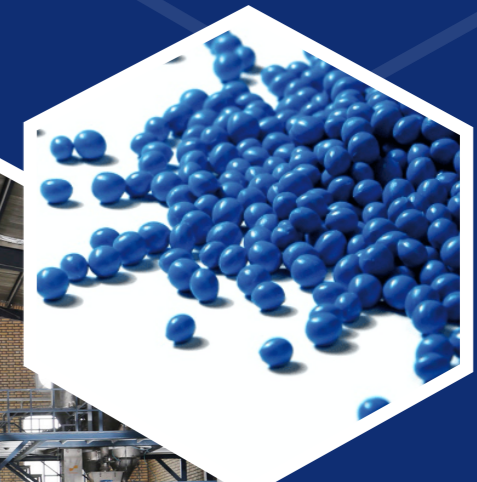




## MASOOM GRANULE (knowledge based)

Design and Production of Advanced Polymer Compounds



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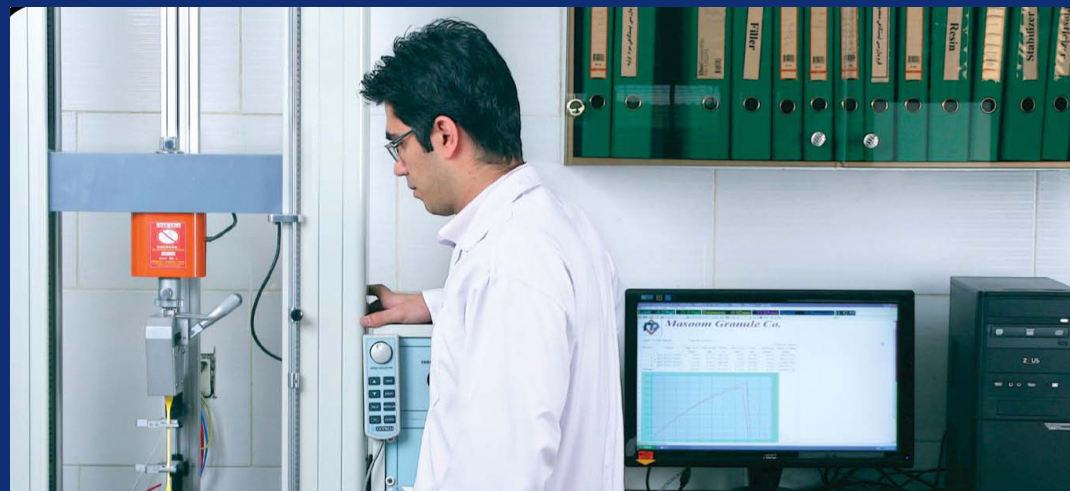
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## About Us

### Masoom Granules, pioneer in the polymer industry

The last half century has been the origin of crystallisation and improvement of petrochemical industries in different countries of the world. The development of technical knowledge in the field of optimum use of petrochemical products, has provided a suitable scope to serve this industry to the human community as much as possible. Masoom Granules with the view of disconnecting dependence in order to increase productivity and with the contemplation of a world leader in the design and production of plastic and polymer compounds in 1995 was established in the holy city of Qom and officially started its activities and now it is in production with an annual capacity 25,000 tons types of PVC granules and 20,000 tons types of engineering plastics and 15,000 tons types of TPE And TPV. Due to the demand of the consumer market, with the incessant efforts of the research and improvement unit of Masoom Granule Company, many granules and special compounds, including various types of medical and sanitary granules, sealing tape around the refrigerator and freezer doors, various polymer car parts, bumper, The dashboard of different cars, which all have special properties, has become completely self-sufficient and has made significant frugality regarding the outflow of currency from our beloved country.



The aim of Masoom Granules is persistent development. Therefore, the company, according to the needs of its consumers, began to produce a variety of advanced engineering compounds, including polypropylene reinforced with talc, calcium carbonate, fibreglass and EPDM, which fortunately has achieved great success in this area.

It should be noted that the above compounds are used in the automotive industry, home appliances, medical equipment and etc. Also in order to supply its feed chain, this company has produced all kinds of medical and industrial plasticizer with a capacity of 10000 tons and all kinds of medical stabilizer with a capacity of 4000 tons.

## Advanced polymer Compounds (engineering plastics)

One of the most important plastics is called polypropylene, which has the third highest consumption among Polyolefins. This plastic is made by polymerising highly pure propylene gas recovered from gas streams in olefin industrial units and oil refineries. Polypropylene has good electrical, insulating and moisture resistance properties.

In order to improve physical properties, heat and impact resistance, flexibility, plasticity, process capability, weather and cold resistance, they combine polypropylene with various minerals such as calcium carbonate and talc powder or other materials such as EPDM and glass fibres.

Masoom Granules with the view of offering high quality products and competing with a variety of foreign products, has produced and presented a variety of reinforced polypropylene with various mechanical properties and colours. This type of granules can be mostly used in the automotive industry, home appliances and sanitary ware.

Another new technology of Masoom Granules is the production of PP granules reinforced with polypropylene (organocaly) nano-composites, in which the produced polypropylene is completely anti-scratch and has a polished surface and the production efficiency is increased by about 20%. This compound has various and high uses in the automotive industry.

### Examples of the production of advanced polymer compounds by Masoom Granules are as follows:

- PP reinforced with calcium carbonate from 5% to 70% in different colours
- PP reinforced with talc from 5% to 60% in different colours
- PP reinforced with glass fibres from 5% to 30% in different colours
- PP reinforced with EPDM from 5% to 40% in different colours
- PP reinforced with polypropylene nano composites (organocaly) with anti-scratch properties
- PP reinforced with barite 60% in different colours for pipes and silent joints
- PC+ABS compounds



## Medical PVC granules

PVC

Masoom Granules, due to the need of consumers for various types of PVC and TPE granules in disposable medical industries and the strong dependence of these industries on the import of various types of medical PVC granules, has started extensive research in this regard and has studied and tried a lot in this field for many years and now we are proud to inform all consumers of medical PVC granules that Masoom Granule Company is the first and biggest manufacturer of standard medical PVC granules and has the approval of health centres and manufacturers of disposable medical products and is able to provide a variety of soft and hard medical granules in the country in accordance with valid European standards and with the best raw materials and the highest quality and necessary guarantees to consumers.

### Examples of medical granules production (medical grade) in Masoom Granule Company:

- Blood and plasma bags
- Tubes of Infusion Set, Blood Transfusing Set, Microsets and Hemodialysis Blood Tubing Set
- Dental and Medical Suctions
- Types of Nelaton Catheters
- Dropper Pump
- Types of Catheters
- Oxygen Mask and Related Tubes and Ventilator set
- Syringe Gasket
- Baby Finger Toothbrush
- Bulb Syringe
- Ambu Bag
- Injection Molding Parts for Different Sets



# PVC

Flexible PVC + NBR and PVC are obtained from PVC compounds powder with one or more emollients and different additives, for various uses with various properties. These compounds have a wide range for consumption in the country's industries.

Masoom Granule, based on its expertise and knowledge, examines consumer requests and identifies the needs of its customers, and then produces soft TPE and PVC compounds.

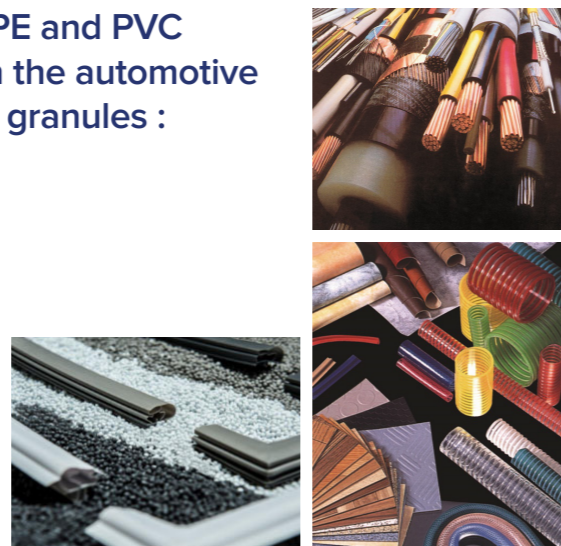
Soft TPE and PVC cover a wide range of materials, including: Soft TPE and PVC used in automotive industries, wire and cable industries, shoe industries, hose industries, production of various types of parquet, production of various types of films, production of water stops, insulation of tools, etc. Masoom Granule Research and Development Group has done research in all the above fields and proudly informs consumers that, this company is able to provide all grades of TPE and PVC compounds in the country by relying on its technical knowledge and can provide consumers with the same quality as imported samples and with quality assurance

### Some of the products of general soft PVC granules for other industries by Masoom Granules are as follows:

- Types of insulation and facing of wires and cables in different colours and with different properties
- Soft injection plugs
- Insulation and facing of wire in thermal classes T1 and T2
- Coaxial antenna cover
- Welding cable
- Insulation of thermal classes of 80 ° C, 90 ° C, 105 ° C, smokeless and hydrocarbons and oils resistant.
- Insulation of tools
- Water stop
- Parquet
- Work shoe soles, anti-oil, anti-gasoline, anti-acid
- The sole and upper part of the shoes
- Sealing strips around aluminium and PVC doors and windows
- All kinds of sealing tapes around refrigerator and freezer doors in different colours

### Examples of granule products TPE and PVC compounds that have been used in the automotive industry and produced by masoom granules :

- Injected parts of wire handle
- Wire handle cover hoses
- Glass hose washer
- Transparent tape around the bumper
- Triangle string of rear window



Hard PVC is produced in the form of sheets, pipes, door and window profiles, electrical ducts, pipes and joints and other molding parts. Extrusion and Co-extrusion profiles can be examined from two perspectives. They should be both functional and attractive.

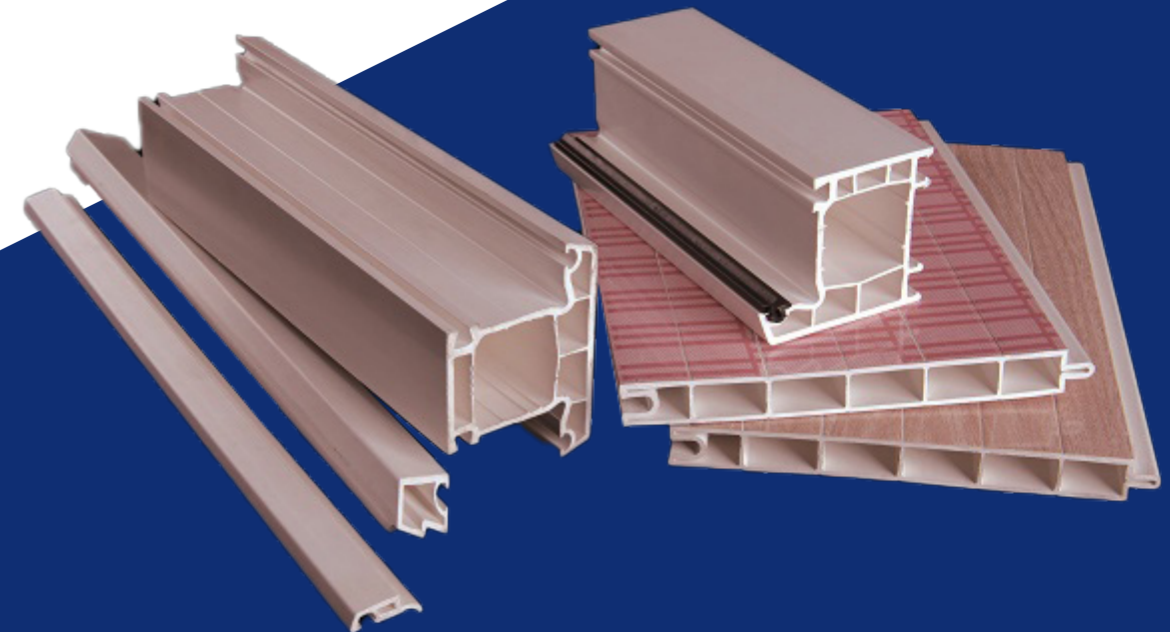
By combining these two perspectives, ideal profiles can be created.

With this view, Masoom Granules has produced a variety of compounds and hard PVC granules in injection and extrusion grades with excellent physical and chemical properties in different colours, which include the following cases: high impact resistance, colour stability and resistance to Sun, UV and weather conditions, resistance to bacterial growth, fast and easy cutting without breakage and strength of welding points.

### Some of the products of hard PVC granule compounds, injection and extrusion by Masoom Granules Company:

- Door and window profiles with various colours and properties
- A variety of decorative strips around MDF in various colours, sticky and fast fixable
- Decorative strips around the kitchen cabinets
- Power distribution box
- PVC pipes and fittings
- Brackets
- Hose pipes

# PVC



## Properties of TPE Granule (base SEBS)

- Excellent fatigue and bending resistance
- Good tear and corrosion resistance
- High strength
- Low relative density
- Excellent chemical and climate resistance
- Simultaneous injection and extrusion with polyolefin and some engineering plastics
- Pleasant electrical properties
- Relative resistance to temperatures below  $-30^{\circ}\text{C}$  and temperatures above  $+140^{\circ}\text{C}$
- Excellent chromaticity
- Recyclability
- Low compression
- Resistance to ozone, alcohol, water, sulphuric acid and detergents
- Oil movement is zero



# TPE

## Electrical appliances

- wire and cable covers
- electrical appliances
- remote control coverage
- button panel of antiknock and anti-shock parts
- industrial sockets
- plug cover
- switch cover
- Types of insulation and facing of wires and cables in different colours and different properties
- Insulation of thermal classes of 80 ° C/ 90 ° C/ 105 ° C, low smoke and resistant to hydrocarbons and oil

## Home Appliances

- Washing machine & Dishwasher hoses
- Plastic kitchen utensils
- Junctions
- Nozzles and connection cones
- Sealing tape around the refrigerator door and washing machine
- Vacuum cleaner parts

## Automotive Industry

- Sealing tape of glass and lights
- Cover the brake pedals and clutch
- Air inlet pipes
- Airbag cover
- Car gear cover
- Inner cv boot
- Car floor mat

## Medicine and Health

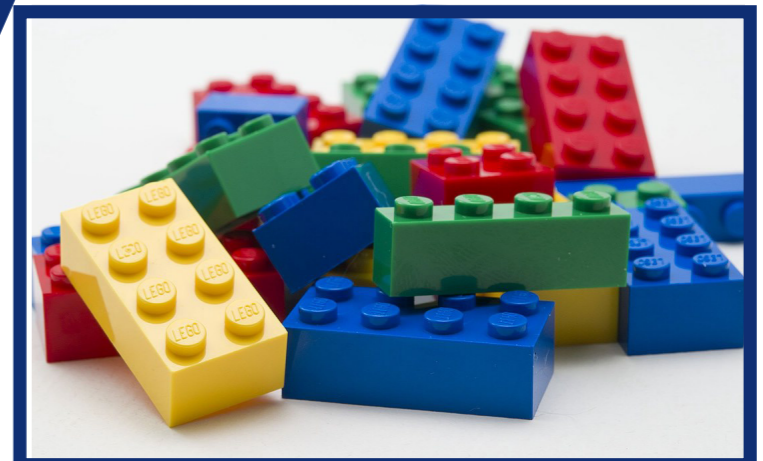
- Medical tube
- Syringe gasket
- Finger toothbrush for newborns
- Injection parts of different sets
- Baby pacifier
- Sealing tapes for food containers

## Construction industry

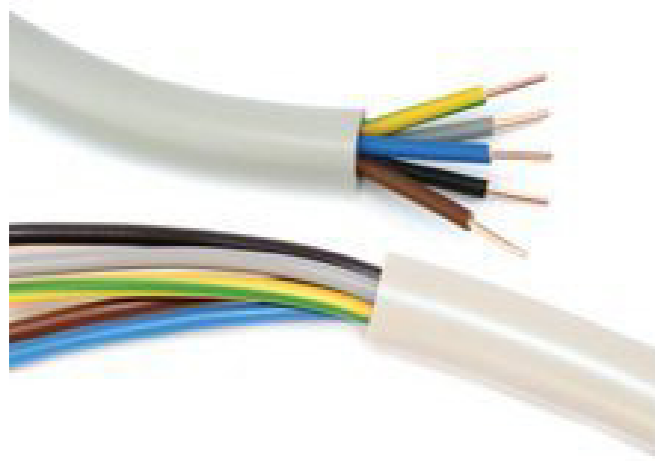
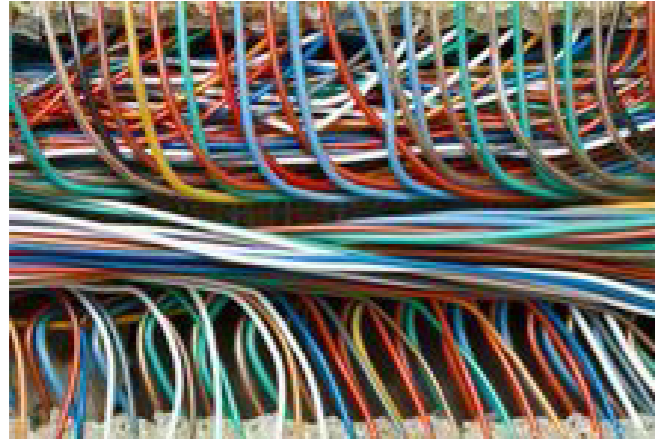
- Window seals
- Gaskets around the doors
- Cabinet sealing tapes
- Special pipe seals
- Waterproof gaskets
- Parquet/ edges of door and window

## Other

- Industrial wheels/ A variety of soft handles for different devices
- Toys / Stationery
- Swimming glasses/ swimming earplugs
- Painting pallets
- Clothespins
- Seat arms
- Traffic parts
- Coating cover
- All kinds of transparent injection and extrusion parts



# TPE



## Properties of TPV granules (base EPDM)

- Tensional strength from 0.5 to 2.4 Newtons per square millimetre
- Truncation impact strength not break KJ
- Maximum continuous use temperature up to 140 ° C
- Density of 0.91 to 1.03 grams per c.m\*3

## Resistance of TPV to chemicals

- Dilute acid resistance
- Dilute base resistance
- Special oils resistance
- Aliphatic hydrocarbons resistance
- Aromatic hydrocarbons resistance
- Halogen hydrocarbons resistance
- Alcohol resistance

## Application of granules and TPV compounds

### Automotive Industry

- Covers on air inlet pipes
- Washers
- Seals
- Hose
- Vibration dampeners
- Sparking parts
- Window seals
- Spark plug wire cover

### Other

- Wheels of hand-wheel
- Gaskets
- Washers
- Shoe industry
- Hose industry
- Wire and cable industries
- Types of parquet
- Types of films
- Water-stop
- insulation of tools







## Liquid and Paste Calcium Zinc Stabilizer

Another product of Masoom Granule Production Company is liquid and Paste Calcium Zinc stabilizer. Calcium zinc based thermal stabilizers usually include calcium stearate and small quantities of zinc soaps such as zinc octoate and this auxiliary agent is generally made of zinc fatty acid, calcium fatty acid and an auxiliary additive.

Calcium zinc stabilizers used in PVC are generally in the shape of liquid or powder and flexible vinyl compounds are often stabilized with a mixture of heat stabilizer metals such as Ba/Zn and Ca/Zn.

Paste and liquid calcium zinc stabilizers are mainly used in cases where attestation of US Food and Drug Association is needed for direct and indirect contact with food and in the recent year we have witnessed its full replacement with lead stabilizers in Europe.

## Functional Mechanism of Thermal Stabilizers :

- Neutralization of Hydrogen Chloride (HCL)
- Replacement of Weak Carbon-Chlorine Bonds
- Prevention from Oxidation

A major use of paste and liquid calcium zinc stabilizers is in the production process of soft and semi-hard PVC that create no environmental pollution. In addition to long-term thermal stability and high transparency, this stabilizer is also odorless. Paste and liquid calcium zinc stabilizers are used in hospital and medical tools and devices such as oxygen tubes and masks, droppers, serum tube sets and microsets and dialysis sets, blood transfusion tubes and bags, Nelatone catheters, Syringe gaskets, medical and dental suction, syringe bulbs, different types of catheters, bag valve mask, injection parts for different sets, baby finger toothbrush, medical injection tools, etc. as well as packaging foods, water pipes, shoe industry, toys, refrigerator door seal, gloves, table cover, straw, etc.

## DOP, DOA and DOTP Plasticizers

DOP, DOA and DOTP Plasticizers are among other productions of Masoom Granule Production Company. These softeners that shall be used in the formulation of soft PVC production in order to provide flexibility, lower process temperature and prevent distortion.

Diocetyl Adipate, Diocetyl Phthalate and Diocetyl Trepthalate respectively abbreviated as DOA, DOP and DOTP oils are examples of different types of softeners needed in the production of soft PVC that significantly improve properties of the final product from different aspects. These softeners are clear, odorless and colorless liquid with high boiling point that have good resistance against factors such as temperature, light, heat, extraction and migration.

They are used in medical equipment, home appliances, sanitary tools, different types of wire and cable coatings, different types of sealing tapes in vehicles, construction industry, synthetic leather, waterproof membranes, floorings, etc. These plasticizers led to the decrease of modulus and mechanical strength and increase length at the point of tear, enhancement of toughness and shock resistance, improving antistatic properties, improvement of surface properties, gloss and resistance to cold. Different PVC Blends include 1% to 45% of DOA, DOP, DOTP, etc.

## Application of DOP, DOA and DOTP in Medical Equipment :

Due to the proper specifications of these blends as plasticizers, they are the most common materials used in medical equipment such as intravenous tubing and bags, different types of catheters, different types of Nelatone catheters, serum and dialysis tube sets and microsets, blood bags and blood transfusion tubes , Oxygen tubes and masks, Syringe gaskets, medical and dental suction, baby finger toothbrushes and syringe bulbs, injection parts for different sets, bag valve masks, droppers, medical injection tools, etc.

It is to be noted that due to the risk classification of medical devices, Masoom Granule Production Company uses DOP, DOA and DOTP oils for the production of medical devices.

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