.

*Start chapter at page 22 »*

## 2

### Rubbers and Related Products

Rubber is an elastic material that exists in two forms: natural rubber and synthetic rubber. Natural rubber is composed of isoprene polymers and water along with some other compounds and is extracted naturally from some trees, whereas synthetic rubber is produced from oil or natural gas. There is a wide range of products obtained from rubber, and the capabilities of knowledge-based companies in this field are presented in the following subcategories:

- **First Section | Rubber Compound and Masterbatch:**

Rubber compound and masterbatch consist of a combination of one or more elastomer polymers and various additives to increase physical, mechanical, thermal properties, etc., and are used for the production of final rubber products. In this subcategory, various types of rubber compounds, including polyurethane and latex, are presented.

- **Second Section | Rubber Belts:**

A belt is a means of power transmission, and rubber belts are composed of two main components: rubber and interwoven strong fibers. These fibers, which are located in the middle layers of the belt, increase the strength of the conveyor belt longitudinally and transversely. The type of material and texture and the number of fibers used in the conveyor belt greatly affect its tensile strength. In this subcategory, all kinds of rubber belts produced by knowledge-based companies are presented.

*Start chapter at page 182 »*

## 3

### Polymer Composites

Polymer matrix composites are a group of composites that are made by placing short or long fibers in a polymer matrix. Therefore, they have unique properties and qualities that cause them to be used differently from ordinary polymers. These qualities include low weight, high flexibility, corrosion resistance, high stability, electrical properties, etc. In this subcategory, polymer composites produced by knowledge enterprises are presented and divided into the following subcategories:

- **First Section | Tanks, Pipes and other Polymer Composite Fittings:**

The use of polymer composite tanks, pipes and fittings is more common than metal samples due to their corrosion resistance, high strength, very accurate dimensions and size, customization and cost. Polymer composite tanks, pipes and fittings included in this subcategory are generally made of epoxy and reinforced with carbon fibers.

- **Second Section | Sheets and Composite Insulators:**

In this subcategory, polymer composite sheets and insulators that are generally multi-layered and have various applications, including building materials (building facade), thermal insulation, etc., are presented.

*Start chapter at page 200 »*

# Polymers and Composites

First Chapter

## Plastics and Related Products

- Plastic Compound and Masterbatch
- Polymer Additives
- Finished Polymer Products



Second Chapter

## Rubbers and Related Products

- Rubber Compound and Masterbatch
- Rubber Belts



Third Chapter

## Polymer Composites

- Tanks, Pipes and other Polymer Composite Fittings
- Sheets and Composite Insulators



First Chapter

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# Plastics & Related Products



# First CHAPTER

FIRST CHAPTER

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Third chapter

## Plastics and Related Products

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Plastic Compound and Masterbatch

Polymer Additives

Finished Polymer Products

Sections:



**Application:**

Production of car interior parts that require high strength and heat resistance and the production of home appliance parts that require high strength (washing machine drum).

➤ **Polypropylene Compound Reinforced with Glass Fibers**

🏠 Parsa Polymer Sharif Co.

[www.parsapolymer.com](http://www.parsapolymer.com)



**Product Introduction:**

This granule is prepared from two components of polypropylene and glass fibers and exhibits good properties, including a much higher modulus than the polymer matrix. Therefore, this granule can be used in many areas where very high strength and modulus are required.

**Main Export Destinations:**

China, Turkey, Azerbaijan, Uzbekistan, Turkmenistan, Romania, Dominican Republic, Georgia, Malaysia, Lebanon

**Export History:**

1,000,000 - 10,000,000 \$

**Founded:**

2007

*This product is a final B2B consumer product.*

**Technical Specifications:**

The formulation includes the polymer base i.e. polypropylene, glass fibers, compatibilizer (maleic polypropylene), lubricant, thermal stabilizer and pigments. Glass fiber is a vitally important component in PP/GF composite. The type of coating in the degree of compatibility with the polymer matrix and the final length of the fibers in the degree of achieving mechanical properties according to the components of the compound and additives; And the opening through which glass fibers enter the extruder and the length of the extruder machine should be determined according to the type of fiber coating and the length of the fibers. Internal and external lubricants are very important in PP/GF compounds. Considering their direct effects on the processability of the produced granule during the production of the final part and the hardness of the surface of the parts produced from PP/GF; The presence of lubricant and the amount and type of lubricant are very important in the easy separation of the part from the mold.

**Advantages:**

- ✦ High production volume
- ✦ Reasonable price
- ✦ Customization of formulation

**International Standards or Permission:**

ISO 17025



**Application:**

- \* Automotive industry such as air manifolds, car interior parts
- \* Electrical parts such as LED lamps, parts such as meter body

➤ **Compounds Based on Polyamide 6 and Polyamide 66**

◆ Parsa Polymer Sharif Co.

[www.parsapolymer.com](http://www.parsapolymer.com)



**Product Introduction:**

Depending on the type of application of the final product, this category of products includes polyamide 6 or polyamide 66 reinforced with glass fibers, polyamide with modified impact resistance, polyamide with flame retardancy and polyamide reinforced with glass fibers and with flame retardancy.

**Main Export Destinations:**

China, Turkey, Azerbaijan, Uzbekistan, Turkmenistan, Romania, Dominican Republic, Georgia, Malaysia, Lebanon

**Export History:**

1,000,000 - 10,000,000 \$

**Founded:**

2007

*This product is a final B2B consumer product.*

**Technical Specifications:**

The formulation of these products generally includes polyamide, glass fibers, compatibilizer, thermal stabilizer, paint (mainly black) and impact modifier (of polymer ester compounds type that also serve as a compatibilizer). High toughness (balance of mechanical strength and impact strength) of the product and at the same time no decrease in thermal stability and high resistance to hydrolysis are other characteristics of this product. Flame resistant types also have the following characteristics:

- \* Resistance to ignition according to UL94 test in flame resistant grades (V0 classification)
- \* Resistance to ignition according to the flammability index test of the ignited wire in flame-resistant grades (850 to 950 degrees Celsius)
- \* High creeping flow track of insulating material (CTI) especially in flame resistant grades (400-600 V)

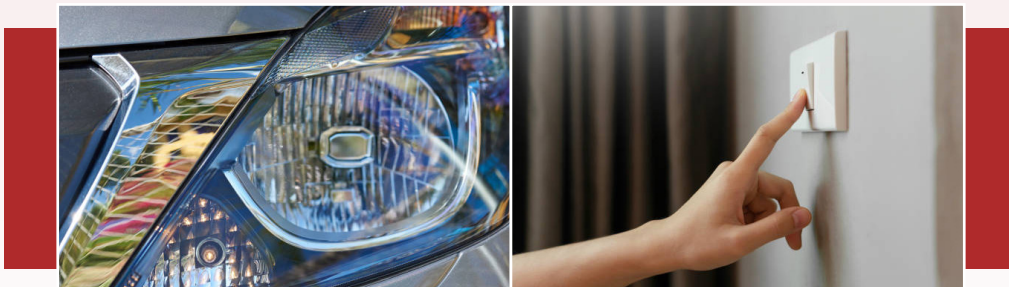
**Advantages:**

- \* High production volume
- \* Reasonable price
- \* Customization of formulation

**International Standards or Permission:**

ISO 17025





### ●> Compounds Reinforced with Glass Fibers

Based on Polyethylene Terephthalate and Polybutylene Terephthalate and Their Alloys

#### ◆ Parsa Polymer Sharif Co.

[www.parsapolymer.com](http://www.parsapolymer.com)



#### Product Introduction:

This product includes polyethylene terephthalate reinforced with glass fibers, polybutylene terephthalate reinforced with glass fibers, as well as flame-resistant polyethylene terephthalate and polybutylene terephthalate alloy. In this family, a compound of two or more plastic resins is prepared and other factors are added depending on the performance needs. These factors are selected according to the production conditions (complexity of the shape of the part), physical properties (such as thermal resistance or flammability) and required mechanical properties (elastic modulus, yield strength or fracture toughness) and after going through the laboratory and pilot stages, are ultimately stabilized in the final formulation.

#### Main Export Destinations:

China, Turkey, Azerbaijan, Uzbekistan, Turkmenistan, Romania, Dominican Republic, Georgia, Malaysia, Lebanon

#### Export History:

1,000,000 - 10,000,000 \$

#### Founded:

2007

### Application:

Automotive industry and household and electrical appliances such as electrical parts and car lighting, electrical switches and sockets and household electrical appliances parts

*This product is a final B2B consumer product.*

#### Technical Specifications:

In products where the base resin is a combination of the two above mentioned types of polyester, controlling the morphology of the matrix and as a result the final properties have a very high sensitivity. This is the result of the ester exchange process between these two polymers.

Although ester exchange increases the compatibility of two polymers, which is necessary to prevent premature failure, at the same time, it hinders the progress of polymer crystallinity and causes the loss of mechanical properties. In these alloys, generally PET serves as a matrix, because it has a slightly lower melting temperature. PBT has the role of increasing HDT and strength.

#### Advantages:

- \* High production volume
- \* Reasonable price
- \* Customization of formulation

#### International Standards or Permission:

ISO 17025



**Application:**

- \* These alloys are used in the automobile industry (such as passenger AC valve and decorative frame on the dashboard)
- \* Household appliances (such as the polymer body of the wall-mounted water heater and washing machine)
- \* As well as electrical and electronic appliances (such as the fan and propeller of the cooling fan of special equipment and the body of the POS device).

➤ **Polymer Alloys Based on PC and ABS**

◆ Parsa Polymer Sharif Co.

[www.parsapolymer.com](http://www.parsapolymer.com)



**Product Introduction:**

This product includes a set of polymer alloys whose base polymer is polycarbonate (PC) or acrylonitrile butadiene styrene (ABS) or a combination of these two polymers. The mentioned alloys have appearance, color, mechanical and flame resistance properties depending on the desired performance. Shiny and luxurious appearance, high impact strength, resistance to deformation caused by temperature, as well as resistance to flammability are the most important features of the parts produced with this product.

**Main Export Destinations:**

China, Turkey, Azerbaijan, Uzbekistan, Turkmenistan, Romania, Dominican Republic, Georgia, Malaysia, Lebanon

**Export History:**

1,000,000 - 10,000,000 \$

**Founded:**

2007

*This product is a final B2B consumer product.*

**Technical Specifications:**

This product is generally produced from polycarbonate, ABS, compatibilizer, flame retardant additive, anti-UV additive, lubricants such as polar wax and heavy stearate soaps, antioxidants and colored pigments.

Combining formulation and final viscosity with the aim of achieving flame retardant and color properties is challenging. Because the relevant components interact with each other. However, in the case of automobiles and household appliances, compounds are usually produced without flame retardant and usually have bright colors. Basically, polycarbonate interacts with some pigments and gets destroyed. Especially in internal polycarbonates, there are catalyst residues that form a complex with pigments. Depending on the type of application and the base polymer, the impact strength is generally higher than 14 kJ/m<sup>2</sup> and this factor is even increased to 40 kJ/m<sup>2</sup> in some grades.

These compounds are mainly used in parts where gloss and beauty are important, so the gloss on the smooth surface should be higher than 50 GLU and in some cases even higher than 70 GLU. In most grades of this family, flame retardant additives have been used so that the compound is placed in class V0 according to the UL94 standard.

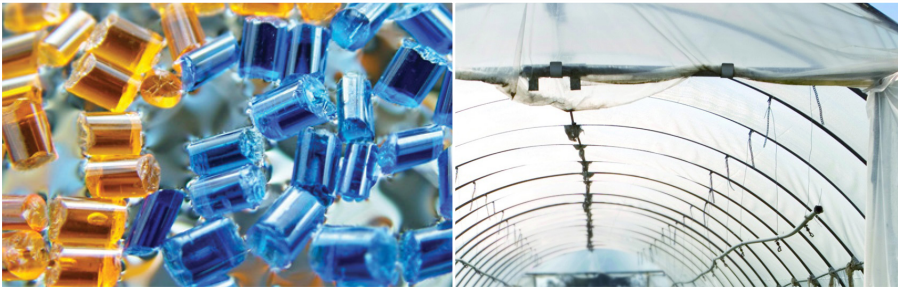
**Advantages:**

- \* High production volume
- \* Reasonable price
- \* Customization of formulation

**International Standards or Permission:**

ISO 17025





## ➤ Various Types of Compounds and Masterbatch Based on Polyethylene and Polypropylene

◆ Pooya Polymer Tehran Co.

[www.pooyapolymertehran.com](http://www.pooyapolymertehran.com)



### Product Introduction:

Compound and masterbatch are base polymer materials with additives that have the desired properties of the final polymer product, and they are in fact, a thick matrix that is supposed to be dispersed in the base polymer and produce the desired properties in the final product. These compounds include the following:

- \* Antioxidant masterbatch based on PE or PP
- \* Antistatic slip masterbatch
- \* Polishing masterbatch based on PE or PP
- \* Filler compound based on PE or PP
- \* Anti-scratch compound based on PP
- \* Intumescent masterbatch
- \* Antifog compound based on PE
- \* Irrigation tape compound
- \* Process aid masterbatch
- \* Black masterbatch of pipe grade on PE
- \* White masterbatch based on PE
- \* Color masterbatch
- \* Moisture absorbent masterbatch based on PE
- \* Impact modifier compound based on PE and PP
- \* PP-based flame retardant masterbatch
- \* Fragrance masterbatch based on PE and PP
- \* Antistatic masterbatch based on PE, PP

### Export History:

1,000,000 - 10,000,000 \$

### Founded:

1995

### Application:

Production of pipes, types of polymer films, types of polymer parts, irrigation tape and polymer finished products

*This product is a final B2B consumer product.*

### Technical Specifications:

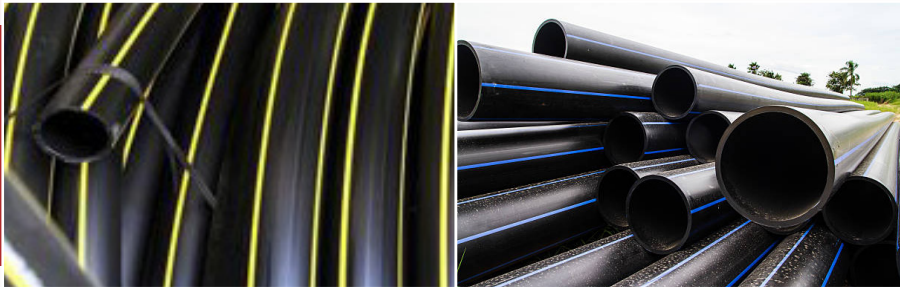
The intended compounds in question are mainly based on polyethylene and polypropylene along with desired additives, sometimes up to 80%, and are supplied in the form of granules.

### Advantages:

- \* Variety of products at reasonable prices
- \* The possibility of customization based on the final application

### Main Export Destinations:

South Korea, Canada, Kuwait, Georgia, Armenia, Uzbekistan, Ukraine, Pakistan, UAE, Tajikistan, Turkmenistan, Turkey, Syria, Iraq, Kyrgyzstan, Kazakhstan, Afghanistan



➤ **PE100 Black and Yellow Polyethylene Compound and Gas Transmission Pipelines Produced Based on These Compounds**

◆ **Vijegan Baspar Shargh Co.**

[www.vijegan-baspar.com](http://www.vijegan-baspar.com)



**Product Introduction:**

The desired compound is made from the combination of mother polymer, i.e. heavy polyethylene, with additives such as carbon black, antioxidants and process aids. This product is in the form of granules and the yellow compound is also used as an identification strip in the body of the pipe.

**Main Export Destinations:**

Russia, China, Turkey, Armenia, Turkmenistan, Kyrgyzstan, Georgia, Iraq, Afghanistan

**Export History:**

1,000,000 - 10,000,000 \$

**Founded:**

2008

**Application:**

Production of gas transmission pipes

*This product is a final B2B consumer product.*

**Technical Specifications:**

Due to the harsh operating conditions of gas transmission pipes, it is necessary for the desired compound to pass resistance standards and be strengthened by additives.

**Advantages:**

Low price

**International Standards or Permission:**

- \* EN 1555-2
- \* EN 1555-1



## ➤ Heavy Polyethylene Compound Containing 40% Carbon Black for Production of Water Pipe

◆ **Vijegan Baspar Shargh Co.**

[www.vijegan-baspar.com](http://www.vijegan-baspar.com)



### Product Introduction:

Black masterbatch is obtained from the combination of carbon black and proper mixing in a polymer base. In general, black masterbatches are used for two purposes:

1. As a color for coloring polymer bases
2. As an additive to protect the polymer base against ultraviolet rays

Obviously, these tasks can be done simultaneously. This masterbatch is used in the production of water supply pipes. Black carbon (soot or carbon black) is the most important pigment for the production of black masterbatch in the plastic industry. This pigment has a great tendency to agglomerate and therefore the good distribution of carbon black particles in the polymer resin is of particular importance in this masterbatch. The amount of distribution of this product is also a criterion for measuring its quality.

### Main Export Destinations:

Russia, China, Turkey, Armenia, Turkmenistan, Kyrgyzstan, Georgia, Iraq, Afghanistan

### Export History:

1,000,000 - 10,000,000 \$

### Founded:

2008

### Application:

Production of water pipes

*This product is a final B2B consumer product.*

### Technical Specifications:

The main feature of this product is its very suitable distribution and uniformity of quality. This product contains a high amount (up to 40%) of N550 carbon black.

### Advantages:

Low price

### International Standards or Permission:

Approval of Waster And Wastewater department of Iran



## ► Pipe and Cable Grade Crosslinkable Polyethylene (PEX, XLPE)

◆ Kimia Javid Sepahan Co.

[www.kimiajavidco.com](http://www.kimiajavidco.com)



### Product Introduction:

Polyethylene is the most widely used family of polymers. This polymer is used in many industries such as pipes, cables, fibers, tanks, etc. due to its favorable chemical resistance, long life, good flexibility and reasonable price. But the biggest disadvantage of this polymer is the lack of service and efficiency at temperatures above 60 degrees Celsius. This can be troublesome when used in hot water pipes or under conditions of sudden temperature increase in moments such as overloading the wires. Therefore, polyethylene is transformed into a polymer with superior thermal properties by creating cross links during a special process called "cross linking". The increase in temperature leads to the polyethylene being able to service at temperatures more than 90 degrees. In cross-linked polyethylene (PEX or XLPE), some properties such as chemical resistance and environmental stress resistance (ESCR) are effectively increased. In this process, polyethylene becomes an insoluble and infusible material.

### Main Export Destinations:

China, Turkey, Malaysia, Azerbaijan,  
Uzbekistan, Afghanistan

### Export History:

1,000,000 - 10,000,000 \$

### Founded:

1999

### Application:

Production of five-layer polyethylene pipes used in water transportation

*This product is a final B2B consumer product.*

### Technical Specifications:

The current trend in the world in the production of cross-linked polyethylene; is towards copolymerization of silane with monomer. Although the grafting process is still popular, the issue of not creating a gel until the final process is very important. Therefore, choosing the base polymer and the gripping agent (silane) and the initiator (peroxide) is important, and in this collection, several types of peroxide are used for this purpose.

The amounts of these components are highly sensitive and the criterion for using very small amounts also applies to this product. In addition, the desired formulation is very sensitive to process conditions. Apart from the mentioned components, additives such as antioxidants, color, gloss masterbatch and lubricants are also used in the product production process.

### Advantages:

- \* Low price
- \* High quality

### International Standards or Permission:

- \* ISO 9001:2015
- \* ISO/TS 29001:2010



**Application:**

Coating of gas transmission steel pipes

➤ **Production of Five-Layer Polyethylene Pipes Used in Water Transportation**

◆ **Kimia Javid Sepahan Co.**

[www.kimiajavidco.com](http://www.kimiajavidco.com)



**Product Introduction:**

Usually, the size distribution of molecules in a polyethylene polymer follows a bell-shaped normal distribution curve described in the Gaussian probability theory. A polymer with a narrow molecular weight distribution curve has molecules that are almost identical to each other in terms of molecular weight. Such a polymer crystallizes at a faster and more uniform rate. The part resulting from this crystallinity does not warp much. A polymer that has chains varying in length from short to long has a wide molecular weight distribution. Resins with this type of molecular weight distribution have good resistance to slow crack growth, as well as good impact resistance and processability. When using polyethylene as the outer coating of gas pipes, several properties become important. Resins that have double-peaked molecular weight distribution, contain polyethylene molecules with very short and very long chains, and while maintaining good processability, have excellent physical properties in the resin. Several layers of coating are applied to steel pipes to prevent corrosion, one of these layers is black polyethylene compound, which in addition to high MFI, should have high ESCR properties and good mechanical properties. For this purpose, double-peaked polyethylenes are used in foreign samples, where components with high molecular mass are responsible for more mechanical and environmental properties, and components with low molecular mass are responsible for easier processability. These polymers are synthesized in the reactor as two-peaked.

**Main Export Destinations:**

China, Turkey, Malaysia, Azerbaijan, Uzbekistan, Afghanistan

**Export History:**

1,000,000 - 10,000,000 \$

**Founded:**

1999

*This product is a final B2B consumer product.*

**Technical Specifications:**

This product is a combination of several polymers with various additives such as process aids, antioxidants and soot. The resulting sample should have good processability, proper adhesion and high mechanical properties. Also, the properties of ESCR (resistance to environmental stress), OIT resistance (resistance to oxidation) and proper distribution of soot are very important. Soot is prepared in the form of a masterbatch with the desired bases and is used in the desired compound. The percentage of soot in the final compound will be about 2.4%. The prepared masterbatch is 40%.





### Application:

These categories of products are used in variety of industries such as packaging, sanitary and construction supplies, home appliances and office furniture, agriculture and gardening, electrical parts, ...

## ➤ Calcium Carbonate Compounds

🏠 Nirumand Polymer Pars Eng. Co.

[www.nirumandpolymer.com](http://www.nirumandpolymer.com)



### Product Introduction:

These products include high percentage of calcium carbonate. Our customers can mix them with polypropylene or polyethylene in different percentages. Adding low percentage of carbonate compounds to the base polymer leads to improvement of some properties such as flexural modulus, dimensional stability, increase of thermal resistance, decrease of shrinkage, improvement of processability and printability and decrease of sink marks. Using high percentage of carbonate compounds lead to the cost reduction of the products.

#### Main Export Destinations:

Turkey, Azerbaijan, Turkmenistan, Kazakhstan, Iraq and Afghanistan

#### Export History:

1,000,000 - 10,000,000 \$

#### Annual Production Capacity:

14 Tons

#### Founded:

2011

*This product is a final B2B consumer product.*

### Technical Specifications:

- \* Improving processability
- \* Printability and dimensional stability in manufactured products
- \* Cost reduction

### Advantages:

Low price



## ➤ Filled and Reinforced Engineering Compounds

◆ Nirumand Polymer Pars Eng. Co.

[www.nirumandpolymer.com](http://www.nirumandpolymer.com)



### Product Introduction:

These products include reinforced compounds with Glass Fiber, Mineral materials and Polymer alloys.

Using mineral powder such as Talc leads to the improvement of mechanical properties such as Tensile strength, Flexural modules and using Glass fiber causes the increase of Tensile strength, Flexural modules, impact resistance and decrease of creeping.

Furthermore, using these fillers lead to dimensional stability, increase of thermal resistance, decrease of shrinkage and decrease of sink marks. Polymer alloys also improve the mechanical properties, develop the processibility and reduce the cost.

#### Main Export Destinations:

Turkey, Azerbaijan, Turkmenistan, Kazakhstan, Iraq and Afghanistan

#### Export History:

1,000,000 - 10,000,000 \$

#### Annual Production Capacity:

12.5 Tons

#### Founded:

2011

### Application:

This group of products are used in various industries such as automotive, constructional tools, home appliances and office furniture, electrical parts and etc.

*This product is a final B2B consumer product.*

### Technical Specifications:

#### ※ Products reinforced with mineral powders:

- Increase of flexural modules
- Dimensional stability
- Increase of thermal resistance
- Decrease of sink marks
- Improvement of processability

#### ※ Products reinforced with Glass Fiber:

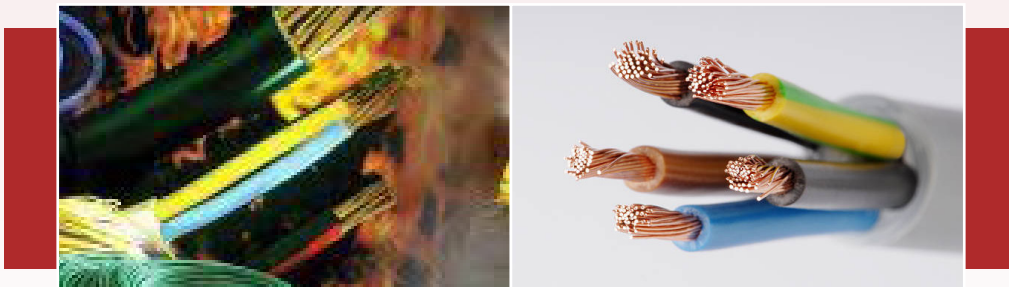
- Increase of tensile strength
- Increase of flexural modules
- More thermal resistance
- Dimensional resistance
- Decrease of sink marks
- Decrease of creeping

#### ※ Alloys:

- Improved mechanical features as tensile strength
- Elastic modulus and high impact resistance
- Good processibility
- Cost reduction

### Advantages:

- ※ Customization based on customers' demands and function
- ※ Achieving mechanical and functional resistance on customers' final products



**Application:**

- ※ Production of cables
- ※ These cables are used in various places such as mines, subway, hospital, oil and gas industries, etc.

➤ **Halogen Free Flame Retardant Polymer Compounds**

◆ **Abhar Polymer Compounds Co.**

[www.abharpolymer.com](http://www.abharpolymer.com)



**Product Introduction:**

Most of the injuries during a fire, is not caused by the fire itself; Rather, it is caused by inhaling smoke and toxic gases. Therefore, the need to meet high levels of safety and health standards and the increasing need of wire and cable manufacturing industries for low smoke and halogen-free flame retardant compounds have been taken into consideration. Nowadays, flame retardant minerals are used instead of halogenated materials to produce flame retardant mixtures. However, the loss of mechanical properties due to the high volume of mineral flame retardant powder in the compound is compensated by using a coupling agent.

**Export History:**

1,000,000 - 10,000,000 \$

**Main Export Destinations:**

Russia, Turkey, Iraq and Central Asia

**Annual Production Capacity:**

3.5 Tons

**Founded:**

1990

*This product is a final B2B consumer product.*

**Technical Specifications:**

The increase of mineral flame retardants in the formulation determines the flame resistance, and on the other hand, the type of polymer base in the matrix has a direct effect on increasing the hardness parameter and viscosity of the melt. Determining the ratio of each polymer in the matrix has a direct effect on the mechanical properties at low temperatures, oil resistance and water resistance. The type of modifier, such as aminosilane, stearic acid, and vinyl silane, as well as the size and distribution of the particles (granulation) of the mineral flame retardant, completely affect the quality of the product.

**Advantages:**

- ※ High quality and High performance against fire
- ※ Competitive price

**International Standards or Permission:**

This product is able to pass the international standard IEC category 60502 as a reference standard in the cable industry





## ➤ UV Resistant Polymer Compounds for Steel Pipe Coating

◆ Abhar Polymer Compounds Co.

[www.abharpolymer.com](http://www.abharpolymer.com)



### Product Introduction:

The surface of the pipes must be protected against long-term environmental hazards by a steel protective coating, as well as during the installation process. Thermoplastic polymer compounds based on heavy polyethylene compound is used to cover steel pipes for gas and water transmission to protect against corrosion. In fact, one of the ways to protect buried steel pipelines in gas and water transmission projects is to cover the pipe with a special polyethylene compound.

### Main Export Destinations:

Russia, Turkey, Iraq and Central Asia

### Export History:

1,000,000 - 10,000,000 \$

### Annual Production Capacity:

2,500 Tons

### Founded:

1990

### Application:

As a coating for gas and water transmission steel pipes to protect against corrosion

*This product is a final B2B consumer product.*

### Technical Specifications:

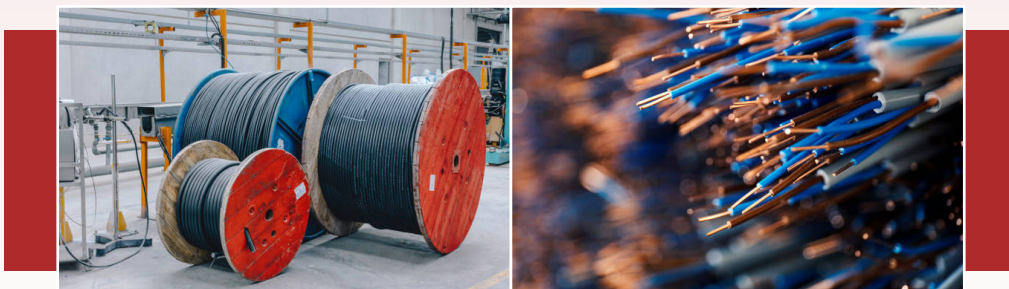
The product in question has higher density as well as higher hardness. The higher density improves the ESCR properties, so even though the standard optimum is 1000 hours F50, this product has been able to withstand the test conditions for more than 5000 hours F50. Higher hardness results in better coating performance during pipe installation. Due to the fact that steel pipes are buried in the soil and have a high weight, as a result, the higher hardness of the polyethylene coating will prevent the stone from penetrating the coating and creating an opening.

### Advantages:

- ※ High quality
- ※ Competitive price

### International Standards or Permission:

These products have passed the CAN/CSA Z45.21 international standard as a reference standard in the pipe coating industry.



**Application:**

Sheathing power cable

➤ **UV Resistant Polymer Compound for Sheathing Power Cables**

🏠 **Abhar Polymer Compounds Co.**

[www.abharpolymer.com](http://www.abharpolymer.com)



**Product Introduction:**

Thermoplastic polymer compounds based on linear low density polyethylene and high density polyethylene are used for sheathing power cables in the wire and cable industry for medium and high voltage cables to transmit electricity with high voltages and low voltage and telecommunication cables. In all applications, the cable sheath must be resistant to the stresses resulting from ozone around the power lines, cracking, chemical agents in the soil, damage caused by mechanical corrosion and UV rays from the sun.

**Main Export Destinations:**

Russia, Turkey, Iraq and Central Asia

**Export History:**

1,000,000 - 10,000,000 \$

**Annual Production Capacity:**

8,500 Tons

**Founded:**

1990

*This product is a final B2B consumer product.*

**Technical Specifications:**

In this product, 3 antioxidants are used with percentages below 1%, which are quite effective in aging (long term). Process control during the manufacture of this compound is very important and will lead to the production of a high-quality product.

**Advantages:**

- \* High quality
- \* Competitive price

**International Standards or Permission:**

These products are produced under the international standard 60502 IEC category 7 ST as a reference standard in the cable industry.



## ➤ Polyethylene Compound for Steel Pipe Coating

### ◆ Padena Polymer Co.

[www.padenapolymer.com](http://www.padenapolymer.com)



### Product Introduction:

Different methods are used to cover the thick pipes used in the oil and gas industry. One of the methods of coating the outer surface of steel pipes, which today has a larger consumer market than other types, is the three-layer polyethylene coating, which includes epoxy, glue, and polyethylene layers. Each of the layers creates properties for the coating to increase its efficiency for a long life.

The epoxy layer has very good adhesion due to the cross links it creates and exhibits high resistance against corrosion and oxygen penetration, but it is vulnerable to mechanical shocks during storage, transportation and line operation. A special type of powder epoxy coating called Fusion bonded epoxy (FBE) is used in coating the outer surface of oil and gas pipes. To compensate for the mechanical weakness of the FBE layer, a polyethylene compound is used in the outer layer.

### Main Export Destinations:

Turkey, India, Azerbaijan, Georgia, Afghanistan

### Export History:

500,000 - 1,000,000 \$

### Founded:

2009

### Application:

Coating steel pipes mainly in the oil and gas industry

*This product is a final B2B consumer product.*

### Technical Specifications:

Polyethylene layer is a very good protection to prevent physical damages. The main issue related to this coating is that the polyethylene compound has a low polarity and therefore does not stick to the metal surface as well as the surface of the FBE coating. Therefore, an intermediate layer which is a modified polymer is used to stick polyethylene to Epoxy. This layer is developed based on polyethylene modified with maleic anhydride.

This coating is possible by forward spiral movement (rotational movement) of the tube through several nozzles. for spiral movement; The tube is placed on the wheels that are placed opposite each other in pairs at an angle, and when the wheels rotate, the tube also rotates around itself and moves forward. Coating is performed in three stations close to each other: 1- First, epoxy powder is sprayed on the pipe by means of special guns (first layer). 2- The middle layer is placed on the pipe from inside a die or nozzle (second layer). 3- Melted polyethylene is placed on the glue from inside a die or nozzle (third layer). Finally, after placing the third layer, a roller with a silicone rubber coating with a length of about one meter causes better adhesion of the layers by exerting pressure on the pipe.

### Advantages:

- \* High quality
- \* Having obtained international licenses

### International Standards or Permission:

- \* ASTM D1603
- \* ISO 18553
- \* ISO 1183
- \* ISO 1133



## ➤ Polypropylene Compound Reinforced with Glass Fibers, for Use in The Production of Car Parts and Household Appliances

◆ Padena Polymer Co.

[www.padenapolymer.com](http://www.padenapolymer.com)



### Product Introduction:

Polypropylene reinforced with glass fibers have higher dimensional stability compared to pure polymer, and the parts made of reinforced propylene are less likely to warp. In terms of mechanical strength and rigidity, polypropylene containing glass fibers shows improvement compared to the pure sample. Also, by adding up to 40% glass fibers to polypropylene, its thermal expansion coefficient is reduced by half. When 30% glass fibers are used along with polypropylene, the tensile strength increases up to 180%. Meanwhile, if the right glass fibers are not used, the increase in tensile strength is only about 50%.

### Main Export Destinations:

Turkey, India, Azerbaijan, Georgia, Afghanistan

### Export History:

500,000 - 1,000,000 \$

### Founded:

2009

### Application:

This compound is used in cases such as the production of household appliance parts or some car parts such as car fans, which must have high thermal and mechanical resistance.

*This product is a final B2B consumer product.*

### Technical Specifications:

The density of this product can vary from about 0.94 gr/cm<sup>3</sup> for pure PP to more than 1.2 gr/cm<sup>3</sup>, depending on the amount of glass fibers in the formulation and also how it is processed. The next important category is mechanical properties. The amount of elongation until the breaking point is inversely proportional to the number of glass fibers in the formulation.

According to ASTM D638 standard test method, this quantity can vary from about 9% for pure polypropylene to less than 3%. In the same way, the tensile strength can vary from less than 30 MPa to more than 90 MPa. Naturally, increasing the number of glass fibers increases the tensile strength. The Izod impact test for the notched part at ambient temperature, based on the ASTM D256 standard test method, can range from 6 KJ/m<sup>2</sup> to more than 13 KJ/m<sup>2</sup>, which the impact resistance is improved by introducing glass fibers into the formulation. Another important mechanical characteristic is flexural strength and flexural modulus, which can vary between 13-90 MPa and 1000-6000 MPa, respectively. Finally, the thermal characteristics of this compound should be taken into consideration that according to the ASTM D256 standard test method, the bending temperature under the pressure of 1.8 MPa is generally in the range of 100-160°C. By increasing the amount of glass fibers in the formulation, this temperature increases.

### Advantages:

Customization based on customer needs and type of performance

### International Standards or Permission:

- \* ISO 1183 standard
- \* ASTM D1238 test standard
- \* ASTM D955 test standard
- \* Bending strength measured according to ASTM D790 standard test method
- \* Thermal resistance measured according to ASTM D256 standard test method





**Application:**

Production of parts with high mechanical properties such as car parts, household appliance parts and things like that

➤ **Polyamide 6 and 66 Compounds Reinforced with Glass Fibers**

🏠 **Arsam Plast Co.**

[www.arsamplast.com](http://www.arsamplast.com)



**Product Introduction:**

PA66 polyamide compound with fibers exhibits very good resistance, physical and mechanical properties. However, one of the weak points of this material is that it hydrolyzes when placed in the vicinity of water. Hydrolysis causes the loss of material properties over time. The mentioned compound has the ability to service at high temperature, and has high resistance to hydrolysis and high strength. The presence of polyamide in the vicinity of water and heat causes its hydrolysis, and the hydrolysis of the material causes the destruction of the material, loss of properties and defects in the performance of the final piece. The product developed by the company is a compound of polyamide resistant to hydrolysis and impact.

**Main Export Destinations:**

Germany, UAE, Turkey, Tajikistan, Azerbaijan

**Export History:**

Up to 500,000 \$

**Founded:**

2015

*This product is a final B2B consumer product.*

**Technical Specifications:**

- \* **Density:** 0.03±1.35
- \* **Ash Content:** 2±30 %
- \* **Tensile Strength At Break:** ≥155 Mpa
- \* **Elongation At Break:** ≥%2
- \* **Notched Izod Impact:** 20 Kj/m<sup>2</sup>
- \* High tensile strength, %30 increase in breaking strength for this component compared to ordinary polyamide 66 and 6, from 83 MPa to 10 MPa
- \* Thermal resistance at high temperatures with a thermal deformation temperature of 234.5°C

**Advantages:**

- \* High volume of production
- \* Customization



## ➤ Polyester Polyol and its Prepolymer to Produce Polyurethane

◆ Resam Polymer Nami Co.

[www.namigrp.com](http://www.namigrp.com)



### Product Introduction:

In general, polyurethanes refer to a group of chemicals that are produced by the condensation reaction of polyol and isocyanates (prepolymer) as the main constituents. Polyurethanes can be prepared according to the required hardness, and this variety depends on the raw materials (polyol and pre-polymer) and the production process used.

There is a very wide variety of these compounds in terms of mechanical properties, high chemical resistance, fast curing, high light resistance if needed, the ability to form foam, etc. These polymers are the result of step-growth polymerization reaction between di or polyisocyanates with di and polyols. This reaction can result in the formation of a crosslinked and thermosetting polymer, or a non-crosslinked and thermoplastic structure, which is a thermoset product.

### Main Export Destinations:

Turkey, Syria, Afghanistan

### Export History:

Up to 500,000 \$

### Founded:

2016

### Application:

Polyurethanes can have very diverse properties, which makes them a suitable option in a wide range of industries, such as glue, paint, and flooring, to types of foam, shoe soles, elastomer parts, etc. These various properties can be obtained by choosing the appropriate reactive components.

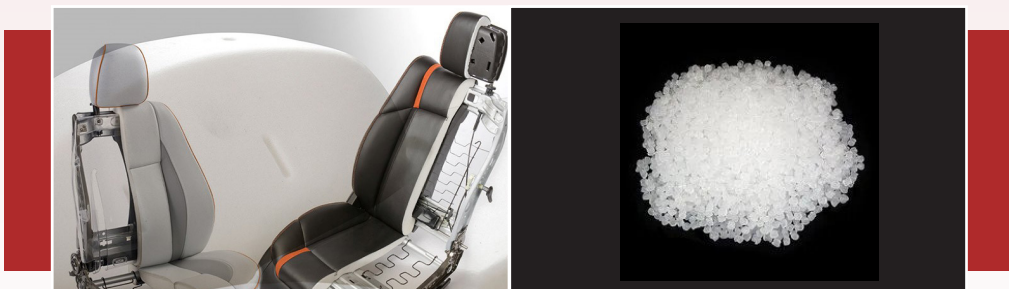
*This product is a final B2B consumer product.*

### Technical Specifications:

- ※ Thermosetting polyurethanes are supplied in the form of two or three reactive components, which are mixed together in a certain ratio adjusted by the consumer and produce the final polyurethane product under the specified reaction conditions. The two main components are polyisocyanate and polyol, which are supplied in formulated form. In some cases, when there is a possibility of an adverse effect between the polyol and the catalyst during storage, the catalyst is provided separately and mostly as a third component. The company's product is a polyurethane system consisting of three components: polyester polyol, isocyanate prepolymer and a set of additives (including catalyst, cross-linking agent, chain extender, surfactant and foaming agent).
- ※ Types of linear and branched polyester polyols (different functional groups) with hydroxyl values of 28 to 500 mgKOH/g, molecular weight of 350 to 4000 and final acidity less than 0.5 mgKOH/g.

### Advantages:

- ※ High Quality
- ※ Very high production volume
- ※ Variety of consumer grades
- ※ Possibility of customization



## ➤ Polyurethane Used in the Adhesive Industry using Polyol and Prepolymer Produced by the Company

◆ Resam Polymer Nami Co.

[www.namigrp.com](http://www.namigrp.com)



### Product Introduction:

In general, adhesives are various chemical structures whose purpose is to connect objects or parts of similar or dissimilar materials. These compounds are used in many industries and there are few products independent of suitable glue. Adhesives used in industry are classified into several main families that are specialized according to need.

### Main Export Destinations:

Turkey, Syria, Afghanistan

### Export History:

Up to 500,000 \$

### Founded:

2016

### Application:

In general, polyurethane adhesives are considered to be very versatile and widely used materials due to a suitable combination of properties and characteristics, and it is possible to use them in a wide range of fields such as the automotive industry, household appliances, bags and shoes.

*This product is a final B2B consumer product.*

### Technical Specifications:

One of the basic features of this product is the ability to increase a high volume of fillers with different characteristics in its structure without losing properties or altering the viscosity out of the desired range, each of which gives the glue a new range of features. The molecular weight of polyol used for glue should be around 1000 to 3000, but according to the need, it is possible to use polyols with low molecular weight around 500-300 by applying some changes in the chemical structure. In single-component adhesives, which mainly use polymeric or modified isocyanates, modified isocyanates should either have an NCO of about 27 to 30, or be used as prepolymers with a low NCO (less than 5), in which case, they are cured with limited OHs on the surface and or moisture. Also, adding bifunctional molecules to the structure without disturbing the proper ratio of hydroxyl is another technical characteristic of this product.

### Advantages:

- \* High Quality
- \* Very high production volume
- \* Variety of consumer grades
- \* Possibility of customization



## ➤ Thermoplastic Polyurethane for In-situ Reactive Molding (Polyurethane / TPU Rubber Imitation)

➤ Resam Polymer Nami Co.

[www.namigrp.com](http://www.namigrp.com)



### Product Introduction:

The company's product is thermoplastic polyurethane (TPU), which is produced from the company's own products, and in addition to having the characteristics of thermoplastic elastomeric polyurethane (TPU), there has been an effort to mold it in the form of casting. The main method of thermoplastic forming of polyurethane elastomers (TPU) is injection at high pressure and temperature into hydraulically, pneumatically or mechanically fastened molds in order for it to fill the entire mold and this high pressure (for some parts is close to 10 tons) should be maintained until the injection port cools down.

### Main Export Destinations:

Turkey, Syria, Afghanistan

### Export History:

Up to 500,000 \$

### Founded:

2016

### Application:

This product is very appealing to owners of reactive in-situ molding (RIM) machines who wish to produce polyurethane elastomeric thermoplastic parts.

This polymer can be used in the production of products such as car parts, gaskets, O-rings, shoe soles, high diversity foams, multi-layer polyurethanes, etc.

*This product is a final B2B consumer product.*

### Technical Specifications:

One of the advantages of this product is its low operating temperature and the same temperature as the polyurethanes used in the foam industry ( $^{\circ}50-40C$ ), which allows the creation of multi-layered polyurethanes, because in the usual forming process of TPUs, the granules of this polymer must be completely melted and injected into the mold with high pressure. This structure is also synthesized generally from the reaction between a polyol and isocyanate with special characteristics.

The molecular weight of polyol is between 1000 and 3000, the acidity is less than %0.5 with hydroxyl values of 38 to 120 mgKOH/g. The molecular weight of isocyanate prepolymer is between 500 and 1500.

### Advantages:

- \* High Quality
- \* Very high production volume
- \* Variety of consumer grades
- \* Possibility of customization





➤ **White Masterbatch Based on Titanium Dioxide and Calcium Carbonate With More Than 75% Additive**

🏠 **Paya Polymer Dana Co.**

[www.paya-polymer.com](http://www.paya-polymer.com)



**Product Introduction:**

The polymer base of this grade is polypropylene and polyethylene, and it is produced using a mineral substance with whitening properties, namely TiO<sub>2</sub>. The production of masterbatch with suitable quality for the preparation of titanium dioxide has uniform distribution and suitable coating. In this masterbatch, the high percentage of mineral powders makes its distribution difficult, and because the masterbatches are intended for use in polymer films, this issue is very important and may cause scratches on the film.

**Main Export Destinations:**

Iraq

**Export History:**

Up to 500,000 \$

**Founded:**

2005

**Application:**

As a white masterbatch in various polyethylene and polypropylene bases in the production of all plastic products, including packaging films, water tankers, white pipes, disposable containers, etc., by creating a white color

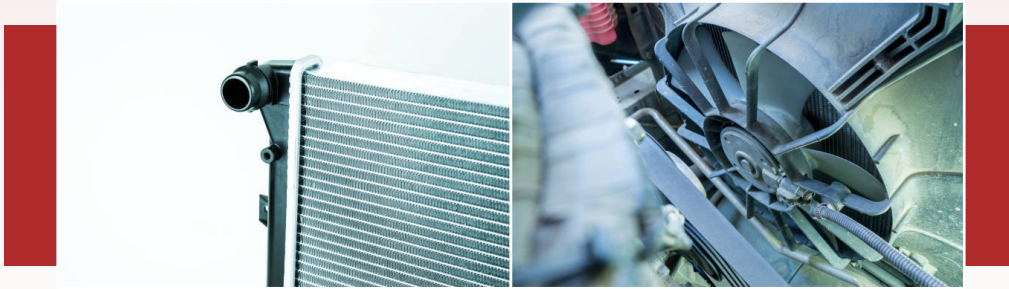
*This product is a final B2B consumer product.*

**Technical Specifications:**

The amount of calcium carbonate and titanium dioxide in the formulation is 75%. The polymer base of this compound is LLDPE and LDPE. The film grade of this product is produced for BOPP films with a thickness of 3 to 5 microns.

**Advantages:**

- \* High production volume
- \* Reasonable price



**Application:**

Production of radiators and car parts, manifolds and valve covers for car engine parts, car fan blades, as spacers in subways and household appliances.

➤ **Polyamide Compounds Reinforced with Glass Fibers**  
Razamid

◆ Razin Polymeric Alloys Co.

[www.razinpolymer.com](http://www.razinpolymer.com)



**Product Introduction:**

Polyamides are a family of engineering plastics that have high mechanical strength and modulus. The high thermal tolerance of these compounds is another important feature of these plastics, and in order to improve the properties of these compounds, all kinds of fibers (to improve mechanical properties), especially glass fibers are used.

The processability and production of polyamide compounds of this polymer base are more complicated in the compounding process than other compounds, mainly due to their softness point and very high level of strength compared to many polyolefins.

**Main Export Destinations:**

Iraq

**Export History:**

Up to 500,000 \$

**Founded:**

2007

*This product is a final B2B consumer product.*

**Technical Specifications:**

- \* It has the ability to control the viscosity (decrease or increase) of polyamide with the help of chain extenders or chain shortening compounds as well as nucleating substances.
- \* Having very high impact property (softening) as an intermediate product in polyamide compounds and even as a final product.

**Advantages:**

- \* Customization
- \* Reasonable price compared to foreign counterparts

**International Standards or Permission:**

ISO 17025



## ➤ Polypropylene-Based Compounds Reinforced with Talc or Glass Fibers

➤ Razin Polymeric Alloys Co.

[www.razinpolymer.com](http://www.razinpolymer.com)



### Product Introduction:

The intended product is polypropylene compound with different percentages of talc or glass fibers. Addition of mineral fillers, glass fibers, materials with high impact strength, etc. give the following properties to polypropylene:

1. Increasing tensile strength
2. Increasing impact strength
3. Increasing tensile and bending modulus
4. Thermal resistance
5. Increasing dimensional stability
6. Increasing elasticity properties
7. Increasing the creep resistance

### Main Export Destinations:

Iraq

### Export History:

Up to 500,000 \$

### Founded:

2007

### Application:

Production of household appliances and auto parts

*This product is a final B2B consumer product.*

### Technical Specifications:

- \* High tensile strength and at the same time appropriate toughness of the compound
- \* Improved flowability due to the high MFI of this compound
- \* Easy injection molding of this product to produce large and complex parts

### Advantages:

Customization

### International Standards or Permission:

ISO 17025



**Application:**

- \* Production of three to multi-layer films
- \* Greenhouse films
- \* Intelligent and multi-layer packaging
- \* Multi-layer parts such as car fuel tanks, etc.
- \* As a coupling and compatibilizing agent in the production of incompatible polymer compounds
- \* Production of colored masterbatches
- \* Multi-layer tubes as middle-layer adhesive

➤ **Polyethylene Grafted with Maleic Anhydride**

◆ Razin Polymeric Alloys Co.

[www.razinpolymer.com](http://www.razinpolymer.com)



**Product Introduction:**

Grafted polymers have a wide range of applications in various industries as an adhesion agent in multilayer films or as a coupling agent and compatibilizer in compounding polymers.

**Main Export Destinations:**

Iraq

**Export History:**

Up to 500,000 \$

**Founded:**

2007

*This product is a final B2B consumer product.*

**Technical Specifications:**

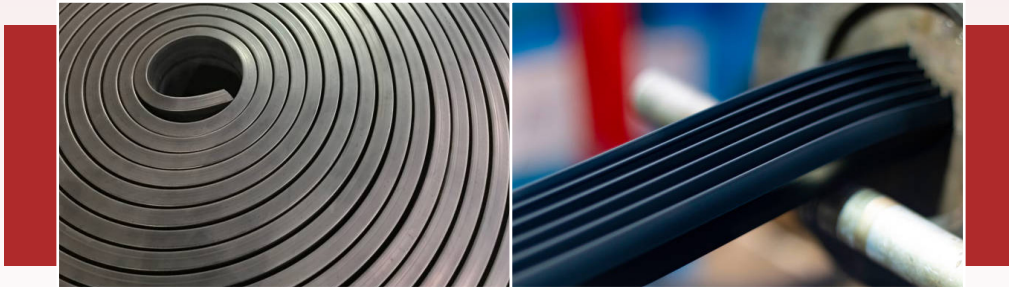
- \* Production through the reaction of a polar active chemical agent (anhydrides) with polyolefin (PE or PP) and connecting to the main polymer chain (grafting)
- \* Production of products with minimum smell, yellow tint and maximum properties of adhesive strength (peel)
- \* Depending on the percentage of grafted maleic anhydride and the polymer base (heavy polyethylene, light polyethylene, linear light polyethylene, polypropylene and ethylene vinyl acetate copolymer) different and very diverse properties can be created.

**Advantages:**

Customization

**International Standards or Permission:**

ISO 17025



## ➤ Vulcanized Thermoplastic Elastomer Based on Epdm (Tpv, Tpe)

🏠 Razin Polymeric Alloys Co.

[www.razinpolymer.com](http://www.razinpolymer.com)



### Product Introduction:

Thermoplastic elastomers are a relatively new generation of polymer compounds (or copolymers) that have intermediate properties of thermoplastics and elastomers. In other words, like thermoplastics, it is possible to create heat treatment for forming (thermoplasticity) combined with properties specific to elastomers (such as elastic resilience, compressive and tensile strength, and high dissipation properties) in TPEs (elastomer thermoplastics).

Among the important grades of thermoplastic elastomers, we can mention thermoplastic elastomers vulcanized (TPV) by peroxide system or phenolic curing (Novolac), which has more prominent mechanical, thermal and rubber properties than thermoplastic elastomers that are not vulcanized.

### Main Export Destinations:

Iraq

### Export History:

Up to 500,000 \$

### Founded:

2007

### Application:

Use in vehicle and pipe fasteners and items that require high heat resistance up to 120 degrees Celsius. Production of cables, fastenings, wiring, automotive products and wide range of industrial products such as flexible coil, welding wire and pump cable.

*This product is a final B2B consumer product.*

### Technical Specifications:

- \* **Hardness range:** SHORE A 30 to SHORE D 70
- \* **Tensile strength:** About 2 to about 50 MPa
- \* **Elongation:** From %150 to about %2000
- \* Production of thermoplastic elastomer products based on polyolefins, which are offered both in uncured form (TPE) and in cured form (TPV).
- \* The use of EPDM RUBBER is introduced as a rubber base in the preparation of TPE compounds and finally during curing with a peroxide system called TPV.

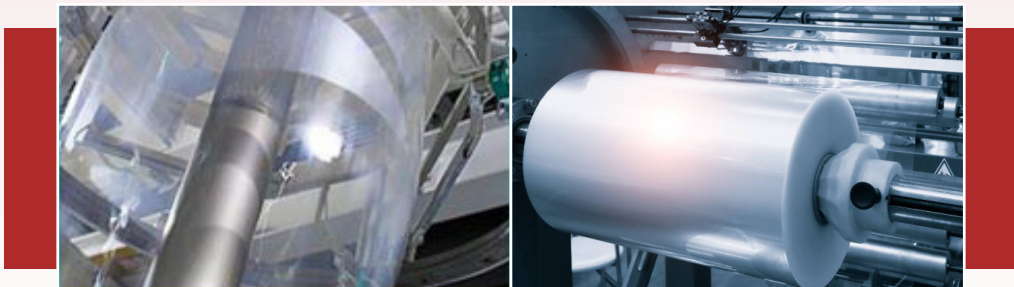
### Advantages:

Customization

### International Standards or Permission:

ISO 17025





**Application:**

As an additive in the production of polymer films such as bags, labels and films

➤ **Polymer Processing Aid Masterbatch for Film Blowing**

🏠 **Novin Baspar Sazeh Co.**

[www.novinbaspar.com](http://www.novinbaspar.com)



**Product Introduction:**

This product is used to reduce melt failure and production instabilities, maintain the film's gloss, smoothness and strength. It is based on light and linear polyethylene and the rest of its components are process additives such as antioxidants.

**Main Export Destinations:**

Georgia

**Export History:**

Up to 500,000 \$

**Founded:**

2011

*This product is a final B2B consumer product.*

**Technical Specifications:**

This product is produced in two grades, the difference between which is in their application in production of film with the antiblock or without. Therefore, the formulation and production process of both grades are almost the same and they differ only in the percentage of components. The most important issue regarding this product is the migration of the effective agent to the surface of the extruder barrel for proper performance and reducing the stresses on the molten polymer wall. Controlling the additive droplet size, maintaining the maximum amount of additive in the masterbatch before applying to the extruder, maintaining the minimum particle size to optimize migration will help in this matter. The resin carrier (matrix and carrier resin) is an alloy and consists of a combination of light polyethylene, linear light polyethylene and polyolefin elastomer.

The quality of the masterbatch depends on the interaction with other additives in the film production process, such as Hals (amine group) contained in anti-UV additives.

**Advantages:**

Customization



**Application:**

Serves as an additive masterbatch in the production of films to prevent sticking of PET films during storage

➤ **Antiblock Masterbatch for Polyethylene Terephthalate Film**

🏠 **Novin Baspar Sazeh Co.**

[www.novinbaspar.com](http://www.novinbaspar.com)



**Product Introduction:**

Masterbatch Antiblock PET is a product based on polyethylene terephthalate, which is used to prevent BOPET film layers from sticking and blocking during the production process and during storage of film rolls. The use of this product between 3 and 4 percent by weight, in addition to reducing surface friction and creating antiblock properties in the film, should maintain the transparency of the film, especially in packaging applications.

**Main Export Destinations:**

Georgia

**Export History:**

Up to 500,000 \$

**Founded:**

2011

*This product is a final B2B consumer product.*

**Technical Specifications:**

- \* In polyethylene terephthalate films, transparency, lower thickness and weight and higher thermal resistance are important. A modified silica masterbatch is used to create friction on the film surface and prevent films from sticking to the roll surface.
- \* Polyethylene terephthalate films are produced by cast extrusion in three layers (ABA or ABC) and are thin with thickness up to 10 microns. Jumbo roll (sometimes up to 8 tons) is used to collect these films. Therefore, it is necessary to use antiblock.

**Advantages:**

Customization



**Application:**

Producing disposable polystyrene containers

➤ **Polystyrene Compound for Producing Disposable Containers**

🏠 **Novin Baspar Sazeh Co.**

[www.novinbaspar.com](http://www.novinbaspar.com)



**Product Introduction:**

To improve the strength and appearance of polystyrene containers, as well as to reduce the cost, polystyrene compounds are usually used instead of pure polystyrene to produce containers.

The optimal use of calcium carbonate mineral particles, knowledge-based formulation, and special equipment have made it possible to increase the mineral particles' adhesion to and compatibility with polymer and take steps to prevent the loss of properties while reducing the total price by using mineral particles. This product is completely recyclable, its use in the production of polystyrene sheets and containers not only does not affect the properties, but also causes a 25% price reduction compared to pure polymer.

**Main Export Destinations:**

Georgia

**Export History:**

Up to 500,000 \$

**Founded:**

2011

*This product is a final B2B consumer product.*

**Technical Specifications:**

The formulation contains GPPS, HIPS, calcium carbonate, wax and carbonate dispersants. This product is also environment friendly due to the presence of calcium carbonate and its decomposition and destruction is faster than pure polymer.

**Advantages:**

- \* Customization
- \* Reasonable price compared to competitors while maintaining properties



## ➤ Masterbatch Highly Filled with Calcium Carbonate with 83% Particle Size Distribution

🏠 Siba Polymer Kabir Co.

[www.cibapolymer-kabir.com](http://www.cibapolymer-kabir.com)



### Product Introduction:

Masterbatch is a mixture that contains three basic polymer components, additives and coupling agent as dispersant. A masterbatch is a product in which filler particles with a high percentage composition, inorganic, organic powders or other additives are integrated in an optimized manner during the melt process into a thermoplastic base.

The consumption of masterbatch varies in the final process of production of plastic product. The most important parameter, along with their quality, is whether the process is economical. The manufacturer can produce a product based on the market's needs by choosing the right base of raw materials, special mixing plan and using the right process equipment and help the consumer to create the proper added value. One of the most important purposes of using masterbatches is to improve the quality of mixing, which are used for coloring, improving strength, or reducing the price.

#### Main Export Destinations:

Iraq, Afghanistan

#### Export History:

Up to 500,000 \$

#### Founded:

2016

### Application:

Calcium carbonate masterbatch is of great importance as one of the most widely used fillers in polyolefins, which is mostly used for the purpose of reducing the final price in polyolefins. Because the two PP and PE polyolefins have important advantages such as low cost, favorable mechanical properties, excellent chemical and moisture resistance, which allow them to be widely used for various purposes such as pipe, cable, fiber, packaging, automobile, sheet, etc.

*This product is a final B2B consumer product.*

### Technical Specifications:

- \* Reduction in the total price of film products such as nylon and Nylex plastics, etc.
- \* Creating an anti-blocking effect in polymer films and preventing adjacent layers from sticking to each other
- \* The anti-slip effect of polymer films on each other
- \* Retaining the mechanical and appearance properties of the film
- \* Increasing the printability on film products
- \* Maintaining strength and tear resistance
- \* Creating a perfect white color without the need to add a white masterbatch

### Advantages:

- \* Customization
- \* Reasonable price compared to competitors while maintaining properties





### Application:

Production of polyethylene pipes

## ➤ Pipe-Grade Crosslinkable Polyethylene (Pex)

◆ Sepehr Amize Razi Engineering Co.



### Product Introduction:

Polyethylene is the most widely used family of polymers. This polymer is used in many industries due to its favorable chemical resistance, long life, good flexibility and reasonable price. But the biggest disadvantage of this polymer is the lack of service and efficiency at temperatures above 60 degrees Celsius. This will be troublesome in applications such as hot water pipes or conditions of sudden temperature increase in moments such as overload on wires. Therefore, polyethylene is transformed into a polymer with superior thermal properties during a special process by creating cross links called "networking". This increases the service temperature of polyethylene up to more than 90 degrees. In cross-linked polyethylene (PEX), some properties such as chemical resistance and environmental stress resistance (ESCR) are effectively increased. In this process, polyethylene becomes an insoluble and infusible material.

**Founded:**

2011

*This product is a final B2B consumer product.*

### Technical Specifications:

This product is packed in the form of granule in vacuum bags and then it is shaped using the catalyst masterbatch in the factory, and the moisture causes the silane hydrolysis reaction and as a result, the silanes are connected to each other in a condensation reaction. Catalyst masterbatch is also offered to the customer along with the product.

The ratio used by the customer depends on the catalyst concentration and the user's equipment. Tin-based catalysts are used for this purpose, on which the intensity of curing and the quality of the final product depend. So that it should not cause process problems such as reduction of output and gelation and sticking of the mold for the customer. The type of antioxidant is important so that it does not interfere with the creation of radicals by peroxide.

### Advantages:

- ※ High volume of production
- ※ Reasonable price





## ➤ Peroxide Masterbatch to Control Melt Flow Index

◆ Sepehr Amize Razi Engineering Co.



### Product Introduction:

Melt flow index in polymer materials is the most important characteristic with which grade design can be done. That is, the main difference between extrusion grade and air or injection grade or fibers is in the number of its melt flow index. Sometimes petrochemicals produce PP with a maximum flow index of 15. While the customer needs PP with a flow index of 150, or a company that produces recycled plastic materials recycles polyethylene pipes, but its melt flow index is above 1, while the flow index standard for pipe grade consumables is 0.45. This product controls the melt flow index by controlled destruction of the polymer chain. In the case of polypropylene, similar products are available in the market, but in the case of polyethylene, not much work has been done in this field. In the case of recycling polyethylene pipes, this masterbatch is used in about one percent to decrease the MFI that has risen to about 1 (due to chain breakage resulting from the stresses introduced during the recycling process) to about 0.45 (the standard melt flow index of the pipe). This process is done by re-polymerization of broken chains and free radicals which are created.

**Founded:**

2011

### Application:

This masterbatch is used to control the melt flow index in the recycling of polyethylene products and is mostly used by polymer product recycling companies.

*This product is a final B2B consumer product.*

### Technical Specifications:

In the production of this masterbatch, peroxide should not be activated in the masterbatch itself; Therefore, it is very important to control the process conditions and process temperature and the optimal design of the extruder screw. The type of peroxide is different for polyethylene and polypropylene in the masterbatch. Because in the case of polyethylene, more cross-linking occurs, and in the case of polypropylene, chain breakage is dominant. This is why polyethylene requires more expensive peroxides (with a high half-life temperature). The formulation includes polymer base, peroxide and radical scavenger.

### Advantages:

- \* High volume of production
- \* Reasonable price



### Application:

- \* Automotive industry: fuel pipe, heater box
- \* Electronics industries: surge protectors, contactors, high voltage cable holders, industrial switch covers and plates, all electrical parts in industrial switchboards, lamp bases
- \* Household appliances: kitchen hood motor's propeller, iron, vacuum cleaner

## ➤ Flame Retardant Compound Based on Polypropylene

◆ Ryan Polymer Industry Co.

[www.rayanbaspar.com](http://www.rayanbaspar.com)



### Product Introduction:

Polypropylene is a type of polymer that is used in various industries such as food industry, packaging industry, automotive industry, household appliances, electronic industry, etc. due to its good mechanical and physical properties, reusability and easy forming process. This polymer, albeit having good properties, has disadvantages such as flammability, which limits its use in parts that are used in proximity to fire or at high temperatures. There are various additives that are able to create self-extinguishing properties in this polymer by adding them to this polymer in different percentages. The property of self-extinguishing is created in different levels according to the material formulation, forming process and physical conditions.

**Founded:**

2015

*This product is a final B2B consumer product.*

### Technical Specifications:

- \* One of the most important things in the production of this compound is maintaining the mechanical properties including impact, tensile strength and modulus by adding mineral additives.
- \* These additives cause the loss of properties, but the precise adjustment of the formulation and the use of improvers maintain the mechanical properties.
- \* The compound produced by the company has reached V0 self-extinguishing properties without loss of properties.

### Advantages:

Competitive price



➤ **Gloss Black Masterbatch Based on Polyethylene with at Least 35% Soot Nanoparticles**

🏠 NabPolymer Co.

[www.nabpolymer.com](http://www.nabpolymer.com)



**Product Introduction:**

This product is polyethylene black masterbatch containing 35% carbon black that is dispersed in polyethylene in nano scale.

**Main Export Destinations:**

Iraq

**Export History:**

500,000 - 1,000,000 \$

**Annual Production Capacity:**

1,000 Tons

**Founded:**

2015

**Application:**

- ✦ The coloring agent for creating shiny black color in the production of polymer products such as nylon and nylon and injection parts
- ✦ The factor of creating anti-UV properties in the production of polyethylene pipes

*This product is a final B2B consumer product.*

**Technical Specifications:**

The conductivity of the product has been measured and a value of 1000 ohms has been recorded for it. But it seems that the minimum measurement range of the existing device is 1000 Ω. However, the masterbatch produced according to the ASTM D257 standard is conductive.

Gloss test by Miran Andisheh Top Laboratory, was conducted according to the ASTM D2457 standard, which shows the value of GU 84.6, and indicates an increase of about 20 GU compared to the non-nano sample. The company's product has dispersed nanoparticles in the polymer matrix without using any lubricants because the use of lubricants reduces the gloss of the product.

**Advantages:**

High volume of production





## ➤ Additive Masterbatch

◆ Aria Polymer Pishgam Co.

[www.ariapolymer.ir](http://www.ariapolymer.ir)



### Product Introduction:

Additive masterbatches are used to add special features to plastic materials. The variety of this product as well as its wide range of purposes make almost every producer of plastic parts want to use one or more of them.

Masterbatches are actually additives concentrated with a polymer such as polyethylene or polypropylene.

Common additive masterbatches in the polymer industry include slip agents, antiblock, process aid, additives that make plastics resistant to impact, anti-UV, antistatic and antioxidant masterbatches, etc.

### Application:

Polymer industry

*This product is a final B2B consumer product.*

### Advantages:

Great variety and high quality

### Main Export Destinations:

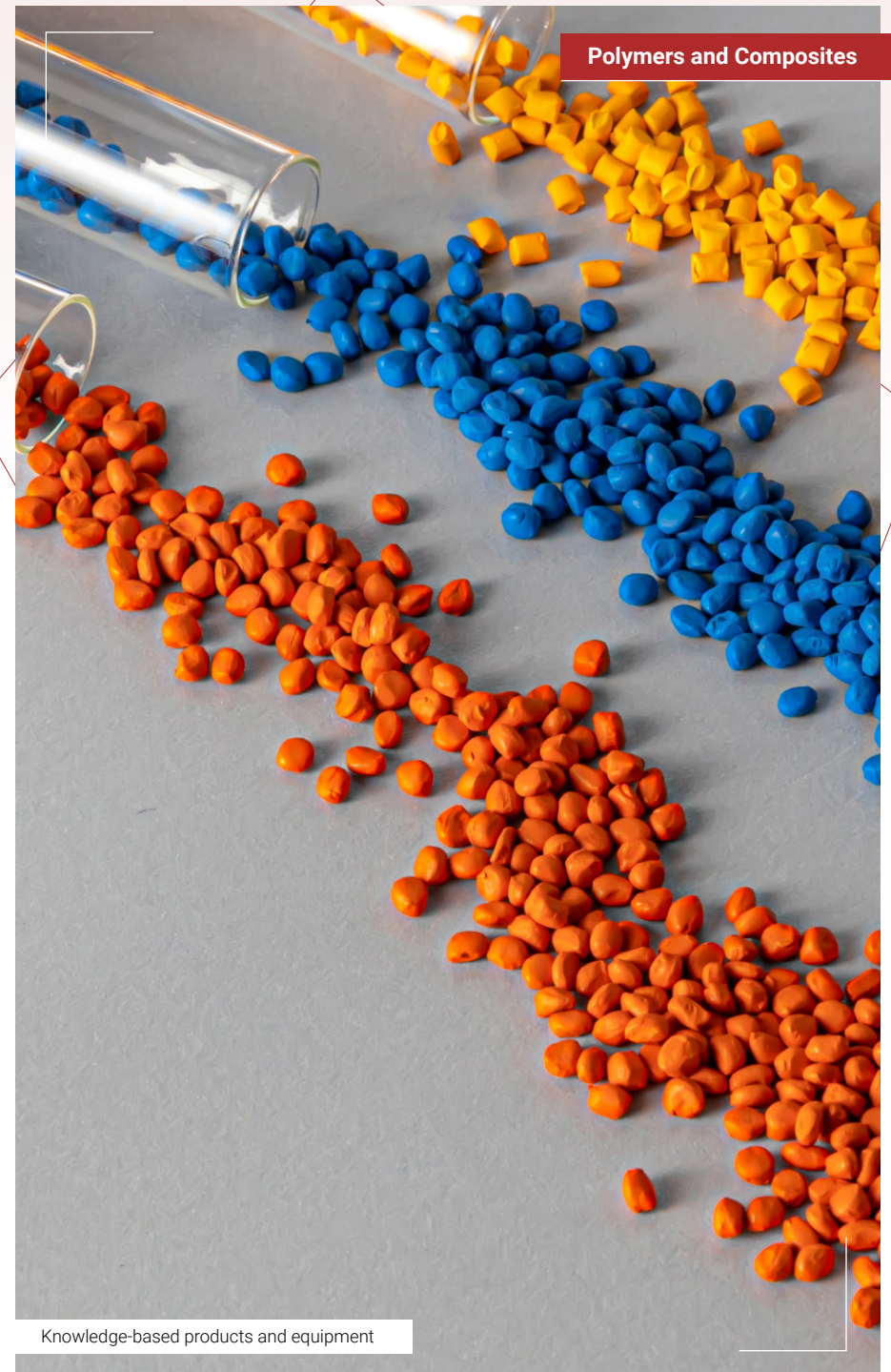
Russia, Turkey, India, Azerbaijan and Uzbekistan

### Annual Production Capacity:

5,000 Tons

### Founded:

2008



Knowledge-based products and equipment



## ➤ Polyethylene Grafted with Heavy Olefins (Karabond PERT, PEX)

🏠 Karangin Co.

[www.karangin.com](http://www.karangin.com)



### Product Introduction:

Controlling crystallinity in polyethylene-based compounds is of great importance. Increasing the crystalline component in polyethylene compounds can lead to its vulnerability to temperature changes, clouding, tearing, etc. One of the solutions is to add materials to the polyethylene mixture that enter the crystal structure and prevent its growth. These factors have a structure similar to polyethylene, but the alkyl groups located on them are long and in addition, adding these components to the polyethylene compound leads to the improvement of the mechanical properties of the final compound. This component is actually a copolymer of ethylene with heavy alpha olefins. This product can be made in the petrochemical plant itself or in smaller units or even during the GRAFTING process. One way to do this, is GRAFTING heavy alpha olefins such as 1-hexene and 1-octene onto polyethylene during a reactive extrusion process. The desired product is polyethylene grafted with heavy alpha olefin during the reactive extrusion process.

This product is used in all kinds of cooling and heating systems and has more hydrostatic strength and processability than available materials. It has high resistance to cracking and heat transfer and has high flexibility.

**Founded:**

1987

### Application:

Underfloor heating systems, radiator connections, snow melting systems, heat exchangers, solar panels, heat recovery systems, hot or cold drinking water networks, plumbing, industrial and single and multi-layer pipes, aluminum pipes, and also has industrial applications where conventional PE generally fails.

*This product is a final B2B consumer product.*

### Technical Specifications:

Since the polymer chains undergo a change in molecular mass (generally, polyethylene undergoes an increase in molecular mass), in the process of grafting, MFI is deemed to be a determining characteristic for the final product. The MFI of the investigated product is generally in a wide range of GR/10MIN 0.8-15.

This product is a polyolefin that has high strength and resistance. It has better thermal and mechanical and physical properties than polyethylene. It has been used to produce a type of heat-resistant polyethylene by extrusion method and improving the level of heat tolerance. These polymers have excellent technical specifications without the need for cross-linking.

### Advantages:

Lower price than similar products

**International Standards or Permission:**

ISO 1133





## ➤ Soft and Hard Granules Based on Polyvinyl Chloride Used in the Manufacture of Medical Products with Low Risk Class (A, B)

◆ Masoom Compound Co.

[www.masoom.co](http://www.masoom.co)



### Product Introduction:

For medical products, based on the type and location of service, four risk classes are defined, two of which are in the low risk class and the other two are in the high risk class. In risk class A, the part inside the body is not infected and sucks fluids from the patient's body. Risk class B products are used to inject or enter liquids or drugs into the patient's body. To produce these products, medical grade PVC resin along with plasticizer and stabilizer and related additives are mixed in a mixer during different stages and then converted into granules by an extruder machine.

**Founded:**

1995

### Application:

These granules are used in the manufacture of medical products with a low risk class, such as dropper pumps, disposable hard tubes for medical suction, oxygen mask connectors, all kinds of hard parts of disposable medical sets, oxygen mask nozzles, microsets, etc.

*This product is a final B2B consumer product.*

### Technical Specifications:

The resin used is medical grade PVC with Kvalue - 65. In the design of PVC formulation, the amount and type of plasticizer are important. In medical products, according to the sensitivity, the consumption is doubled. The role of plasticizer in the product is very important and the degree of hardness and flexibility of the material is directly related to the consumption of this material. One of the most important challenges of choosing the right softener is the lack of volatility (no smell), the transparency of the product (no yellowness). Stabilizer also causes thermal stability of the product and prevents the destruction of materials during the process. In medical products that have very high sensitivity, stabilizers containing heavy metals such as lead, cadmium, barium, etc. cannot be used, and due to the deposition of these metals in the body, only minimal use of stabilizers based on light metals such as calcium and zinc is allowed.

Internal and external lubricants must be used in all PVC compounds. The internal lubricants cause the internal lubrication of the product and the uniformity of the product, and the external lubricants cause the compound to not stick to the cylinder wall and the spiral of the device. In medical products where transparency is at a high level, it is important to be careful in choosing the correct additive and its compatibility with the stabilizer. If the right lubricant is chosen, this additive and thermal stabilizers will have a synergistic effect and significantly improve the thermal stability of the product.

### Advantages:

- \* Variety of products
- \* Reasonable prices

### International Standards or Permission:

- \* ISO-13485
- \* Food and Drug License of Iran



## ➤ Polycarbonate-Based Diffuser Masterbatch

◆ Paydar Polymer Ojan Co.

[www.paydarpolymerco.ir](http://www.paydarpolymerco.ir)



Paydar Polymer Ojan

### Product Introduction:

This material itself is obtained by mixing several other materials and after combining with polycarbonate-based polymer, makes them suitable for covering lighting lamps, especially LED types. The purpose of this material is to hide the LED lighting sources to prevent the adverse effects caused by direct radiation of light waves to the eyes. The composition used in the production of this material creates a feature in the final product that spreads the light emitted from the LED lamps so that the light which is emitted from the LED lamps and reaches the human eye is not annoying; In addition, this material hardly reduces the lamp's brightness. In terms of the country's plastic industry; This masterbatch is known as diffuser masterbatch.

**Founded:**

2015

### Application:

Production of the final cover of LED lamps as a light diffuser

*This product is a final B2B consumer product.*

### Technical Specifications:

The diffuser masterbatch consists of at least three key components, including the base polymer, which is usually a transparent polymer (it is polycarbonate here, which is used to produce the final part), a light diffuser agent and an internal plasticizing agent used for better mixing of components in the dry state as well as controlling melt viscosity. The fourth factor, which may be necessary based on the type of diffusing agent, is a compound that improves the interfacial tension with the base polymer and can affect the amount of dispersion and its intensity, and as a result, affects the final morphology of the dispersed phase in the final part. Other factors such as antioxidants, UV stabilizers and fillers or enhancers are added as needed in the formulation.

### Advantages:

- ※ High quality in final lamp production
- ※ The price is lower than the foreign counterpart

### International Standards or Permission:

After adding this masterbatch to the polymer that is going to produce the lamp, it will increase the amount of haze measured according to the ASTM D3003 standard (TRANSMISSION HAZE test according to the ASTM D 1003 standard) to more than 90% and at the same time does not reduce the amount of light transmission, which is measured with ASTM E1348 method and TOTAL TRANSMITTANCE test according to ASTM E-1348 standard, more than 40%.



**Application:**

Electrical industries, automotive industries and household appliances and sports equipment

➤ **Impact Resistant ABS/PC Polymer Alloy**

◆ **Advanced Mixed Technology Co.**

[www.hitech-polymer.com](http://www.hitech-polymer.com)



**Product Introduction:**

The alloy product includes polycarbonate and ABS, which is suitable for producing body parts with high strength. This alloy has high impact resistance, low susceptibility to cracks especially at low temperatures, good electrical properties, low melt viscosity and therefore good processability. In most of the mentioned cases, especially in the electrical industry, which is the most used area of PC/ABS alloys, being fire resistant is of great importance, which is achieved to some extent in this alloy.

**Founded:**

2009

*This product is a final B2B consumer product.*

**Technical Specifications:**

The above alloy is produced in order to produce superior properties such as high impact resistance, high thermal deformation temperature and suitable price for the products used in household appliances and automobile parts and is supplied to the customer in the form of granules in 25 kg bags. The final product forming process; is plastic injection. High toughness (balance of mechanical strength and impact strength) of the product and at the same time not reducing the thermal stability and high resistance against hydrolysis are among the properties of the products formed with this alloy.

**Advantages:**

- ※ High volume of production
- ※ Reasonable price



## ➤ Styrene Thermoplastic Compounds (TPE-S)

◆ Arvin Polymer Co.

[www.arvinpolymer.com](http://www.arvinpolymer.com)



### Product Introduction:

In the classification of polymers based on properties, two important categories of elastomers and plastics can be mentioned. One of the most important properties of elastomers is reversibility and the ability to return to the original state after removing the applied force. This group of polymers neutralizes the change in length caused by force (both compressive and tensile) to a large extent (after the force is removed) and returns to the original length before the force was applied. One of the important problems of this category of polymers is non-melting after the initial forming process, non-recyclability and high cost of compounding. The second category, which are known as plastics, have a very weak reversibility compared to elastomers, but unlike elastomers, they have the ability to melt, and to be shaped, recycled and processed very well.

Thermoplastic compounds of elastomers, if formulated correctly, simultaneously have five important properties of reversibility after removing force, ability to melt multiple times, wide range of service temperature, suitable recyclability and excellent compatibility with downstream industries' processes. In fact, thermoplastic elastomers offer a combination of opposing properties of plastics and elastomers simultaneously in one product. The unique properties of this category of polymers have made them a suitable substitute for many elastomers and some plastics.

The compound produced in Pishro Arvin Polymer group is a combination of thermoplastic styrene elastomers and thermoplastic cross-linked elastomers. In this formulation, the constituent components of these two categories of thermoplastic elastomers are used in a way that they make up for each other's weak points and synergy is created.

**Annual Production Capacity:**  
3,200 Tons

**Founded:**  
2016

This has led to the production of formulas with excellent properties. For example, styrene thermoplastics do not have good resistance against hydrocarbon solvents. On the other hand, thermoplastic cross-linked elastomers do not have good weldability. By combining the components of these two categories of materials, both the resistance to solvents has increased and the weldability is in a suitable range.

### Application:

- \* Production of UPVC door and window gaskets
- \* Manufacturing car parts
- \* Household appliances and kitchen utensils
- \* For parts of tools that are in contact with the hand and toothbrushes
- \* For improving impact properties of other polymers
- \* Shoe industry

*This product is a final B2B consumer product.*

### Technical Specifications:

Compound used in:	Specifications
UPVC door and windows gaskets	High elasticity, high resistance to UV damage, excellent processability, dimensional stability, excellent adhesion of two thermoplastic elastomer components to each other in the co-extrusion process.
Production of car parts	High range of service temperature, resistance to thermal degradation and ultraviolet rays, high elasticity, creating excellent adhesion to the second material in the injection process.
Household appliances and kitchen utensils	High fatigue resistance, creating excellent adhesion to the second material (polypropylene and ABS) in the injection process, creating a SOFT TOUCH and wear-resistant surface.
Parts of tools that are in contact with the hand, toothbrushes	Excellent adhesion properties to the second material, resistance to wear and segregation, excellent colorability
Improving impact properties of other polymers	Very low hardness (0 to 25 on the Shore A scale)
Shoe industries	Excellent wear resistance, good adhesion in the injection process, foamability, very low pressure durability, good dimensional stability.

### Advantages:

- \* Good quality
- \* Competitive price compared to similar products





## ➤ Lead-Based or Calcium-Zinc-Based PVC Thermal Stabilizer for Producing Door and Window Profiles

◆ **Chimiaran Co.**

[www.chimiaran.com](http://www.chimiaran.com)



### Product Introduction:

Due to its structure, PVC is highly sensitive to temperature and cutting pressure and is easily destroyed. Degradation of PVC causes the release of hydrochloric acid gas and the catalytic effect will be degraded. Therefore, the destruction proceeds very quickly and creates large amounts of HCL gas, which is corrosive and toxic. So, Thermal stabilizers are used. According to the process conditions and formulations, these stabilizers will be different from each other. Most stabilizers contain metal elements that react with HCL and prevent further degradation. These products can be divided into two general categories: lead-based stabilizers and calcium/zinc-based stabilizers. In different applications, this package, which is a complete package of various additives, is provided in addition to stabilizers, internal and external lubricants, color and pigment, and process aids.

### Main Export Destinations:

China, Russia, Korea, Hong Kong, Azerbaijan, Armenia, Uzbekistan, Ukraine, UAE, Indonesia, Thailand, Taiwan, Turkmenistan, Turkey, Sudan, Iraq, Kyrgyzstan, Georgia, Malaysia, India, Vietnam, Pakistan, Afghanistan

### Export History:

10,000,000 - 50,000,000 \$

### Founded:

1998

### Application:

PVC door and window profiles, PVC pipes and fittings, cable sheathing, foamed PVC sheets

*This product is a final B2B consumer product.*

### Technical Specifications:

The term «one pack» stabilizers is common for this product and indicates the existence of different implementation required by the formulation. Stabilizer packages include stabilizers, mineral fillers, softeners, lubricants, process aids, and special additives such as flame retardants.

Stabilizer packages are used in most products to provide thermal stability and rheology behavior adjustment, and these materials should be changed according to the customer's formulation. It is worth noting that these packages must be customized for different lines, so there are many product codes for each product category.

Stabilizers act on the basis of neutralizing HCL gas and preventing the formation of double bonds in the polymer structure. It also prevents the oxidation of PVC and is replaced by unstable chlorine on PVC.

The calcium/zinc stabilizers in this product are lead-free. Removing lead from the formulation as a heavy metal will result in a more reasonable price.

One of the challenges of removing lead is the color of the product. Because lead in combination with PVC's chlorine produces lead chloride, which creates a white color. With the removal of lead, this white color will no longer exist. Also, the removal of lead will change the water absorption and dynamic thermal stability properties. On the other hand, due to electronic issues, not every additive can be used.

### Advantages:

- \* Wide variety of products
- \* Customization

### International Standards or Permission:

ISO 17025





## ➤ PVC Thermal Stabilizer

◆ Advanced Mixed Technology Co.

[www.hitech-polymer.com](http://www.hitech-polymer.com)



### Product Introduction:

Polyvinyl chloride or PVC is one of the most widely used polymers due to its suitable physical and mechanical properties. However, this polymer may degrade during the process. Therefore, stabilizers should be used as additives in it. These materials prevent the rapid destruction of PVC.

The company's product is a thermal stabilizer in powder form, which is specifically designed for PVC pipes and electrical conduits.

**Founded:**

2009

### Application:

In addition to the pipe and hose industry, PVC is widely used in medical equipment and food packaging.

*This product is a final B2B consumer product.*

### Technical Specifications:

For the production of this product, a combination of lead base and a synthesized substance called hydrocalumite has been used. Hydrocalumite is a hydrated salt containing aluminum, calcium, and hydroxide. This material reduces the price and reduces the toxicity of the product. The bio-based nature of the product has also been considered.

### Advantages:

- \* High volume of production
- \* Reasonable price



## ➤ PVC Impact Modifier

◆ Advanced Mixed Technology Co.

[www.hitech-polymer.com](http://www.hitech-polymer.com)



### Product Introduction:

Impact modifiers are an additive to increase flexibility and strength. Some unmodified polymers such as polyvinyl chloride (PVC), polystyrene (PS) or styrene acrylonitrile (SAN) are fragile at ambient temperature. But some polymers such as polyamide (PA) and polyolefins (PO) are tough at ambient temperature; But they are fragile at low temperatures.

Also, some polymers such as polycarbonate may have good dart impact, but they have poor general impact resistance. Impact modifiers are used whenever the polymer needs strength for a specific application. According to the base polymer and required properties, there are different types of impact modifiers.

**Founded:**

2009

### Application:

In all products that use PVC, this product can be used to improve impact properties.

*This product is a final B2B consumer product.*

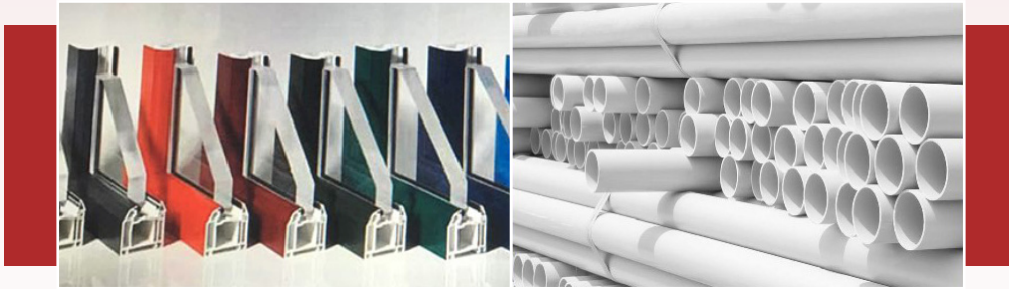
### Technical Specifications:

Since the primary task of impact modifiers is to neutralize or absorb impact energy to prevent crack growth, an important factor in selecting impact modifiers is that all modifiers must be sufficiently compatible with the polymer matrix to provide the necessary adhesion to the matrix. To be SBR, nitrile and other pure rubbers are not effective as impact modifiers for PVC due to lack of compatibility. Therefore, generally, acrylate compounds are used for this purpose.

The company's product includes a combination of ABS and SBR to achieve the properties of PVC impact modifiers at a lower price. Depending on the type of final product process, lubricants are also used.

### Advantages:

- \* High volume of production
- \* Reasonable price



## ➤ UPVC Profiles by Co-Extrusion Method

🏠 Hampar Co.

[www.hampar.com](http://www.hampar.com)



### Product Introduction:

Due to its structure, PVC is highly sensitive to temperature and cutting pressure and is easily destroyed. Degradation of PVC causes the release of hydrochloric acid gas and the degradation of catalytic effect. Thus, the destruction proceeds very quickly and creates large amounts of HCl gas, which is corrosive and toxic. Therefore Thermal stabilizers are used. According to the process conditions and formulations, these stabilizers will be different from each other. Most stabilizers contain metal elements that react with HCl and prevent further degradation. Therefore, for various applications, this package is provided which is a complete package of various additives, in addition to stabilizers, internal and external lubricants, color and pigment, and process aids. The term "one pack" stabilizers is common for this product and indicates the existence of different implementation required by the formulation.

**Founded:**

1989

### Application:

These thermal stabilizers are used in the production of major PVC-based products, including doors and windows, artificial leather, cable sheath and fittings, etc.

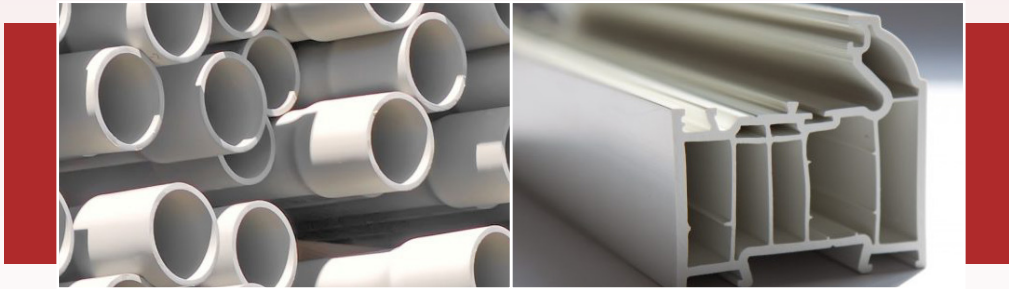
*This product is a final B2B consumer product.*

### Technical Specifications:

The product contains 5 to 6 components, including calcium and zinc salts, lubricants and pigments. There are more applicable standards for cable sheathing, as electrical parameters, water absorption, aging tests, and dynamic degradation tests are important in these products. The products are packed and sold in the form of powder or flakes.

### Advantages:

- \* Customization based on customer's formulation
- \* Reasonable price
- \* High production volume



## ➤ Polymer Compatibilizer and Coupling Agent

◆ **Aria Polymer pishgam Co.**

[www.ariapolymer.ir](http://www.ariapolymer.ir)



### Product Introduction:

Because the additives used in the plastic industry such as glass fibers, talc, calcium carbonate, wood powder and other commonly used additives in the plastic industry are generally polar, they do not form a proper bond with non-polar polymers such as polyethylene and polypropylene on a molecular scale due to lack of compatibility. If these additives are used in polymer, they will have low physical-mechanical properties.

Therefore, compatibilizers should be used that can connect to the non-polar polymer on one end and to the polar additive on the other. Polyolefin compatibilizers are compounds that are produced during a reactive extrusion process with a formulation including peroxide initiator, maleic anhydride monomer, and a thermal stabilizer and under certain temperature conditions (controlling the reaction progress in an optimal state) in a twin screw extruder with a specific screw design. The polar functional groups of maleic anhydride are grafted on polyethylene or polypropylene chains. The resulting composition acts as a surfactant or glue.

#### Main Export Destinations:

Russia, Turkey, India, Azerbaijan and Uzbekistan

#### Export History:

1,000,000 - 10,000,000 \$

#### Annual Production Capacity:

5,000 Tons

#### Founded:

2008

*This product is a final B2B consumer product.*

### Application:

In order to adapt (compatibilize) or bind polar compounds such as glass fibers, calcium carbonate, talc, wood powder, aluminum, etc. to non-polar compounds and polymers (such as polyethylene or polypropylene) in various industries.

### Technical Specifications:

- \* Binding or compatibilizing additives, polar polymers to non-polar polymers or increasing the colourability of PP and PE compounds
- \* Increasing the uniformity of additive distribution in the matrix and creating a strong interface
- \* Improving mechanical properties such as impact and tensile strength and improving adhesion

### Advantages:

- \* Competitive price and
- \* High quality



**Application:**

It can be used for applications such as car bumpers that require more adhesion and colourability. It can also be used as a middle-layer adhesive in gas pipes.

➤ **Polymer Compatibilizers - SMA-Based Interlayer Adhesives**

🏠 **Karangin Co.**

[www.karangin.com](http://www.karangin.com)



**Product Introduction:**

In polymer compounds, especially when the base polymer has low polarity, the dispersion of components with higher polarity such as fillers or some polar additives will be associated with problems. In such cases, components that have both polar and non-polar components in their molecular structure should be used. This compound is used in cases where more adhesion and color durability are needed than polymers such as PE and PP.

**Founded:**

1987

*This product is a final B2B consumer product.*

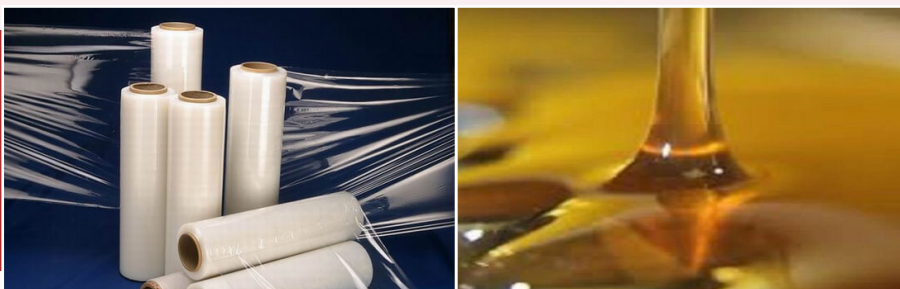
**Technical Specifications:**

This product is continuously produced by reactive extrusion method. The main reactive components in this process are polystyrene, maleic anhydride and peroxide compounds that produce radicals. Finally, the polystyrene-graft product with %3-2.5 graft with MFI=2 has been produced as the final product.

**Advantages:**

- \* Lower price
- \* High quality





## ➤ PVC Plasticizer Based on Epoxidized Triglyceride (Epoxidized Soybean Oil)

◆ Pak Chemical Co.

[www.pakchemical.com](http://www.pakchemical.com)



### Product Introduction:

Plasticizers are used to soften PVC plastic. These compounds must have a compatible and homogeneous structure with the desired plastic. The main industrial model of these compounds is dioctyl phthalate, known as DOP. This plasticizer has the property of penetrating the surface and over time it can penetrate the surface from inside the plastic matrix. The company has based its plasticizers on the methyl ester and pentaerythritol ester of a series of vegetable oils, which have the property of epoxidation due to the presence of an unsaturated double bond in the fatty acid part of these oils. So, A combination of these two substances has been used as a plasticizer for PVCs available in the market. One of the most common additives used in the plastic industry, especially in the industry, is PVC. These materials are also used in some other polymers such as acrylic, PET, polyolefins, polyurethanes, etc. But the main volume of consumption is in the production of products made from polyvinyl chloride.

### Main Export Destinations:

China, UAE, Turkey, India, Azerbaijan, Afghanistan

### Export History:

Up to 500,000 \$

### Founded:

2003

### Application:

The main applications for flexible PVC include flooring and wall covering, roof membrane, electrical cable and wire insulation, automotive applications, medical devices, synthetic leather goods, etc. Some plasticizers can also be used in rubber products, paints, adhesives and sealants for professional use.

*This product is a final B2B consumer product.*

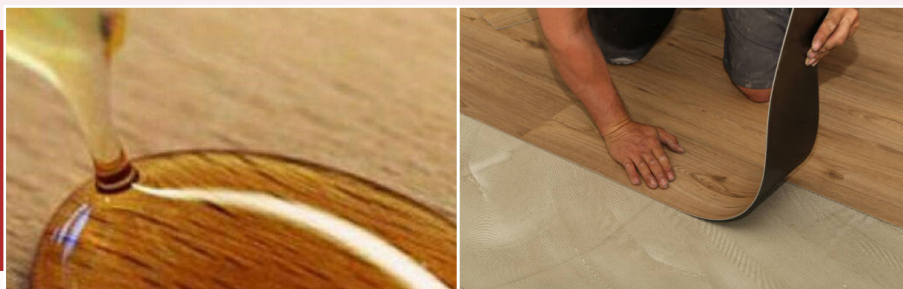
### Technical Specifications:

APPEARANCE	CLEAR TRANSPARENT LIQUID
ACID VALUE Mg KOH/g	0.5
FLASH POINT (°C)	200
DENSITY (20 °C)	0.96-0.098
MOISTURE	0.25
FREEZING POINT	-15 °C

Considering that the company's product is epoxidated based on vegetable oils, it can be used for health purposes as well. Various properties, including non-toxicity, non-migration to the surface, high production speed, suitable film at the time of application,...

### Advantages:

Reasonable price



## ➤ Liquid Compound Tin Stabilizer with the Synthesis of Dimethyl Tin Base Isooctyl Thioglycolate

◆ Pak Chemical Co.

[www.pakchemical.com](http://www.pakchemical.com)



### Product Introduction:

In the extruder stage of plastics, due to the high temperature to melt and mold, the plastic needs a stabilizer in order to retain the shape and length of the desired plastic chain and structure, and at the same time to have a suitable sample of its molded form. PVC is destroyed at high temperatures and it is necessary to add a thermal stabilizer to prevent the destruction. Common stabilizers are based on lead, but due to environmental pollution, these materials are no longer used. The company's product is produced based on tin.

This product is used as a stabilizer in PVC plastics. These compounds are destroyed due to applying a large amount of heat in the extruder, which allows the stabilizer to retain its stability at a temperature even higher than melting temperature. and undergo the least structural change.

### Main Export Destinations:

China, Turkey, United Arab Emirates, India, Azerbaijan, Afghanistan

### Export History:

Up to 500,000 \$

### Founded:

2003

### Application:

The main consumer industry will be PVC polymer products, and it can also be used in industries such as artificial leather, flooring, pipes, etc.

*This product is a final B2B consumer product.*

### Technical Specifications:

Appearance	Clear transparent liquid
Tin content ( % )	9.5-19.0
Density (25 °C) g/cm <sup>3</sup>	1.20-1.18
Viscosity (25 °C) MPA.S	90-60
Sulfur	≥ 4.5

The percentage of tin, smell, viscosity, density, color and these parameters are important in the PVC film produced with this stabilizer. Moreover, static and dynamic thermal stability, transparency, color stability, Congo Red test have been carried out.

### Advantages:

Reasonable price



### Application:

- \* Packaging industry, electrical, construction, household appliances and...
- \* One of the most important uses of polystyrene is the production of polystyrene foam for packaging before transportation, production of disposable dishes and cutlery, cups, household appliances, stationery, CD and DVD boxes, and all kinds of toys.

## ➤ Production Process of General Purpose Polystyrene (GPPS)

📍 Moheb Polymer Qom Co.

[www.mpq.co.ir](http://www.mpq.co.ir)

M.P.Q.CO.



### Product Introduction:

Polystyrene is one of the hard and transparent thermoplastics that is widely used in injection and vacuum molding. The advantage of such materials is that it is easy to produce useful products by molding them. Also, due to the transparency of this material, different colors can be used in its composition. General purpose polystyrene is a non-toxic material and is approved by the FDA for the production of food containers.

#### Main Export Destinations:

Russia, China, Turkey, UAE, India, Bulgaria, Pakistan, Kazakhstan, Iraq

#### Export History:

1,000,000 - 10,000,000 \$

#### Founded:

2008

*This product is a final B2B & B2C consumer product.*

### Technical Specifications:

Free radical polymerization of styrene is the most important industrially. The main advantage of the solution method is the low amount of residual monomer from the process and the high purity of the produced polymer. The suspension method is capable of producing polymers with different molecular weights as well as special crystalline and resistant grades. The main advantage of the bulk process is the excellent transparency and colorability of the resulting resin. Most of the polystyrene produced for general use is made by solution polymerization in a continuous process.

### Advantages:

- \* High volume of production
- \* The possibility of customization based on customer needs
- \* The possibility of producing various styrene derivatives



### Application:

Production of televisions, household appliances, internal parts of refrigerators such as trays, floors, inner covers, storage containers, production of sports equipment and toys.

## ➤ High Impact Polystyrene (HIPS)

### ◆ Idea Gostar Moheb Baspar Petrochemical Co.

[www.mohebbaspar.com](http://www.mohebbaspar.com)



#### Product Introduction:

This material is a thermoplastic polymer of the polystyrene type with the abbreviation HIPS and a copolymer of PS, whose impact resistance has been modified with elastomeric molecules such as butadiene. The low impact resistance of the normal grade caused the modified or resistant polystyrene to grow strongly and be placed in the category of widely used polymers.

Among the prominent features of this grade are the mechanical properties, especially the good impact resistance, along with a reasonable price, which make it possible to use this grade for making all kinds of tools and equipment. Modification of polystyrene increases toughness, impact strength and increases elongation. After this action, the polystyrene will no longer be transparent.

#### Main Export Destinations:

China, Turkey, UAE, India, Greece, Azerbaijan, Turkmenistan, Uzbekistan, Iraq, Afghanistan

#### Export History:

1,000,000 - 10,000,000 \$

#### Founded:

2015

*This product is a final B2B & B2C consumer product.*

#### Technical Specifications:

The production method of this polymer is based on free radical polymerization. In fact, this product is synthesized from the copolymerization of styrene monomer and polybutadiene rubber solution (styrene as a solvent). Surely due to the high reactivity of styrene at temperatures of 130 to 140 degrees Celsius, there is no need for an initiator to produce this polymer, and this reaction can be performed at room temperature. This product is sold in the form of white granules.

#### Advantages:

- ※ High volume of production
- ※ Low price
- ※ The possibility of preparing different grades based on customer needs



**Application:**

Used in making RO membranes

➤ **Trimesoyl Chloride (TMC)**

🏠 **Hafez Varesh Co.**

[www.vareshco.com](http://www.vareshco.com)



**Product Introduction:**

Trimesoyl chloride with the abbreviation TMC is one of the main precursors for the preparation of the third layer of the water purification membrane by the reverse osmosis (RO) method. Due to the reaction of TMC with another precursor, i.e, metaphenylene diamine, the third layer of polyamide is synthesized on the other two layers, which are made of polyester and polyether sulfone.

**Main Export Destinations:**

England, UAE, Thailand, Kuwait, Malaysia, Iraq

**Export History:**

1,000,000 - 10,000,000 \$

**Founded:**

2015

*This product is a final B2B consumer product.*

**Technical Specifications:**

The purity of the product is 99.9. The mentioned substance is a white solid with a melting point of 36 degrees Celsius.

**Advantages:**

High purity

**International Standards or Permission:**

- \* ISO 9001:2015
- \* ISO 14001:2015
- \* OHSAS 1001:2007





### Application:

Packaging of protein-rich foods such as chicken, liver, gizzards, and red meat

## ➤ Absorbent Polystyrene Foam Containers

### ◆ Mazeroon Foam Co.

[www.mazeroonfoam.com](http://www.mazeroonfoam.com)



#### Product Introduction:

Protein products, which often come with blood residue, are packaged in absorbent polystyrene foam containers, which are manufactured and marketed for that purpose. Non-frozen meat and other foods should be stored in disposable containers that absorb the water of the desired food product and offer sufficient conditions for maintaining the food product's health and preventing deterioration. This product may absorb up to many times its weight in water and aqueous solutions.

#### Main Export Destinations:

Germany, Russia, Kuwait, Azerbaijan, Turkmenistan, Iraq, Afghanistan

#### Export History:

500,000 - 1,000,000 \$

#### Annual Production Capacity:

1,700 Tons

#### Founded:

2015

*This product is a final B2B & B2C consumer product.*

#### Technical Specifications:

- \* Container made of polystyrene
- \* Having a foam appearance (spongy)
- \* Having a density of 106 kg/m<sup>3</sup>
- \* Having different colors and dimensions according to customer needs
- \* Having absorption rate of 4 g/g (%400)
- \* Absorption rate of 12 g/m

#### Advantages:

Appropriate price to quality ratio

**Application:**

Packaging of protein products

## ➤ Smart Absorbent Containers Based on Structural Foam for Storing Protein Products

### ◆ Tinar Foam Khazar Co.

**Product Introduction:**

Absorbent pads are generally used to package protein products in the market and to solve the problem of blood residue in them. These pads are one of the infectious agents of transmission of germs, bacteria and other pathogens that endanger the health of the consumer. Another point is the lightness of this company's product, which has reduced transportation costs.

Another advantage of the product is that the consumer must purchase the absorbent pad at a higher cost to obtain common products in the market; This is while the cell structure of the foam has changed in this product (changing the structure of the foam from closed cell foam to open cell foam, which is one of the complications of the process), which can absorb blood while creating a safe and clean packaging for protein products and also reducing its side costs.

**Founded:**

2014

*This product is a final B2B & B2C consumer product.***Technical Specifications:**

This product is made of polystyrene with a foam (sponge) appearance and a density of  $106 \text{ kg/m}^3$ , which is produced in different colors and dimensions (according to the customer's request). The absorption rate of this product is 4 grams of liquid per gram of product (%400) or 12 grams per minute. In addition to the presence of an absorbent material in the foam structure, having cavities and pores to absorb the desired liquids has made it possible to produce absorbent sanitary containers from polystyrene foams.

**Advantages:**

Production based on the shape and size requested by the customer



**Application:**

Fruit and vegetable packaging as well as use in hotel and catering

➤ **Bio-Based Structural Foam Containers Based on PLA/PS Alloy**

🏠 **Tinar Foam Khazar Co.**

**Product Introduction:**

This product is a container made of an alloy of polystyrene and polylactic acid polymers with a foamy appearance (sponge) and a density of 50 kg/m<sup>3</sup>, which is produced in different colors and dimensions and is biodegradable.

**Founded:**

2014

*This product is a final B2B & B2C consumer product.*

**Technical Specifications:**

Considering the non-biodegradability of polystyrene foam, polylactic acid foam will be a very suitable substitute for polystyrene foam. Polylactic acid or PLA is an eco-friendly polymer and can be produced from agricultural waste. Changes have been made in the formulation of this product to increase the efficiency and improve the performance of polylactic acid.

**Advantages:**

Lower price



**Application:**

Production of easy-open seals in different packaging, especially packaging of dairy foods, chocolates, pharmaceutical products such as creams and toothpastes, etc.

➤ **Polymer Coating for Easy-Open Seals**

🏠 **Nova Plast Co.**

[www.novaeplast.com](http://www.novaeplast.com)



**Product Introduction:**

In the packaging industry, one of the most important topics is easy-open products. In this family of products, the polymer coating is placed on aluminum, paper, plastic such as PET or OPP, which gives this product the ability to stick to its own layer.

**Export History:**

Up to 500,000 \$

**Main Export Destinations:**

Russia and Turkey

**Annual Production Capacity:**

1,000 Tons

**Founded:**

2015

*This product is a final B2B consumer product.*

**Technical Specifications:**

This product is produced by reactive extrusion process. The process is solvent-free and environment friendly. At the end of the process, the solvent is separated by the distillation tower and vacuum. Finally, granule A, grade is separated through several steps of going through mesh. The base polymer of this product is polyethylene, on which maleic anhydride is grafted.

**Advantages:**

Quality

**International Standards or Permission:**

Operational and health tests



**Application:**

Construction industry, mattress production, furniture production and packaging industries

➤ **Slow-Burning Polyethylene Foam (EPE)**

🏠 **Mazeroon Foam Co.**

**Product Introduction:**

Polyethylene foams, like all foams, consist of a resin with bubble cells, and due to having suitable properties, it is one of the best cold, thermal, moisture and sound insulations. Polyethylene foams are divided into two categories of linear and network foams in terms of the cross-linking agent. In linear foams, no network agent is used and they are known as ordinary polyethylene foam or polyfoam or EPE foam, which is very suitable for insulation in construction due to favorable production costs and low cost.

In network foams, a curing agent is used, which creates a three-dimensional structure in the foam product, and as a result, greatly increases the properties of the foam. This group of foams is known as crosslink polyethylene foam or network polyethylene foam or XPE foam, which is used for special and luxury conditions due to high production costs. The product under review is of the first type. One of the weak points of polyethylene foams is low flame resistance; Therefore, creating flame resistance in this type of foam can be very useful and efficient, especially in the construction industry.

**Founded:**

2007

*This product is a final B2B & B2C consumer product.*

**Technical Specifications:**

This product is produced with a thickness of 1 and 2 mm for packaging. The properties of this foam are listed in the following table:

Properties	standard	Value
Tensile strength(KPa)	ASTM 412	250
Elongation at break (%)	ASTM 412	75
Compressive Strength (psi)	ASTM D3575	8
Compression Set (%)	ASTM D3575-B	16-20
LOI	ASTM D2863	26-29
UL94	IEC 60695-11-10	V0, V1,V2

**Advantages:**

Lower price





## ➤ PVB Film Polyvinyl Butyral (PVB) Sheets Used in Safety Glass

◆ Razin Polymer Rahe Abrishamm Co.

[www.razinpvb.com](http://www.razinpvb.com)



### Product Introduction:

These products are polymer sheets that produced from polyvinyl butyral (PVB), which are used in different thicknesses in the production of safety glasses. These sheets are sandwiched between two glass sheets and placed in the autoclave. Under temperature and pressure, this sheet glues two layers of glass together. The glass that has been strengthened in this way has a much higher impact resistance and when subject to impact, it does not fall easily even if it breaks. This process makes the glass resistant to impact to a great extent and prevents the glass from turning into sharp shards and injuring people in the event of an accident and breakage.

#### Main Export Destinations:

Iraq

#### Export History:

Up to 500,000 \$

#### Annual Production Capacity:

2,700 Tons

#### Founded:

2008

### Application:

This product is used in car and safety glass.

*This product is a final B2B consumer product.*

### Technical Specifications:

- \* The refractive index should be close to that of glass so as not to cause the light beam to deviate from the original direction.
- \* It must be free of any defect, impurity, tear, etc.
- \* During the time and in the cycles of changing temperature, humidity and pressure, it should not undergo color change or bubbling or any other appearance change.
- \* It must be completely uniform. This uniformity must be observed both in terms of thickness and geometry, as well as in terms of formulation and structure.
- \* This film must have suitable mechanical properties.
- \* This desired film must have a suitable interfacial structure with glass. Both in terms of interface texture and roughness, and in terms of interfacial energy and adhesion between two surfaces

### Advantages:

- \* High volume of production
- \* Reasonable price
- \* The only manufacturer in West Asia

### International Standards or Permission:

ECER 43 standard



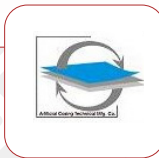
**Application:**

- \* Production of back sheets for baby diapers and women's menstrual pads
- \* Making rainwear, sports shoes, clothes, hats and surgical masks
- \* Construction of buildings to gradually reduce the moisture content of concrete and thus reduce the amount of cracking and increase the strength of concrete

➤ **Three-Ply Breathable Polymer Film Based on Polyethylene**

◆ Artificial casing technical Mfg. Co.

[www.actmco.com](http://www.actmco.com)



**Product Introduction:**

Breathable polymer films (BREATHABLE FILM) based on polyethylene and calcium carbonate usually has three layers. The main reason for having three layers is to increase the tear resistance due to the synergy of the layers. These films prevent the water from penetrating into the film or out of the film according to the use; It causes the release of water vapor from the film and prevents skin allergies in children and women, and in cases such as clothes, it leads to the release of body sweat.

Due to the use of this film in the back sheet of baby diapers, the need to use absorbent powder is reduced by 35%, which somehow adds to the added value of the product. Also, the use of this film due to its breathable feature can reduce skin sensitivities as a result of heat rash or the accumulation of liquids in non-breathable films. These films are also known as porous polyethylene films in scientific references.

**Main Export Destinations:**

Turkey, Turkmenistan, Iraq, Afghanistan

**Export History:**

Up to 500,000 \$

**Founded:**

2003

*This product is a final B2B consumer product.*

**Technical Specifications:**

In terms of formulation, these films are usually made of polyolefins (polyethylene). This product is made based on linear light polyethylene and calcium carbonate coated with stearic acid and is a type of highly filled composite with 45 to %70 filler by weight. Polyolefins process additives such as thermal stabilizers and antioxidants are the other formulation components. The thickness of the product film in the first stage (non-breathable) is about 50 microns and the width of the film is 2 meters, and after various tension stages, the thickness is reduced to 14 microns and makes the product breathable. The final width of the product reaches 160 cm after stretching and cutting.

The company has the ability to produce products with a weight of 15 to 70 grams per square meter and different widths according to the customer's request up to 1650 mm in different colors.

**Advantages:**

Customization



**Application:**

As an additive to improve surface properties in paint and resin industries  
Epoxy coatings, especially in coatings applied on vertical surfaces of thick epoxy coatings (up to 1000 microns)

➤ **Polyamide-Based Thixotropic Agent**

◆ **Baspar Lia Chemical Co.**

[www.basparlia.com](http://www.basparlia.com)



**Product Introduction:**

This wax is actually a thixotropic agent that is supplied in the form of powder or small agglomerates. The product is produced from the reaction between stearic acid and several types of amines in an industrial reactor under certain temperature conditions, and it is an oligomer with a molecular weight of about 1000, which is ground after being discharged from the reactor and cooled, and the product is in the form of a white powder (small lumps) is provided to customers.

**Main Export Destinations:**

Turkey, Armenia

**Export History:**

Up to 500,000 \$

**Founded:**

2017

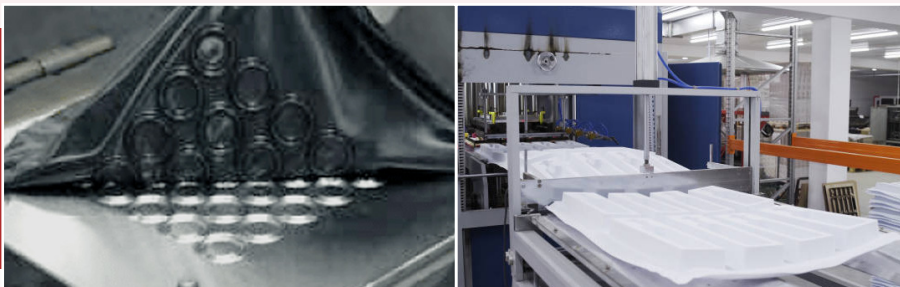
*This product is a final B2B consumer product.*

**Technical Specifications:**

The product is actually a thickening agent with hydrogen bonding through amino groups. For this purpose, a combination of a saturated fatty acid (such as stearic acid) and polyamines is used. Different grades of alcohol and amine are used to achieve different grades of product according to the melting temperature (60 to 130 degrees Celsius).

**Advantages:**

Reasonable price



**Application:**  
Foaming industry

## ➤ Release Agent Based on Hydrocarbon Compounds

### ◆ Baspar Lia Chemical Co.

[www.basparlia.com](http://www.basparlia.com)



#### Product Introduction:

This product is actually a type of RELEASE wax that is specifically used in the foaming industry. In the foaming industry, the raw materials forming the foam (for example, polyisocyanate and polyol) enter the mold and the temperature of the mold increases. The foam is then baked and blown and fills the entire mold. Then the mold is flipped over and the formed foam is removed. In this process, the foam should not stick to the surface of the mold, its surface should remain smooth and without holes, it should not change color, and it should be easily removed from the mold. For this purpose, a substance called RELEASE wax is used. Before introducing the foam ingredients into the mold, this wax is applied on the inner surface of the mold. Applying this wax can be done by spraying or applying it with a handkerchief and a brush.

On the one hand, this wax should have good adhesion to the aluminum surface (the material of the foam mold is mostly aluminum) and on the other hand, it should have a little adhesion to the surface of the foam, so that it can help the foam separate easily from the surface of the mold. That is to say, the wax structure must be amphiphilic.

#### Main Export Destinations:

Turkey, Armenia

#### Export History:

Up to 500,000 \$

#### Founded:

2017

*This product is a final B2B consumer product.*

#### Technical Specifications:

The chemical structure of this wax should have a hydrophilic part and a hydrophobic part, and this molecular structure should be designed in such a way that its hydrophilic side faces the aluminum surface and its hydrophobic side faces the air. During the curing of the foam inside the mold, this orientation is maintained, and the polyurethane foam that hits it actually comes into contact with the non-polar and hydrophobic part of the RELEASE wax, which due to the polar nature of polyurethane foams, it does not stick to the mold surface. Of course, this orientation of the release wax molecule must remain the same during curing. This wax is developed as a wax suspension in organic solvents. The solvent in this wax should not have a negative effect on the surface of the foam or cause its surface to change color or make holes, which increases the technical complexity. The boiling point and vapor pressure of this solvent mixture should be such that it does not cause the surface of the foam to bubble. The structure of the release wax and the solvent should not change color at high temperature of the surface of the mold or react with the foam while it is being cured and cause it to change color and properties.

Also, considering that a large volume of this solvent evaporates in a day in a foaming workshop, the solvent in this structure should not be toxic or carcinogenic. Also, in terms of safety issues, the flash point of the solvent mixture used in the wax formulation should be lower than the foam curing temperature.

#### Advantages:

Reasonable price



### Application:

These tanks are used to collect fluids and blood from the patient's body in hospitals.

## ➤ Disposable Container for Collecting Biological Fluids in Hospitals

◆ Puya Tebb Zakariya Co.



### Product Introduction:

For many years, suction bags in hospitals have been re-usable and permanently used. With the development of disposable products, disposable hospital suction bags have gained popularity over the past decade. The present product is produced as a hospital disposable suction bag with a capacity of 1, 2 and 3 liters. The task of this tank is to collect blood and body fluids of the patient during surgery. In general, the issue of infection control is the easier handling of the outputs of different hospital departments and the conditions of cleanliness and environmental hygiene. This issue has led to the use of disposable suction bags.

### Main Export Destinations:

Turkey

### Export History:

Up to 500,000 \$

### Founded:

2011

*This product is a final B2B consumer product.*

### Technical Specifications:

In general, the product can be divided into the following parts:

1. Suction bag
2. Bag seal
3. Cut-off filter
4. Absorbent powder
5. Support body
6. Inlet and outlet hose connector to the bag

The outer body is made of PC. The method of its production is injection. Inside this compartment is a PE bag that is welded to the lid of the compartment (red) and inside this bag is polyacrylic acid as the solid. By suctioning liquid materials from inside the surgical environment, liquids enter the bag (with a vacuum pressure of 60 Pa) and can be disposed of as solid waste by being absorbed by the super absorbent.

### International Standards or Permission:

ISO 10079





## ➤ Syringe Gaskets Made of TPE and Its Compounds

◆ Kooshesh Pajohan Sanat Polymer Co.

[www.koosheshpajouhan.com](http://www.koosheshpajouhan.com)



### Product Introduction:

Syringe stoppers are a part of the syringe that are placed in front of the syringe piston and cause better sealing of the syringe. The important thing about this product is that the piston in the syringe should be able to move easily while sealing properly.

Considering that this product is in direct contact with medicine, biological standards become important along with physical and mechanical properties. Physical and mechanical properties such as hardness, tensile strength and compressive strength are of significant importance and when it comes to toxicity of biological tests, MTT of cytotoxicity are important. In addition, the amount of substances released from the stopper into the drug is very important.

**Founded:**

2016

### Application:

Making syringes

*This product is a final B2B consumer product.*

### Technical Specifications:

Currently, this product is made in the market with different materials. Most of the currently used materials are PVC, which is not biologically suitable for this product.

There are other products with natural rubber in the market, and these products also have problems with the release of additives, and also this type of stoppers will have a more time-consuming production process due to the need to cure the rubber.

The silicone type of this product is more expensive and is currently not economical.

Low friction coefficient is one of the essentials of this product, which makes the piston move easily in the syringe. Currently this happens in PVC samples of this product with a lot of plasticizer, and the release of this plasticizer causes defects in the drug.

It also has the ability to be molded on the piston, which can be done easily and in a shorter time due to the elimination of the rubber curing time compared to NR samples.

The pressure resistance of this product is also very important and it should be such that the sealing inside the syringe is not weakened over time.

Another important advantage of TPE over rubber is its recyclability. This will reduce production costs and make it more economical.

The compound stoppers produced by this company are different according to the different dimensions of the syringes, and its physical properties must be customized according to the size of the syringe and the type of mold wanted by customers. Different compounds have between 8 and 16 components, and accordingly, they have different hardness and tensile properties.

### Advantages:

Customization and production of various product grades

### International Standards or Permission:

Biological tests have been conducted based on the ISO 10993 standard.



## ➤ Hard Gelatin Shell for Enteric Medicinal Capsules and Typical Capsules Based on Fish Gelatin

◆ Iran Gelatin Capsule Mfg. Co.

[www.irancapsule.com](http://www.irancapsule.com)



### Product Introduction:

This product is used in the pharmaceutical industry to fill active pharmaceutical ingredients, including powder, granule and pellet (typical capsule) and oily liquid (liquid capsule). The name of the pearl shell is derived from its special and shining surface, which is the result of the use of special color compounds in the formulation of the shell. Often creating a capsule form for an oral drug can have two reasons: either the active substance of the drug may be harmful to the initial parts of the digestive system (especially the stomach), such as the drug Piroxicam, or, on the contrary, stomach enzymes reduce the effect of the drug.

Therefore, the capsule shell is used to help the active ingredient reach the lower parts of the digestive system safely. Generally, compared to tablets, more active ingredients can be placed in capsules. According to the type of production, capsules are divided into hard and soft types. Capsule shell gelatin is insoluble in cold water but can absorb up to ten times its weight in water. Therefore, it softens very quickly in the vicinity of oral fluids, and for this reason, they are easier to swallow than tablets.

Gelatin melts at a temperature of 37 degrees Celsius, so after being swallowed in the stomach, the gelatin melts and its medicinal substance is released. Melted gelatin is also digested. Not feeling the smell and taste of medicine is one of the advantages of capsules. Hard capsules include amoxicillin capsules and soft capsules include nitroglycerin and vitamin A.

**Founded:**

2002

### Application:

Pharmaceutical industry

*This product is a final B2B consumer product.*

### Technical Specifications:

The shell of hard gelatin capsules consists of two parts: cap and body. The general nature of these capsules is based on gelatin, and in order to improve and optimize the formulation; Materials such as preservatives, softeners, lubricants and pH stabilizers are added to gelatin in the formulation. These capsules are produced in different sizes. Each of these has specific volumetric characteristics and their physical characteristics such as the size of their walls are also specific. In the formulation of these capsules, certain ratios of skin gelatin to bone are used because each type of gelatin has specific physical and chemical characteristics that affect the time of opening and other characteristics of the capsule shell. Determining these ratios depends on the characteristics of the gelatin raw material, including the two characteristics of gel firmness (bloom) and viscosity. The difference in the liquid-filled capsule formulation compared to the conventional capsule is in the thickness of the layer, which is related to the manufacturing settings.

### Advantages:

- \* Using Halal gelatin
- \* High production volume
- \* Customization
- \* Variety of products

### International Standards or Permission:

- \* ISO 9001
- \* ISO 14001



## ➤ Hard Gelatin Shell for Medicinal Typical, Metallic and Liquid Capsules

◆ Iran Gelatin Capsule Mfg. Co.

[www.irancapsule.com](http://www.irancapsule.com)



### Product Introduction:

This product is similar to the previous products in terms of manufacturing specifications, with the difference that in enteric (intestinal) derivatives, in addition to gelatin, compounds such as Eudragit are used in the manufacturing of the capsule shell. This type of capsule causes the drug to open in the intestine by changing the formulation and without the need to create a coating on the surface of the tablet or capsule. The shell of enteric capsules are prepared by changing the formulation of the shell of normal capsules by changing the pH, changing the thickness of the shell and delaying the solubility of the shell depending on their application. For example, pH-dependent capsules are prepared by using Eudragit and HPMC-phthalate polymers, or by using formaldehyde solution and creating cross-links, it is possible to improve the opening of the capsules. Also, according to the difference in pH in different parts of the intestine, the drug can be designed so that it opens in a certain part of the intestine and exerts its effect in that area.

**Founded:**

2002

### Application:

Pharmaceutical industry

*This product is a final B2B consumer product.*

### Technical Specifications:

The shell of hard gelatin capsules consists of two parts: cap and body. The general nature of these capsules is based on gelatin, and in order to improve and optimize the formulation; Materials such as preservatives, softeners, lubricants and pH stabilizers are added to gelatin in the formulation. These capsules are produced in different sizes. Each of these has specific volumetric characteristics and their physical characteristics such as the size of their walls are also specific.

Fish gelatin is used in the formulation of these capsules, and with a special formulation, it prevents the pill from opening in the stomach and releases the medicine in the intestine.

### Advantages:

- \* Using Halal gelatin
- \* High production volume
- \* Customization
- \* Variety of products

### International Standards or Permission:

- \* ISO 9001
- \* ISO 14001



## ➤ Two-Ply Easy-Open Film Based on Polyvinyl Chloride and Polyethylene for Packaging Pharmaceutical Suppositories

◆ Arya Pharmed Co.

[www.aryaplasticgroup.com](http://www.aryaplasticgroup.com)



### Product Introduction:

This product is a kind of film for packaging pharmaceutical suppository products, which consists of several layers and has the properties of plasticity and impermeability to moisture and oxygen, and more importantly, it is easy to open. This film is a combination of PVC in the form of a sheet with a thickness of 120 microns  $\pm$  5 microns and with the ability of thermoforming along with a layer of polyethylene with a thickness of 25 to 30 microns, and one of its sides can be printed and the other side can be easily opened in another process. The total thickness of the sheet will be 155 $\pm$ 5 microns and it is used to produce packages for various pharmaceutical products in the form of suppositories. The suppository packing chamber also has specific volumes, which are produced with a special machine and with thermoforming operations.

**Founded:**

2004

### Application:

Pharmaceutical industry

*This product is a final B2B consumer product.*

### Technical Specifications:

The technology of producing thin films in the form of cast extrusion, the easy-to-open feature of the inner layer which is made of polyethylene and finally using the proper polyurethane-based adhesive for sticking the layers together are very difficult, and accuracy in the process and formulation of each step will guarantee the final quality of the product. The company's product has passed special permeability tests - gas and moisture passage, and the thickness of the produced film reaches up to 150 microns.

The suppository shell production process is that two layers of PVC and polyethylene film are produced, which are connected to each other with a final thickness of about 160 microns, and after heat treatment and forming, both ends of the suppositories are cut and ultimately, it is rolled up and transferred to the packaging section.



## ➤ Foam Furniture/Sofas and Couches Including Types of Polystyrene Plastofoams

🏠 Poya Foam Qaem Khazar Co.

### Product Introduction:

Using foam is a new idea in the furniture industry. This product has replaced traditional furniture based on wood, metal and polyurethane. Unlike common furniture, this product is made of polystyrene foam, which is designed and optimized for use in the furniture industry. Lightness, dimensional stability, ease of transportation, cheapness, etc. are some of the properties of this type of furniture. This product is based on polystyrene plastofoam, which is designed with various coatings and has more capabilities due to the strengthening of mechanical properties, including high mechanical strength/ weight, excellent resiliency and long-term durability. This product can be used in closed spaces, including homes, office environments, as well as open spaces such as parks, etc.

### Main Export Destinations:

Turkmenistan, Iraq

### Export History:

Up to 500,000 \$

### Founded:

2011

### Application:

As furniture in office, residential and open spaces

*This product is a final B2C consumer product.*

### Technical Specifications:

- \* Determined and distributed cell size
- \* Improving the cell density to achieve the desired mechanical properties to withstand high static pressure
- \* Good dimensional stability during use
- \* Setting the conditions of the forming process
- \* Optimizing the cell structure and adjusting and determining the appropriate cell size and density as well as controlling the shape of the cells (open or closed, spherical or polyhedral or elliptical) in order to improve the resiliency and thus increase the dimensional stability of the product.

### Advantages:

- \* Ability to customize
- \* Lower price compared to other similar products
- \* Lower weight





## ➤ Anti-Reflux Mattress Including Types of Polystyrene Plastofoms

🏠 Poya Foam Qaem Khazar Co.

### Product Introduction:

Using an anti-reflux mattress is a new idea in the mattress making industry. This product replaces common mattresses based on polyurethane foams, memory foam, etc. This product is made of polystyrene foams, which is designed and optimized to be used in making anti-reflux mattresses. Lightness, high stability, variety of designs and roles, low price, etc. are some of the properties of this type of anti-reflux mattress. This product is based on polystyrene plastofom, which is designed with various coatings and has more capabilities due to the strengthening of mechanical properties, including high mechanical strength/ weight, excellent resiliency and long-term durability.

### Main Export Destinations:

Turkmenistan, Iraq

### Export History:

Up to 500,000 \$

### Founded:

2011

### Application:

Mattresses in homes and hotels and guesthouses

*This product is a final B2B & B2C consumer product.*

### Technical Specifications:

- \* Determined and distributed cell size
- \* Improving the cell density to achieve the desired mechanical properties to withstand high static pressure
- \* Good dimensional stability during use
- \* Setting the conditions of the forming process
- \* Optimizing the cell structure and adjusting and determining the appropriate cell size and density as well as controlling the shape of the cells (open or closed, spherical or polyhedral or elliptical) in order to improve the resiliency and thus increase the dimensional stability of the product.

### Advantages:

- \* Ability to customize
- \* Lower price compared to other similar products
- \* Lower weight



## ➤ Various Types of Cellulose Filter Sheets

◆ Safi Aran Co.

[www.safiaran.com](http://www.safiaran.com)



### Product Introduction:

The intended paper filter is used in the production of filter press, which is made using cellulose, perlite and diatomite fibers. Diatomite is the most important filter aid material from the volumetric point of view and perlite is also a filter aid. These filters are disposable and have the property of absorbing small particles up to about 0.5 microns. This filter is capable of purifying aqueous, alcoholic and oily solutions in two ways: superficial and deep.

*This product is a final B2B consumer product.*

### Application:

This filter is used in the production of filter press, which is used to filter all kinds of solutions in the pharmaceutical, chemical and mineral industries.

### Technical Specifications:

The products of this company have reduced the duration of filtration from 12 hours to 2 hours.

### Advantages:

High-quality

**Founded:**

1999



Knowledge-based products and equipment



## ➤ Polymer Waterproofing Based on Polyurethane, Polyacrylate and Epoxy

◆ Mandana Polymer Co.

[www.mandanapolymer.com](http://www.mandanapolymer.com)



### Product Introduction:

This coating product is resistant to the penetration of water and other chemicals with suitable elastic properties and ideal adhesion to the surface of all types of concrete, stone structures, etc., which is formulated and prepared based on acrylate, polyurethane and epoxy resins, and with unique innovation, it turns into a thermostat when it dries. In order to achieve proper insulation of polymer substrates, especially acrylate substrates, cross-linking above 50% is needed to insulate this substrate against water and humidity.

**Founded:**

2011

### Application:

These insulations are used as moisture insulation in buildings and structures.

*This product is a final B2B & B2C consumer product.*

### Technical Specifications:

Preparation of acrylate resin to create a link between polymer chains and cross-linking of the resin at the working level is the main challenge of product technology. Regarding polyurethane substrate, to achieve the desired properties, there must be a proper balance between the ratio of these parts as well as their characteristics. Choosing the type of isocyanate, the type of polyol, their structure, as well as catalysts and other components of the formulation, will completely affect the properties, resistances and of course the final price.

### Advantages:

- \* High quality
- \* Competitive price

**International Standards or Permission:**

According to the British international standard (BS EN 14891)



**Application:**

According to its grade, polyurethanes are used in a wide range of industries, including automobiles, construction, household appliances, and shoes. The current grade of this company is hard grade polyurethane used in the construction industry as a sandwich panel, home appliance industry for insulation of refrigerators and freezers and other corresponding applications such as the construction of cold storage and refrigerator cars.

➤ **Insulation Hard-Grade Polyol with Polyester Synthesis**

◆ **Polyurethane Razin Systems Development Co.**

[www.razinpu.com](http://www.razinpu.com)



**Product Introduction:**

Polyurethanes are a member of the family of polymers with a wide range of properties, which according to their grade have distinctive features such as proper dimensional stability, insulation, flexibility and wear resistance. The current product of this company is placed in the group of hard polyurethane foams with proper dimensional stability and insulating properties.

**Export History:**

Up to 500,000 \$

**Main Export Destinations:**

CIS countries, Uzbekistan and Persian Gulf countries

**Annual Production Capacity:**

2,500 Tons

**Founded:**

2011

*This product is a final B2B consumer product.*

**Technical Specifications:**

Razin company's hard insulating grade products have good quality and good price and standard specifications that match the equivalent grades in the world. The technical specifications of each product grades have been compiled in the form of product data sheets according to the field of application of panels and refrigerators, etc.

As an example, the base grade polyester of Razin company is available with the following specifications.

	Standard	Value	Unit
Hydroxyl number	ASTM D4274	350-300	Mgr KOH/g sample
Acid number	ASTM D4662	1 >	Mgr KOH/g sample
Viscosity	ASTM 4878	5000-3000	mPa.s

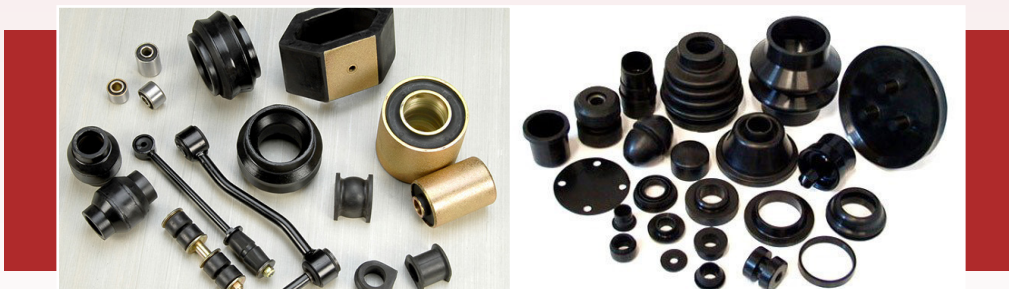
**Advantages:**

- ※ High quality
- ※ Competitive price
- ※ The possibility of customization according to customer needs

**International Standards or Permission:**

It has quality approvals from the Polymer and Petrochemical Research Institute of Iran





**Application:**

Production of various types of car parts

*This product is a final B2B consumer product.*

➤ **Polymer Nanocomposite Based on Polypropylene and EPDM**

◆ **Shamim Polymer Co.**

[www.shamimpolymer.com](http://www.shamimpolymer.com)



**Product Introduction:**

This nanocomposite product is based on polypropylene copolymer modified by using EPDM, nanoparticles and other additives. Different grades of this product have been developed for special applications, and in cases where light resistance is needed, anti-UV materials are used in the formulation. Glass fibers are also used to improve mechanical properties.

**Founded:**

2007

**Technical Specifications:**

Among the special characteristics of this product, we can mention high impact resistance, fracture strain and color adhesion. Use of appropriate nanoparticles with strong interactions in the matrix, type of modifier of surface properties (addition promoter), use of optimal and low amounts; For the proper distribution of components, formulation and controlled process conditions to solve the problem of brittleness and lack of adhesion

Test Specification	Reference Standard	Unit	Test Condition	Values
<b>Physical Properties</b>				
<b>MFI</b>	ASTM D1238	g/10min	230 °C, 2.16 kg	5 ± 1
<b>Density</b>	ISO 1138	g/cm <sup>3</sup>	23 °C	1.13 ± 0.05
<b>Ash Content</b>	ASTM D5630	%	800 °C, 40 min	30 ± 2
<b>Volatile Content</b>	ISO 15512	%	105 °C, 30 min	<0.3
<b>Linear Mold Shrinkage</b>	ISO 294	%	after 48 h	0.3 - 0.5
<b>Mechanical and Thermal Properties</b>				
<b>Tensile Modulus</b>	ASTM D638	Mpa	50mm/min	>5800
<b>Tensile @Break</b>	ASTM D638	Mpa	50mm/min	>60
<b>Elongation @Break</b>	ASTM D638	%	50mm/min	>4
<b>HDT</b>	ASTM D648	°C	1.80 Mpa	>125
<b>Izod Impact (Notched)</b>	ASTM D256	kJ/m <sup>2</sup>	23 °C	>17

**Advantages:**

- \* High volume of production
- \* Customization





### Application:

One of the applications of memory foams is used in the production of bed cushions. People who have mobility problems and need to use a wheelchair or hospital bed (especially patients with burns) can benefit from the advantages of viscoelastic polyurethane foam. Viscoelastic polyurethane foam can also be used in sports equipment, power tools, and medical shoe soles (medical soles). Memory foam is also used in ergonomic applications such as neck and back cushions.

## ➤ Polyurethane Memory Foams

🏠 Imen Polymer Chemie Co.

[www.imenpol.com](http://www.imenpol.com)



### Product Introduction:

Polyurethane memory foams belong in the flexible foam class. These foams are a group of smart materials that have the ability to recover their original shape after undergoing high strains. The most important reason for using viscoelastic foams is that the heat and pressure of the human body can be used to cause precise deformation. The viscous part of the "viscoelastic" foam is what plays the main role here.

Body heat actually makes the memory foam softer and therefore more viscous. This feature actually causes a mold of the body to be created. The slow distribution of body weight on the viscoelastic polyurethane foam prevents the compression of blood vessels and leads to the ease of blood circulation and the mobility of skin tissues. The structure of these foams is designed in such a way that various factors make these foams have low resiliency, and after removing the pressure from them, slowly return to their original state. But unfortunately, the loss of mechanical properties in the long term for this category of foams is more than the usual common foams.

*This product is a final B2B consumer product.*

### Technical Specifications:

The complete resiliency and ability of the foam to return to its original state after removing the stress and uniform cell distribution from the core to the shell are among the things that determine the quality of the foam production. The production of this foam is the same as soft polyurethane foams, with the difference that two or more polyols and cell surface modifiers are used for making it a memory foam. The density of this product is 1.02 grams per cubic centimeter.

### Advantages:

Competitive price



## ➤ Fiber Optic Microduct with Inner Coating of Silicon

◆ Nour Behine Gostar Khavar Mianeh LTD. Co.

[www.nbgme.net](http://www.nbgme.net)



### Product Introduction:

Microduct is one of the latest products that is used to build telecommunication infrastructure and for fiber optic cable transmission, telecommunication purposes, camera communication and traffic control orders and for network transmission, and it has eliminated the need to dig multiple channels in the street and shows more foresight. Soil microducts are used to guide and pass all kinds of optical microcables in the FTTX network. In other words, a microduct is a special duct for the passage of optical microcables, which is resistant to pressure due to its nature, and inside which internal pipes are installed for the passage of optical fiber microcables.

**Founded:**

2004

### Application:

Telecommunications, Optical fiber transmission, Traffic control, Network transmission

*This product is a final B2B consumer product.*

### Technical Specifications:

There are various methods for producing microducts. The simplest method is to use a plastic tube as a microduct. The main challenge in this product is to reduce the internal friction to increase the shooting range of the cable. For this purpose, various methods have been used, such as creating a groove on the inner surface or using internal softeners and finally covering the surface. Using the technology of creating a silicone layer inside the polyethylene pipe at the same time to reduce the amount of internal friction (COF) is one of the latest technologies in this field. This company uses this method to produce microducts. In fact, in the production method, the inner layer is formed by co-extrusion method and using silicone masterbatches, which reduces the friction coefficient.

### Advantages:

Reasonable price

**International Standards or Permission:**

International IEC 60794 standards



### Application:

Coaxial waveguide cables are widely used in mobile phone systems, television image transmission systems, and radio transmission systems, to transmit radio signals, etc., from one point to another.

## ➤ UPVC Profiles by Co-Extrusion Method

### ◆ Sima Moj Co.

#### Product Introduction:

These products include three types of special telecommunication cables, including coaxial (feeder) and wave carrier. This product includes an internal conductor, an interface insulator, an external conductor and an external polyethylene layer to protect it. Dielectric insulation is placed between the internal conductor and the external conductor. Here, air and a thin spiral-shaped strip of polyethylene or foam are used as dielectric insulation.

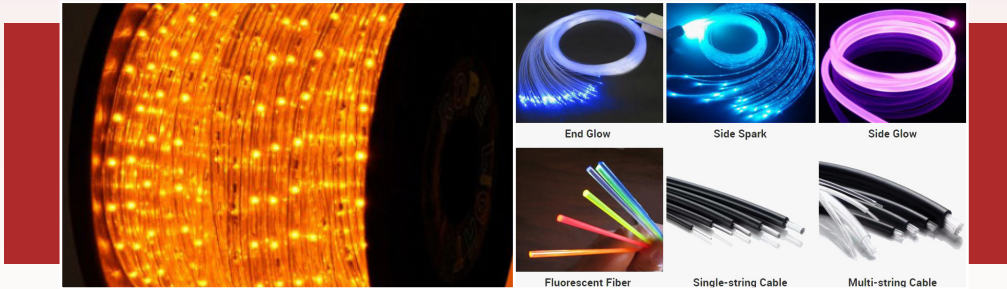
**Founded:**

2003

*This product is a final B2B consumer product.*

#### Technical Specifications:

The company has succeeded in designing and manufacturing microcell closed cell polymer foams with a foam density of less than  $0.3 \text{ g/cm}^3$  and controlling its dielectric properties through proper process design, process conditions control, using appropriate components and also optimizing the ratio of components. The main technical feature of this product is its very difficult process, which is only available to a few specific countries. Construction of a product production line includes a seven-station pipe rolling line with TIG welding, a copper pipe spiraling machine, an insulation intermediate production line, a feeder cover extruder machine, pillar cutter, coil opening and pulling devices and a device for testing electrical technical specifications of the product.



## ➤ Polymer Lighting Strips

◆ Paydar Polymer Ojan Co.

[www.paydarpolymerco.ir](http://www.paydarpolymerco.ir)



Paydar Polymer Ojan

### Product Introduction:

This product is a luminous plastic strip that has many applications due to its flexibility and the possibility of using it in different lengths. Depending on the application, the strips can be used in different dimensions and designs (cross-sectional shape) in two transparent and opaque models similar to polycarbonate profiles. With the advent of LED-based lighting and the improvement of technology regarding linear ribbons, the use of lighting strips has increased greatly due to the ease of use.

Due to the major advantages of LED, the lighting industry is moving towards using LED lights and lamps. The advantages of LED lamps and lights include greater efficiency, lower energy consumption, and longer lifespan. Currently, LED is one of the biggest trends in the world, and these changes are also taking place in our country. One of the major advantages of using LED in lights is the very high flexibility in design. This flexibility has caused the transition of shape of lights and lamps from the previous simple models, which were generally in the form of fixed bubbles, to linear lights.

**Founded:**

2015

### Application:

Since these strips are made of flexible and resistant polymer strips, they can be used on all winding surfaces, and for this reason, they are widely used in building facades, urban decorations, celebrations, and also the interior design of buildings.

*This product is a final B2B consumer product.*

### Technical Specifications:

This product is produced using the extrusion process, and due to the fact that it has an luminous part and a non-luminous part, it is necessary to couple two extruders. There are also one-component strips, where the entire surface of the strip is capable of transmitting light. Therefore, they are less efficient than two-component strips. In the non-luminous part, polymer based materials are used in addition to color in the presence of a high percentage of filler so that light does not pass through this section. These materials are poured into the hopper of the first extruder. In the second extruder, the second base polymer is used, which requires adding a diffuser compound based on the type of strip, i.e. whether it is transparent or opaque. The output of both extruders is connected to a die, and the output of a strip is ultimately a die made of two different materials.

### Advantages:

- \* High quality
- \* Lower price than the foreign counterpart



## ➤ All-Polymer Pencil

🏠 Donyaye Farda Pencil Co.

[www.mdfpencil.com](http://www.mdfpencil.com)



### Product Introduction:

An all-polymer pencil is a pencil whose entire body, lead, and shell are produced simultaneously in a polymer process, and conventional ceramic leads are not used in it. In fact, this pencil does not contain wood.

This pencil consists of three parts: the lead, which is the main part of the pencil, the body, which holds the lead, and the shell, which is used for the beauty and appearance of the pencil. The compound of the lead part is mixed separately, which is produced in colored and black models. The compound of the body part is mixed separately and mixed with other polymers at the molding site. The shell is also used as a pure colored polymer. All these three parts in the pencil are produced at the same time in a co-extrusion process and the desired pencil is obtained.

**Founded:**

2009

### Application:

Writing and stationery.

*This product is a final B2C consumer product.*

### Technical Specifications:

The technical complexity of this product is in the formulation and selection of materials and appropriate process. In the compounding stage, polystyrene and SAN are used in the production of pencil leads. LDPE is also used in the production of pencil body. The cross-section of the pencil was originally circular, but now it is also produced in polygonal form. Currently, all pencil colors are produced by the company, and sharpenability, ability of being erased with an eraser, comfort and writing smoothly and weight are the same as regular pencils.

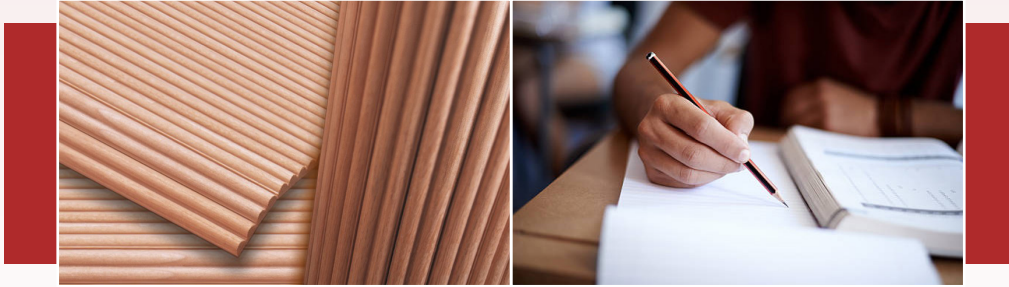
### Advantages:

Lower price than the regular pencils

**International Standards or Permission:**

The standard for pencils is En72





## ➤ Producing Pencils Based on Woodplast Composite

### 🏠 Yekta Composite Toska Co.



#### Product Introduction:

The outer part of ordinary pencils is usually made of wood or paper, and the lead of the pencil is placed inside. Pencil leads are mainly composed of graphite, and depending on the amount of clay mixed with them, they have different hardness. The body of wooden pencils is made from wood of a type of Cypress tree that grows in certain parts of the world, and therefore wooden pencils have a higher price than other types. Other types of body include paper (such as newspaper pencils) and polymer, which are also known as polymer pencils in the market. A kind of natural composite (made from processed wood powder and polymer) is used in the body structure of this pencil. The body and lead of the pencil are connected to each other with the help of an adhesive connection.

**Founded:**

2009

#### Application:

Stationery

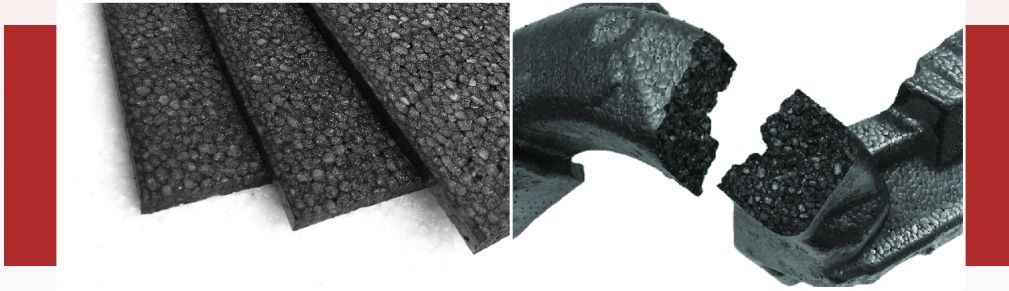
*This product is a final B2C consumer product.*

#### Technical Specifications:

The body of the pencil is made of Woodplast, which includes wood waste (%40-30 by weight) and a mixture of polystyrene and polyethylene (%70-60 by weight). The produced pencil must have the same strength as normal pencils so that it does not break under pressure and at the same time must have good sharpenability.

#### Advantages:

Lower price than typical pencils



### Application:

After molding in the steam rack machine, the expanded polypropylene beads become final products such as car bumpers, bicycle helmets, urban furniture, and similar polymer products with high durability, unique chemical resistance, and a significant strength-to-weight ratio.

## ➤ Expanded Polypropylene Beads Foam

◆ Sharif Advanced Materials Co.

[www.samfo.ir](http://www.samfo.ir)



### Product Introduction:

Expanded Polypropylene Granule Foam or EPP refers to foam beads that are produced from the volumetric expansion of polypropylene granules under supercritical conditions in the presence of carbon dioxide gas. The amount of volume expansion expected in the production process of these materials varies from 300 to 3000 percent depending on the final application and will lead to a significant decrease in the density of the product. In fact, primary microgranules with a density of about  $900 \text{ kg/m}^3$  in the presence of nanomaterials synthesized in the company and under supercritical conditions and at high temperature and pressure are transformed into expanded foam beads with a very low and controllable density of  $50 \text{ kg/m}^3$ .

**Founded:**

2018

*This product is a final B2B consumer product.*

### Technical Specifications:

- \* Density: in the range of 20 to  $200 \text{ kg/m}^3$ , has a microcellular structure with uniform distribution of cells
- \* Parts produced from expanded polypropylene (EPP) foam beads have wide applications due to their durability, suitable mechanical and chemical resistance, floating on water and chemicals, very high strength-to-weight ratio and %100 recyclability, as well as the ability to absorb vibration and impact energy in different areas.

### Advantages:

Reasonable price

**International Standards or Permission:**

International IEC 17025 standards



## ➤ VCI Corrosion Inhibitor in the Form of Film, Foil and Sachet

◆ Borna Polymer Co.

[www.bornapolymer.com](http://www.bornapolymer.com)



### Product Introduction:

VCI (Volatile Corrosion Inhibitor) materials are used to prevent corrosion of metals. Due to their high vapor pressure, VCI materials prevent their corrosion from within these films and by forming a nanometer layer around the surface of the sample. This method will not be subject to the dimensional limitation of the part and also the final cleaning of the sample.

According to their vapor pressure, these materials are sublimated and placed on the surface of the metal and remove the water particles. Some of them have high vapor pressure and some have low vapor pressure; Some of them affect iron alloys and some affect copper and aluminum. These materials may have a neutralizing or synergistic effect together. Some of these compounds, such as nitrite compounds such as dicyclohexylamine nitrite, have been banned due to environmental problems. The use of VCI has many advantages due to its vapor phase, including that it easily prevents corrosion in geometrically complex parts, like the rifling inside the barrel of a military cannon, which are difficult to lubricate. Although VCI products vary in shape, material, and impact strength; But they all have three features in common:

1. All of them need a cover or a closed fence so that they can form a space saturated with VCI molecules.
2. The molecules inside the VCI are in equilibrium with the molecules already vaporized and settled on the metal surfaces inside the chamber or on the fence and prevent the penetration of corrosive substances molecules on the metal surface.

**Founded:**

2018

3. The effectiveness of different VCIs largely depends on the chemical nature of the corrosion inhibitor system and the shape of the system.

### Disadvantages of some VCIs:

1. Speeding up the corrosion of some non-ferrous metals, changing the color of some plastics and packaging in a closed environment in order to prevent the release of inhibitory gases.
2. There are many variations depending on the type of metal. For example, papers impregnated with sodium benzoate make the shine of steel stable; While papers impregnated with benzotriazole provide good protection from copper and its alloys.

### Application:

Packaging and storage of metals to prevent corrosion

*This product is a final B2B & B2C consumer product.*

### Technical Specifications:

The company's products are offered in two forms: polymer film and sachet. In sachet form, inhibitor compounds are formulated and packed in solid form in small sachets. But the polymer film product includes a multi-layered film containing anti-corrosion inhibiting substances in the vapor phase, which with a controlled and targeted release, inhibiting molecules are released from their polymer substrate and by saturating the packaging environment, they are absorbed on complex metal surfaces in the form of a molecular layer with nanometer thickness and prevents the corrosion of all kinds of metals by different mechanisms.

At this stage of the process, a mixture of light, heavy and linear polyethylene granules as well as the pre-prepared masterbatch were poured into the film blowing machine. In this machine, first the masterbatch is mixed and made uniform with the relevant granules, and then the polymer melt comes out in the form of a bubble, which turns into a roll of polymer film after cooling.

### Advantages:

- \* Reasonable price
- \* Variety of products

### International Standards or Permission:

The product has passed corrosion tests based on NACE test.

Second Chapter

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# Rubber & Related Products



# 2<sup>nd</sup> CHAPTER

First Chapter

**Second**  
CHAPTER

Third Chapter

## Rubbers and Related Products

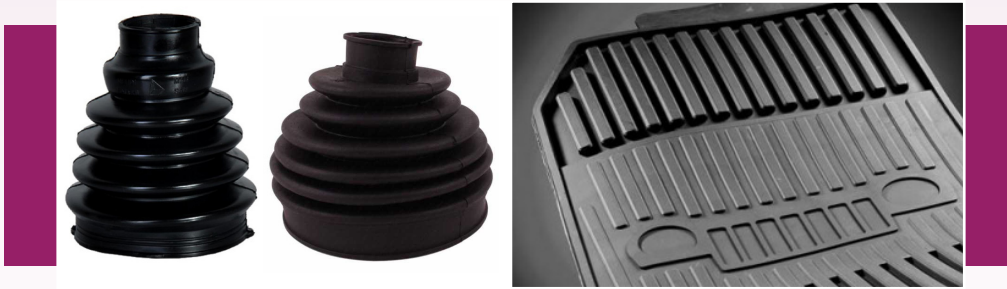
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Sections:

Rubber Compound and Masterbatch ○

Rubber Belts ○





### Application:

These compounds are used in the production of various parts, such as mountings (rubber-metal parts, cushion, washers and o-rings), fuel hoses, radiator hoses, hydraulic oil hoses, ventilation, dust collector parts, solid and sponge sealing profiles, rubber carpets, rails and so on.

## ➤ Various Types of Rubber Compounds

### ◆ Baspar Sazeh Toos Co.

[www.partlasticgroup.com](http://www.partlasticgroup.com)



#### Product Introduction:

The company produces all kinds of rubber compounds. In fact, in order to produce rubber products, it is necessary to produce the desired compound first and then shape it.

This company produces about 250 formulas related to various rubber compounds with all polymer bases available in the rubber industry, according to the type of part and its application, in which 450 types of raw materials are used in different amounts.

#### Founded:

2001

*This product is a final B2B consumer product.*

#### Advantages:

- \* Customization
- \* Variety of products
- \* Quality and compliance with international standards

#### International Standards or Permission:

In the field of automotive compound production, the company has obtained the IATF standard.



## ➤ Polyurethane Elastomers

◆ Poly Urethane Pars Ltd. Co.

[www.parspu.com](http://www.parspu.com)



### Product Introduction:

Polyurethane casting elastomers generally consist of two components: prepolymer and curative agent, which after mixing and casting in the mold; it takes the intended shape. Polyurethane elastomer based on polyester refers to an elastomer that is synthesized from a diol polyester with different composition, such as adipic acid, ethylene glycol, diol butane, diethylene glycol, and various diglycols and diacids, and the synthesized compound belongs to the isocyanate group and forms a polyurethane elastomer prepolymer, which becomes the final elastomer after combining with a diamine such as MBOCA. Each type of elastomer offers different properties and applications. Among the important features of ester-based polyurethane elastomers are good physical and mechanical properties, better wear properties than polyethers, resistance against corrosion and longevity. However, in hydrolysis and FATIGUE properties they have weaknesses which are compensated for in polyethers.

**Founded:**

2009

### Application:

- ✳ In oil and gas industries, mines and other industries that suffer from corrosion, these elastomers have strategic use. The types of parts and liners that are prepared using these prepolymers are briefly:
- ✳ Food industry can printing roller (canning)
- ✳ All types of polyurethane mesh and sieves and dewatering screens (mines)
- ✳ All kinds of wheels and rollers for all kinds of industries (all industries)
- ✳ Packing and sealing hydraulic and pneumatic jacks (all industries)
- ✳ All types of abrasive liners and polishing pots (all industries) Pigs and cups (for cleaning oil and gas lines) and all kinds of protective ducts (oil and gas)
- ✳ Scanning blades (mining industry)
- ✳ All kinds of parts with abrasive and cutting properties in cardboard and paper industries
- ✳ Snow removal blades (transportation)
- ✳ Types of shells for pumps and hydrocyclones (mines)
- ✳ All types of shooting and shock absorbers (all industries)
- ✳ Anti-flat tires (military industry)

*This product is a final B2B consumer product.*

### Technical Specifications:

In addition to the structure, there is another parameter in polyurethane products called hard segment, which originates from the reaction of the prepolymer with the growing chain. These hard segments are the result of the percentage of isocyanate present in the produced prepolymers, on which many parameters of physical and mechanical properties depend, and determines the strength of hydrogen bonding in molecular dimensions. Now, in polyurethane, using the type and percentage of isocyanate and the structure using different molecular mass, it is possible to include the price and the volume used in the final part in the synthesis in a completely customized way based on parameters such as the operating environment, final physical and mechanical properties, and deliver the product according to the customer's needs.

### Advantages:

The possibility of customization based on customer needs at the intended price



## ➤ NBR and SBR Latex

### ◆ Paya Resin Co.

[www.payaresin.com](http://www.payaresin.com)



#### Product Introduction:

SBR copolymers are mainly composed of butadiene and styrene monomers, but small amounts of other auxiliary monomers can also be used in their structure. Regarding the XSBR product, acrylic acid, methacrylic acid, and itaconic acid monomers are also used, some of which are finally converted into bivalent salts with zinc compounds, which form physical cross-links. These auxiliary monomers also improve adhesion to polar surfaces.

NBR copolymers are mainly composed of butadiene and acrylonitrile monomers, but small amounts of other auxiliary monomers can also be used in their structure. In this product, styrene monomer has been replaced with acrylonitrile, which greatly improves the solvent resistance of this product compared to SBR.

**Founded:**

1992

#### Application:

Various industries that use this latex include:

- ※ Glove making industries including cotton gloves and heavy non-cotton gloves and examination gloves
- ※ Textile industry which include woven fabrics such as high-density and low-density rugs and non-woven fabrics such as carpets or moquettes
- ※ Metal coating industries such as stainless coating
- ※ Packaging industry as laminate glue
- ※ Paper industry for paper coating
- ※ Road construction industries for asphalt coating
- ※ Construction industries for cement and concrete admixture
- ※ Agrochemical and pesticide industries in order to stabilize the chemicals

*This product is a final B2B consumer product.*

#### Technical Specifications:

These products are prepared by emulsion polymerization method. In this process, the monomer is dispersed in a solution of Surfactant in water with a slightly higher concentration than the CMC, and the polymerization begins with initiator systems (which are usually soluble in the aqueous phase). Polymer particles are obtained by the entry of radicals into micelles (heterogeneous nucleation), the growth of oligomers in the aqueous phase (homogeneous nucleation) and the entry of radicals into monomeric droplets. In order to create physical cross-links, other monomers such as methacrylic acid, fumaric acid, acrylic acid and maleic anhydride are used.

#### Advantages:

- ※ High production volume
- ※ Good quality
- ※ Competitive price
- ※ Ability to customize

#### International Standards or Permission:

- ※ All functional tests and mechanical properties of the final products have been carried out and passed.



## ➤ Footwear of Military Standards

### 🏠 Navid Bahman Shoes Co.

[www.bahmanshoes.com](http://www.bahmanshoes.com)



#### Product Introduction:

The military boot has two main components including; a) upper b) sole. Upper is made of natural leather and is produced in different designs according to the customer's needs (conditions of use). The product engineering and modeling unit of the company will produce the initial models in interaction with the customers, and after the approval of the employer, customization and mass production of that product will be on the agenda of the company.

#### Application:

The industry of producing shoes with special applications

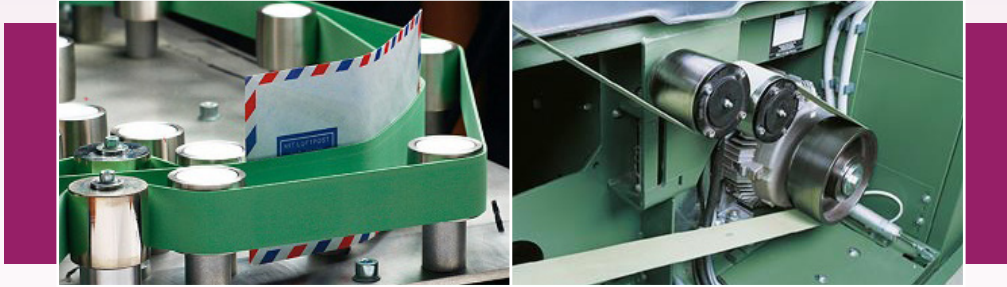
*This product is a final B2B consumer product.*

#### Technical Specifications:

One of the complications of military shoes is the appropriate shoe outsole. Shoe design and shape play a very important role in the comfort of shoes. Mostly, the companies use Italian or Chinese shoe models, which are not fully comfortable for the Iranian foot. But the company has designed its own shape and design. In single density models; Normal shoe soles can be made of different materials, such as polyurethane foam, PVC rubber, and EVA foam, depending on the application. And in the double-density model, in addition to the fact that the sole is firm, polyurethane foam is used to create softness in the upper layer.

#### Advantages:

- \* High Quality
- \* Reasonable price
- \* The possibility of design and customization based on customer needs



## ➤ Multi RIB V Ribbed Belts

◆ Tasmiran Co.

[www.tasmiran.com](http://www.tasmiran.com)

تسمیران  
Tasmiran

### Product Introduction:

Multi-ribbed belt has the task of rotating and transmitting power in cars and industrial machines. These belts combine the high flexibility of FLAT belts and the good performance of V-BELT belts. In machines with small design space and small diameter of pulleys, the best type of belt is the multi-rib grooved belt model.

**Founded:**

1981

### Application:

No noise and low vibration performance, high flexibility, flexible belt protection, high power transmission level, suitable covering of reinforcing fibers and high adhesion to rubber, no need for service and repairs and maintenance, having a suitable profile shape for heat dissipation during service and reducing heat storage, the presence of tension-resistant cushions due to the use of suitable short fibers in its formulation and long life in the finished product

*This product is a final B2B consumer product.*

### Technical Specifications:

No noise and low vibration performance, high flexibility, flexible belt protection, high power transmission level, suitable covering of reinforcing fibers and high adhesion to rubber, no need for service and repairs and maintenance, having a suitable profile shape for heat dissipation during service and reducing heat storage, the presence of tension-resistant cushions due to the use of suitable short fibers in its formulation and long life in the finished product

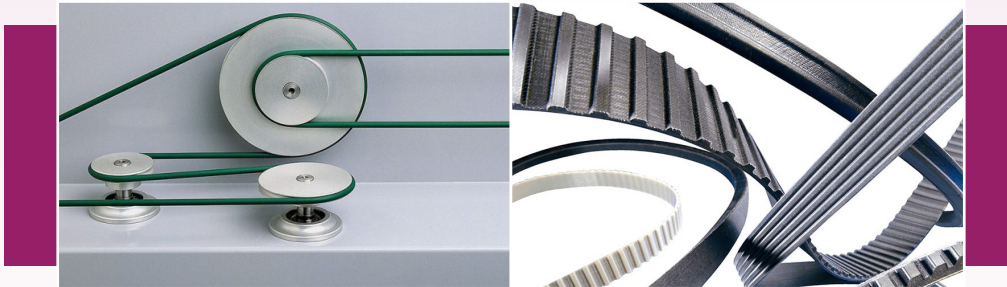
### Advantages:

- ※ Possibility to customize based on end use
- ※ High production volume
- ※ The price is right

### International Standards or Permission:

All kinds of rheometric, tensile, hardness, springiness, adhesion strength, heat test, and JASO E-109-94 standard tests have been done on this product.





## ➤ High-Capacity Power Transmission Belts

🏠 Tasmirans Co.

[www.tasmiran.com](http://www.tasmiran.com)

تسمیران  
تاسمیران

### Product Introduction:

These types of belts are used in systems with high power and speed as a set. In order to reduce regulating cycles, which are mainly caused by: 1- Length increase due to high load and also successive starts/stops

2- Unbalanced power distribution due to the lack of balance of the installed belts, a new generation of these belts has been designed and manufactured. In the production of these belts, fibers with high tensile strength and limited thermal shrinkage and rubber compounds reinforced with fibers whose surface has been modified are used. In the production process, using a continuous vulcanization system with a variable-speed cooking rotor under hydraulic pressure of moving jaws, in addition to applying loads, especially for each cross-section, and longitudinally stabilizing the belts with the stretch method, provides the product's capabilities to cover the desired requirements.

**Founded:**

1981

### Application:

Industries such as steel, petrochemical and machinery

*This product is a final B2B consumer product.*

### Technical Specifications:

This product is designed and produced in simple and ribbed types with classic and narrow sections in single or multiple row forms in different lengths from 25 inches to 900 inches with different formulations to meet the performance needs of different applications. Also, this product has the ability to transmit high power by classic belt sections, is resistant to consecutive start and stop cycles by reinforcing layers, has high power transmission speed by anti-wear coating with non-aligned layers (narrow sections), ultra-heavy power transmission under test conditions by HM profile (reinforced multi-layer compression composite) etc.

### Advantages:

- \* Possibility to customize based on end use
- \* High production volume
- \* The price is right

### International Standards or Permission:

The surface hardness test, rheometry test, tensile test, pressure durability test, springiness test, and fatigue test have been performed on the designed rubber compounds.



### Application:

The toothed super-heavy belt works like a chain and a gear and has a high transmission power. The ribs of this type of belt create suitable friction with the grooves of the gear wheel and are used in industrial machines such as automobile, tile and ceramic, printing and packaging, oil and petrochemical, food and other industries.

## ➤ Super Heavy Ribbed Belts

### ◆ Shahab Tasme Asia Co.

#### Product Introduction:

Power transmission belt; The compound structure has a layer of fibers or fabric (made of polyamide or polyester fiber) and a rubber composite, which has the lowest amount of tension at high speed and high power, and is used in the automotive industry, mechanical equipment manufacturing, machinery manufacturing, etc. From the point of view of the fibers used in the final structure of the belts, power transmission belts can be divided into the following three main groups:

- \* **Power transmission belt containing polyamide fibers:** This belt is used in places where a stronger belt is needed.
- \* **Power transmission belt with polyester fiber layer:** This belt is used in places where the belt needs to be durable at high speed.
- \* **Power transmission belt including polyamide layer and polyester thread:** This type of belt is used for high power and high speed (simultaneously).

Also, in terms of appearance, power transmission belts are divided into the following two general categories:

- \* Flat belts
- \* Toothed belts

**Founded:**

1998

*This product is final B2B consumer product.*

#### Technical Specifications:

Toothed super heavy belt is a kind of mechanical and anti-slip belt, and it may also be interpreted as; A flexible and ribbed belt whose teeth are shaped inside its surface so as to prevent it from slipping. In cars, the toothed belt synchronizes the rotation of the crankshaft, in such a way that the engine valves open and close in a certain period of time and strike during the suction and discharge of the cylinder. Extra heavy toothed belts are made from a combination of rubber and polymer fibers or from a combination of polyurethane and wire rod. The product in question in this section is only made of a combination of rubber and polyester layer.

#### Advantages:

- \* High production volume
- \* Good quality



Third Chapter

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# Polymer Composites



# 3<sup>rd</sup> CHAPTER

First Chapter

Second Chapter

**Third**  
CHAPTER

## Polymer Composites

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Sections:

*Tanks, Pipes and other Polymer Composite Fittings* ○

*Sheets and Composite Insulators* ○





## ➤ Tanks, Fittings, Parts and Equipment Using Structural Composite Technology (GRIP)

◆ Farapax Shiraz Co.

[www.farapax-shiraz.com](http://www.farapax-shiraz.com)



### Product Introduction:

These products include all kinds of fan rings, winged half-pipes, coils, domes, all kinds of sand filter tanks for use in water desalination sites, treatment plants, steel industries, etc., tanks for transporting, storing and processing all kinds of chemical substances (acid and base), sea water and drinking water, etc. (on the ground, buried and aerial), water and firefighting foam (with the ability to be installed on trailers and fire trucks), fuel and petroleum liquids, as well as fittings in large dimensions. Basically, structural composites have less weight and higher safety, and in addition to controlling the parameters of the filament winding process, it needs to create a structure. Vertical, horizontal and diagonal structures are used to reduce the thickness.

### Main Export Destinations:

Iraq

### Export History:

Up to 500,000 \$

### Founded:

2005

### Application:

These products are used in the manufacture of special equipment and parts in various industries such as oil and gas and petrochemical, power plants, sewage treatment plants, steel industries, etc., which require composite materials.

*This product is final B2B equipment.*

### Technical Specifications:

Polyester and vinyl ester resins have been used to produce the product. The difference and technical complications of the production of structural composite products (reinforced products using reinforcing sections) in comparison with common composite products is that in the design of vertical tanks and horizontal tanks, atmospheric composite parts and under internal pressure, according to the conventional standards of making these tanks and parts, one of the common methods to increase the strength in order to ensure the safety of the tank in terms of design and operation is to increase the thickness of the shell and lens (cap) and other components of the tank.

Due to the lack of use of longitudinal and longitudinal-peripheral reinforcement sections from inside and outside, these tanks and parts do not have enough strength and hardness against the loads applied to different parts in areas of the tank shell and parts that can be restrained by the reinforcement sections. And these tanks and parts are used in normal applications and at lower pressures. In the design of the desired products, correct and sufficient use of longitudinal and longitudinal-peripheral reinforcement sections inside and outside of tanks have been taken into consideration and composite parts have been designed in such a way to increase the strength, rigidity and resistance of tanks and parts, in exchange for applying internal and external loads to them.

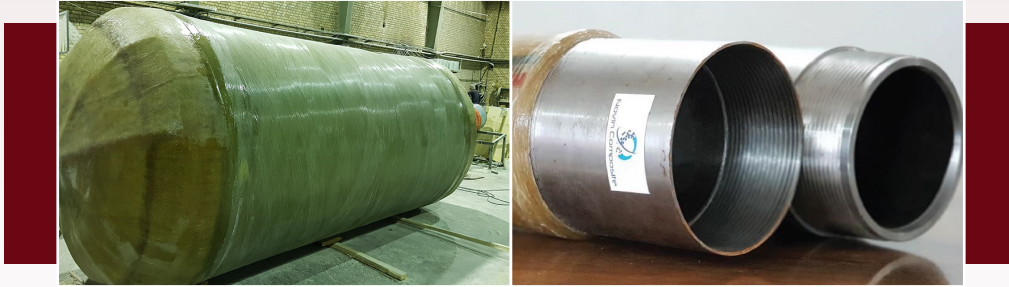
### Advantages:

- \* Design according to customer needs
- \* Competitive price
- \* High Quality

### International Standards or Permission:

- \* BS 4994
- \* EN 13121-4
- \* OHSAS 18001





➤ **Epoxy Pipes, Fittings and Tanks with a Service Pressure of More than 30 Bar**

🏠 **Novin Composite Sadra Co.**

[www.novincomposite.com](http://www.novincomposite.com)



**Product Introduction:**

In the pipelines used in acid recovery projects, acid usually flows with high temperature and concentration, which renders vinyl ester resins and even thermoplastic layers unusable due to high temperatures (mainly above 120 degrees Celsius) and high corrosiveness. For this purpose, using epoxy resin is the best available solution. GRE composites have good mechanical and chemical properties that enable their use in very high pressures and complex chemical and temperature conditions.

**Main Export Destinations:**

Romania, Iraq

**Export History:**

1,000,000 - 10,000,000 \$

**Founded:**

2008

*This product is final B2B equipment.*

**Application:**

Manufacturing light and strong parts in aerospace industries, high pressure fuel transfer lines, oil fluid transfer pipelines in oil and gas industries, fluid transfer lines in petrochemical industries, fluid transfer lines in power plants, water desalinator, etc.

**Technical Specifications:**

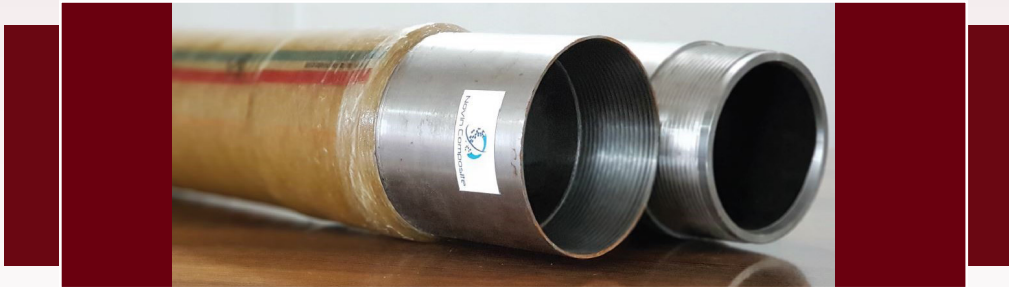
In the process design, design and manufacture of equipment including pipe molds, tanks and epoxy fittings, winding machine and fitting production, special furnaces for proper and stepped curing, using a multi-stage curing system for proper curing and increasing mechanical and corrosion properties and preventing cracks and product failure are important. The use of separable multi-piece molds for the production of fittings and easy eject are also included in this field. The working pressure of these parts is above 30 bar.

**Advantages:**

The possibility of customization and design

**International Standards or Permission:**

- \* AWWA C950
- \* AWWA M45
- \* ISO 14692



**Application:**

In particular, this product is used in oil well sampling.

➤ **Coiled Tubing for Well Drilling**

🏠 **Novin Composite Sadra Co.**

[www.novincomposite.com](http://www.novincomposite.com)



**Product Introduction:**

In the drilling process, extracting and estimating reserves and knowing the type of earth layers is very important in designing the drilling process. The coring tube is used in the oil industry to identify the properties of the reservoir rock visually and with the naked eye, lithological changes, for checking and measuring the percentage of porosity, permeability, estimating the volume of the reservoir in projects related to discovery and extraction.

In the past, the coring tube was metal and made of aluminum, but removing the core from inside these types of tubes is difficult and the core heats up during its longitudinal cutting. Currently, these pipes are also made of GRP, which has fewer problems and at the same time a lower price. These pipes are produced in the form of portable branch connections of several meters, and there are aluminum threaded connections in the form of shells at both ends. With their help, these pipes are connected to each other and enter the well.

**Main Export Destinations:**

Iraq

**Export History:**

Up to 500,000 \$

**Founded:**

2008

*This product is final B2B equipment.*

**Technical Specifications:**

The design of a two-layer cylindrical shell at both ends of the pipes, which has a high operating temperature on the one hand, but at the same time, the coefficient of thermal expansion of the two layers is different from each other. On the other hand, the modulus of these two layers is also very different. In this way, as a result of increasing temperature, the inner layer with a higher coefficient of thermal expansion and lower modulus tends to increase in diameter, and the outer layer resists against it in this direction.

This causes accumulation of compression stress in the contact surface of two layers. With Paying attention to the lower modulus of the inner layer and based on buckling theory, if the accumulated stress exceeds a critical value, the segregation of the two layers and the wrinkling of the inner layer will occur.

According to the Buckling theory, the amount of critical stress is proportional to the modulus of two layers and their thickness. On the other hand, the compressive stress accumulation rate is proportional to the difference of the thermal expansion coefficient of the two layers and depends on the material design of the two layers and especially the outer shell. All these cases show the special use and high sensitivity of the product production.

**Advantages:**

The possibility of customization and design



## ➤ Fiber Carbon Drive Shaft

🏠 Tavan Mehvar Azin Sanat Co.

[www.tavanmehvar.ir](http://www.tavanmehvar.ir)



### Product Introduction:

Composite power transmission shafts can be considered a good example of replacing an existing isotropic metal material with advanced composite materials. Power transmission shafts are usually made of hollow or solid steel or aluminum tubes; However, by using the composite type of these shafts, it is possible to enjoy advantages such as safer delay modes, better mechanical properties and higher resistance to corrosion at a lower weight. The total weight of the cooling tower fittings made by the company is less than 45 kg, so workers can easily carry it. In addition, a critical length is defined for metal shafts, which limits the use of one-piece shafts in industrial applications such as cooling towers.

**Founded:**

2011

### Application:

- \* Cooling towers
- \* Pumping systems
- \* Landing gear of aerospace systems
- \* Types of vehicles

*This product is final B2B equipment.*

### Technical Specifications:

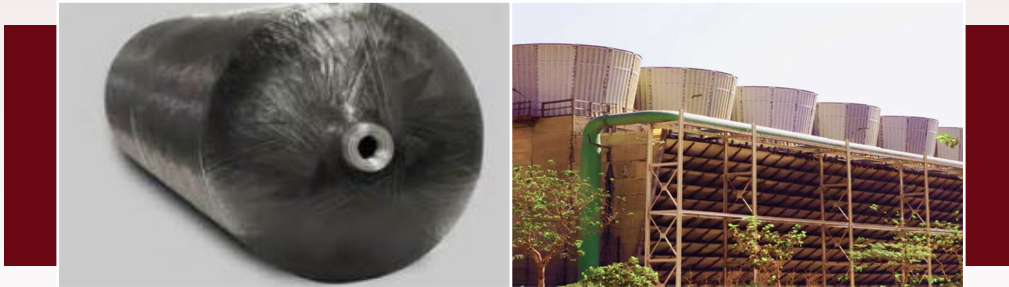
- \* Weight equivalent to 0.25 times of a similar steel sample (less than 45 kg)
- \* Almost twice the critical speed of the shafts compared to the steel sample and a reduction of about %80 in the forces on the bearings.
- \* Reducing the vibrations of power-oriented composite joints and increasing the useful life of the bearing
- \* Very easy installation process due to no need for a crane in the major installation of fittings
- \* The possibility of using composite joints at a distance of about twice that of steel joints without any additional bearings
- \* Less maintenance and therefore lower costs due to the elimination of fixed bearings
- \* The possibility of producing cylinders with a larger diameter due to the lower density and higher specific stiffness of these composite materials
- \* Has the longest fatigue life in cooling towers
- \* Very high resistance to corrosion in cooling towers that are in contact with chlorine

### Advantages:

- \* High quality
- \* Lower price than foreign samples
- \* Possibility of customization

### International Standards or Permission:

- \* ISO 9001
- \* ISO 29001



➤ **Epoxy-Based Composite Pressure Tanks with a Pressure Tolerance of More than 300 Bar**

◆ Pishro Composite Co.

[www.pishrocomposite.com](http://www.pishrocomposite.com)



**Product Introduction:**

A composite pressure tank is a container in which high-pressure fluids are stored. Since The aerospace industry needs the structure that is launched into space, to be light, these tanks are made of composites so that, while being light, they can withstand high fluid pressure.

**Founded:**  
2010

**Application:**

Storage of gases such as helium and nitrogen and compressed air as well as CNG gas canisters for cars

*This product is final B2B equipment.*

**Technical Specifications:**

The third and fourth types of composite tanks consist of a metal or polymer liner and filament fibers twisted around this liner. The liner plays the role of a sealing layer in these tanks, and the mechanical load applied due to the internal pressure of the fluid is borne by twisted fibers of carbon or glass along with resin. The thickness of these liners is usually between 2 and 3.5 mm, which can be aluminum, titanium steel or polymer. fibers used; Carbon fibers and resin used; is usually epoxy. Tanks are designed for pressures above 300 bar and are tested at a pressure equivalent to one and a half times the working pressure.

**Advantages:**

High quality along with having obtained international licenses

**International Standards or Permission:**

The performance of the product can be evaluated through the tests mentioned in the ISO11439 standard. The most important tests of this product are internal pressure test and fatigue test. International approval has been obtained from the AREONAVY laboratory in the United States.



**Application:**

The main users of carbon fiber drive shafts are industries such as petrochemicals, steel complexes and iron and cement smelters, refineries, etc. in cooling towers and rotating equipment.

➤ **Carbon Fiber Composite Shaft**

🏠 Pishro Composite Co.

[www.pishrocomposite.com](http://www.pishrocomposite.com)



**Product Introduction:**

Carbon fiber shafts are power transmission shafts that have characteristics such as light weight, less corrosion, reduced system vibrations, easy installation (due to low weight), low thermal expansion coefficient, and corrosion resistance, and are quickly being replaced by all kinds of steel rods.

**Founded:**  
2010

*This product is final B2B equipment.*

**Technical Specifications:**

These shafts are made by the process of twisting fibers or filament winding. Stress analysis is done with software such as Ansys and ABAQUS. The spring disk coupling is designed and manufactured according to the conditions of the axis. Then the balance is done dynamically and the packing is used in the form of spiral tubes to keep the shaft balanced.

**Advantages:**

Customization based on customer needs and type of performance

**International Standards or Permission:**

Measurement of maximum stress, tensile properties of fibers, viscosity of resin, dynamic balance of rotating device and mechanical and functional properties of the final product are important tests of this product.





**Application:**

Military industries, medical equipment, cars and electric motors

➤ **Hollow Composite Sections Made of Carbon Fibers**

🏠 Avita Co.

[www.avita-med.com](http://www.avita-med.com)



**Product Introduction:**

In general, the application area of carbon section production technology, including hollow and solid parts, depending on the geometry of the part and its working conditions, can be classified into three groups: medical equipment, aerospace industries, and sports and electric cars. In recent years, the use of carbon composite technology in the construction of a significant part of medical and rehabilitation equipment, such as wheelchairs, crutches, head and neck supports and protectors, has received much attention.

High strength-to-weight ratio, corrosion resistance, high natural frequency, and good life against fatigue are among the things that have made the use of carbon composite in medical equipment interesting. In the military industry, they use this structure to make parts used in drones, such as multi-rotor propellers. In the area of electric cars, hybrids and supersport cars, major car companies are planning to start using composite technology in parts of the chassis, body and other parts of the car to reduce the car weight.

**Founded:**

2017

*This product is final B2B consumer product.*

**Technical Specifications:**

Composite sections are made using carbon fiber pre-preg and epoxy. The production of parts is also done by pressure molding under vacuum, and the mold design plays a big role in the production of parts with complex geometric shapes with high precision.

**Advantages:**

Design based on customer needs



➤ **Cylindrical Composite Tanks Based on Epoxy Resin and Carbon Fibers**

◆ **Ati Composite Co.**

[www.aticomposite.ir](http://www.aticomposite.ir)



**Product Introduction:**

Composite tanks are used to store, transfer or carry out industrial and military processes. Various materials (concrete, brick, steel, aluminum, polyethylene, etc.) are used in tank production, each of which has its own unique mechanical and chemical capabilities, but it can be claimed that the composite tank produced from Polymer composites (FRP) has most of the mechanical and chemical capabilities. Some of the problems such as corrosion from chemicals, acids, and moisture, heaviness (which greatly increases the cost of transportation and installation) and the formation of sludge and algae in water tanks that were caused by metal and concrete tanks in industries, have led to the solution of using FRP tanks. A useful life of over 50 years, resistance to corrosion, moisture, UV, and lightness are some of the advantages of composite tanks compared to metal tanks.

**Founded:**

2012

**Application:**

In the military, aerospace, oil and gas industries, etc.

*This product is final B2B equipment.*

**Technical Specifications:**

In these products, the stacking of layers, the number of layers, the arrangement of fibers and the number of fibers used determine the final properties of the product. These tanks are used at a working pressure above 300 bar. The general specifications of the product are as follows:

<b>Tensile strength</b>	4900 MPa
<b>Tensile modulus</b>	230 MPa
<b>Density</b>	1.8 g/cm <sup>3</sup>
<b>Volume</b>	0.5 to 1.5 litres



**Application:**

This product is used as sound thermal insulation on thin metal layers in railway cars and wagons, and since it has a dry density of GR/CC 2.1, it can also be used in the automotive and aviation industries.

➤ **Water-Based Heat-Sound Insulation Cover**

◆ Nilifam Rey Chemical Engineering Co.

[www.nilifam.com](http://www.nilifam.com)



**Product Introduction:**

The product under review is a water-based coating with special characteristics that can be applied by spraying and with high thickness on different surfaces. This coating can be applied on steel, stainless steel and anodized aluminum surfaces. Other surfaces such as non-galvanized steel as well as raw aluminum surfaces should be covered with a suitable primer layer before applying the coating. After drying, this coating is moisture and water resistant and insulated. Its flammability is very low and as a sound insulator, it can reduce the intensity of noise up to one eighth.

Also, this product is also used as a thermal insulation and can provide a temperature difference of about 10 degrees compared to conventional coatings. This product has a viscosity of 12000 centipoise and can be applied by spray methods with atomized or airless air.

**Main Export Destinations:**

Australia

**Export History:**

Up to 500,000 \$

**Founded:**

2012

*This product is final B2B equipment.*

**Technical Specifications:**

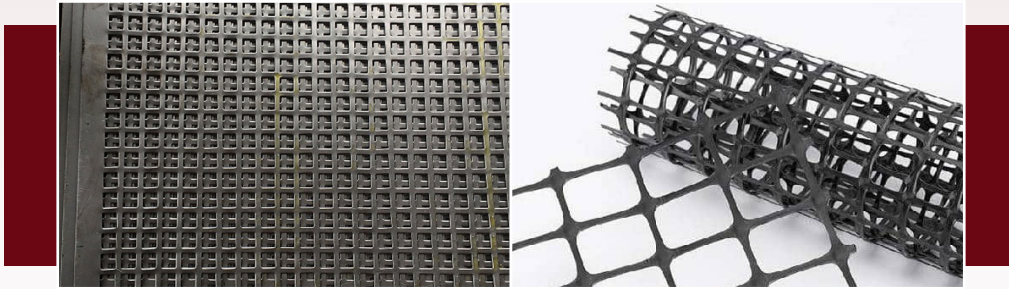
This product can be diluted with water, it has a mild smell and the solid percentage is about %41, it dries in about 9 hours at 40 degrees Celsius. This product contains components such as water-based acrylic resin, a variety of dispersing, wetting and anti-foaming additives, calcium carbonate filler with a special grade, perlite, and small amounts of graphene oxide, and the amount of this component has a great impact on thermal and sound insulation functions.

**Advantages:**

Durability and high strength

**International Standards or Permission:**

The sound insulation properties of this product are measured according to DIN 53440 standards.



**Application:**

Reinforcement of soil such as street and road infrastructure or swimming pool and so on. . .

➤ **Polyester Geogrid Sheet**

🏠 **Rahyab Sanat Alborz Co.**

[www.rsgrid.com](http://www.rsgrid.com)



**Product Introduction:**

This product consists of polyethylene substrate (LDPE & LLDPE) and polyester fibers with high tenacity. The production procedure of this product is that polyester fibers are added to the system in a cap in the extruder head and placed in a polyethylene substrate. In the end, ribbing is done. The resulting belts in this section have a width of 3 cm. By placing the belts next to each other, the width of the belt increases to 5.7 cm. Then other belts are placed on it perpendicular to the existing belts and form the geogrid network.

**Main Export Destinations:**

Jordan

**Export History:**

Up to 500,000 \$

**Founded:**

2008

*This product is a final B2B & B2C consumer product.*

**Technical Specifications:**

The prominent properties of these sheets include water resistance, corrosion resistance, wear resistance, resistance against low temperature, non-toxicity, long useful life and so on. It should be noted that this sheet can replace concrete and reinforcement in construction operations.

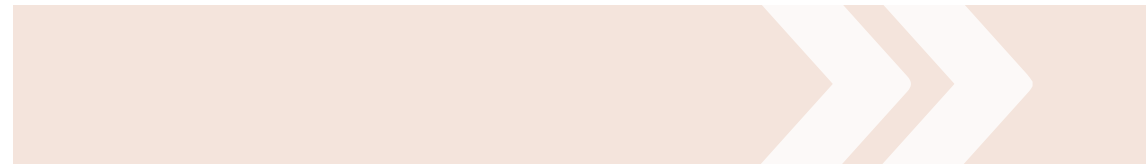
**Advantages:**

Low prime cost



### **Iran House of Innovation and Technology (iHiT)**

Iran House of Innovation and Technology (iHiT) is one of the types of export intermediaries that launched under the auspices of the Vice President for Science and Technology in Kenya, China, Russia, Turkey, Syria and Iraq. In addition to accessing the export instructions, these houses provide variety of services for companies to enter the interactional service markets such as: private and shared workspace, permanent exhibition of products, finding business partners and investing in the target countries of export, company registration, product registration, medicine, medical equipment and trademarks registration, dispatch and admission of business delegations, hiring local specialists to present products and service.







## TEHRAN iHiT

**Manager:** Mohammad Karami

**Field of Activity:** Permanent International Exhibition | Export of products and services of knowledge-based, creative and technology companies in Tehran

**Country:** Islamic Republic of Iran – Tehran

### Services:

- Holding permanent exhibition of knowledge-based products and services
- Holding specialized events and meetings
- Providing dedicated and shared workspace in Tehran
- Identifying export opportunities
- Identifying opportunities for scientific, technological and industrial cooperation

**Address:** Hall 37A, Tehran International Exhibition, Tehran, Iran

**website:** [www.ihit-expo.com](http://www.ihit-expo.com)

**Tel No:** (+98) 912 444 9958 / (+98) 21 910 737 37

**Supervisor:** Mohammad Mahdi Agharafiee

**Office Phone:** (+98) 912 706 9611



## NAIROBI iHiT

**Manager:** Ali Baniamerian

**Field of Activity:** Export of products and services of knowledge-based, creative and technology companies

**Country:** Republic of Kenya – Nairobi

### Services:

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

**Address:** Dennis Pritt Road, Next to Maalim Juma Road, Kilimani, Nairobi, Kenya

**website:** [www.ihit.co.ke](http://www.ihit.co.ke)

**Tel No:** (+254) 111 606 113

**Supervisor:** Fahime Zabihi

**Office Phone:** (+98) 21 910 700 80 INT 301



## SUZHOU iHiT

**Manager:** Amir Ghorbanali

**Field of Activity:** Export of products and services of knowledge-based, creative and technology companies

**Country:** People's Republic of China - Shanghai

### Services:

- Holding Permanent exhibition of products and services
- Export development of knowledge-based products
- Providing dedicated and co-working space
- Identifying opportunities for scientific, technological and industrial cooperation
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Providing export instructions of the Center for International Science and Technology Cooperation

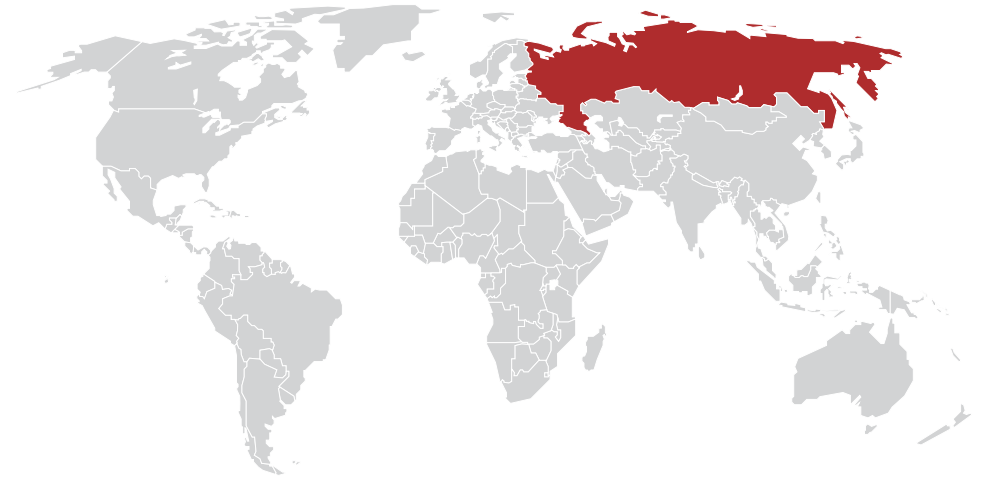
**Address:** Room 88 ,409 Keling Road, Advanced District, Suzhou, Jiangsu Province, China

**website:** [www.innotechexport.ir](http://www.innotechexport.ir)

**Tel No:** (+86) 182 062 123 92

**Supervisor:** Simin Rafeapour

**Office Phone:** (+98) 935 861 44 22



## MOSCOW iHiT

**Manager:** Mahdi Deilam Salehi

**Field of Activity:** Export of products and services of knowledge-based, creative and technology companies

**Country:** Russian Federation – Moscow

### Services:

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

**Address:** No. 7, Unit 4, Arkhangelsky St., Moscow, Russian Federation

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## ISTANBUL iHiT

**Manager:** Masoud Hasani

**Field of Activity:** Export of products and services of knowledge-based, creative and technology companies

**Country:** Turkey – Istanbul

### **Services:**

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

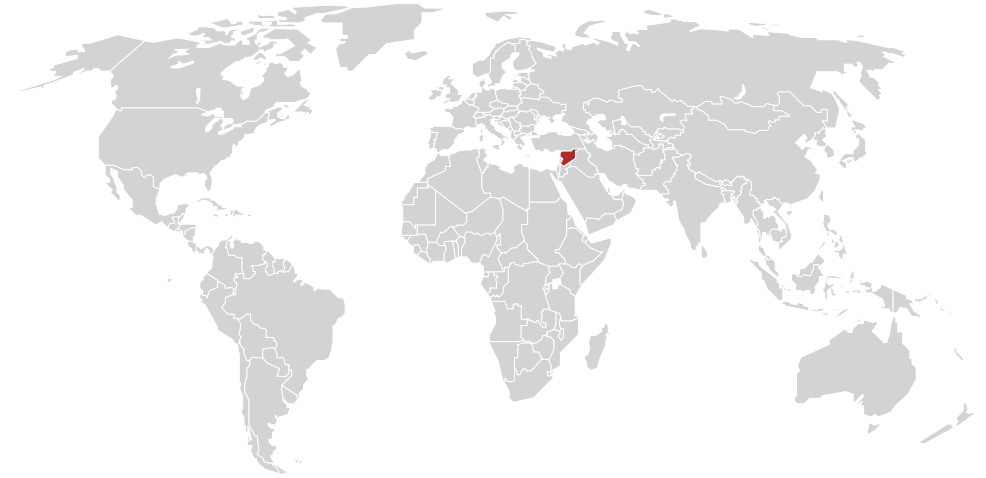
**Address:** Halaskargazi, Halaskargazi Cd. No: 34371 ,66-38 Şişli/Istanbul

**website:** [www.istanbulihit.com](http://www.istanbulihit.com) **Email:** [info@istanbulihit.com](mailto:info@istanbulihit.com)

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## DAMASCUS iHiT

**Manager:** Mohammad Hadi Zeighami

**Field of Activity:** Export of products and services of knowledge-based, creative and technology companies

**Country:** Syrian Arab Republic – Damascus

### **Services:**

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Providing export instructions of the Center for International Science and Technology Cooperation

**Address:** Damascus Freezone, Jamarag Sq., Damascus, Syria

**website:** [www.ihit.sy](http://www.ihit.sy)

**Tel No:** (+98) 918 693 39 33

**Supervisor:** Hasan Tahmasebi

**Office Phone:** (+98) 21 631 033 15



## Iraq (Sulaymaniyah) iHiT

---

**Manager:** Hossein Salmani

**Field of Activity:** Export of products and services of knowledge-based, creative and technology companies

**Country:** Iraq – Sulaymaniyah

**Services:**

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

**Address:** Iraq, Sulaymaniyah, Sever St.

**website:** [www.abc-s.com](http://www.abc-s.com)

**Tel No:** (+964) 774 567 03 66

**Supervisor:** Mohammad Mahdi Alebouyeh

**Office Phone:** (+98) 939 124 5009





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selected knowledge-based Iranian products  
in the field of

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