Baspar Sazeh Toos Company

Part Lastic Industrial Group

Baspar Sazeh Toos Company, a subsidiary of the **Part Lastic Industrial Group**, with over four decades of experience in designing and manufacturing rubber compounds for a wide range of rubber products, has not only obtained IATF certification but also, through the transfer of technical knowledge and close collaboration with leading rubber product manufacturers in Europe and Asia, and by relying heavily on research and development, has established itself among the most capable designers and producers of rubber compounds.

Winter Hiking, Military, and Tactical Boot Sole Compound Specially Designed for Cold Regions

- The shoe sole plays a primary role in protecting the foot while walking on various surfaces, and generally, the following qualities are expected from a good sole:
- It must have high flexibility to prevent fracture under the body's weight during use. This should be achieved using materials that are soft enough to absorb impact and prevent the transmission of shock to the user's body while walking.
- It should possess high mechanical strength to resist tearing or abrasion. Additionally, in the event of minor cracking, the material should demonstrate strong resistance to crack propagation caused by repetitive walking.
- It must have good abrasion resistance to prevent premature wear when used on various surfaces over time.
- The sole should provide proper traction on the ground to prevent slipping and ensure the user's safety.
- In addition to the above-mentioned requirements, the sole of a mountaineering shoe is expected to withstand extreme cold conditions typically found in mountainous regions. It must maintain its desirable properties at temperatures as low as -40°C, which represents severe mountain cold. To achieve this, a specially formulated rubber compound is required.

Safety Shoe Sole

The sole of a safety shoe must comply with the basic requirements specified in National Standard No. 1136. In addition to these fundamental criteria, specific applications—such as electrical insulation safety shoes or shoes resistant to molten metal contact—require additional performance standards.

BASPAR SAZEH Company has successfully designed and manufactured various safety shoe sole compounds in accordance with both the basic requirements of Standard 1136 and the special application requirements

- Anti-static requirement (marked with "A") to prevent the accumulation of

static electricity in the shoe sole and avoid the risk of electric sparks.
- Electrical insulation requirement up to 20 kV, in compliance with EN 50321 standard.
- Heat contact resistance requirement (marked with "HRO"), for use in environments such as metal smelting plants, where exposure to hot surfaces is likely.
- Fuel oil resistance requirement (marked with "FO"), practically tested using iso-octane, indicating resistance to various fuels, solvents, petroleum-based oils, and greases.

BASPAR SAZEH TOOS Company has successfully designed and manufactured safetv shoe sole compounds in both black and

In the meantime, materials such as **PU (Polyurethane)**, **EVA (Ethylene Vinyl Acetate)**, and **soft PVC** are also used in sole production. However, each of these materials has certain drawbacks compared to rubber:

- **PU**, in addition to being costly, is susceptible to hydrolysis and degradation when exposed to aqueous solutions. It also provides less traction, increasing the risk of slipping.
- **EVA** has low abrasion resistance, making it less suitable for applications that involve continuous surface contact.
- **Soft PVC** tends to become hard and glassy near freezing temperatures, leading to loss of flexibility and increased slipperiness, making it unsuitable for use in cold environments.

BASPAR SAZEH TOOS, designer and manufacturer of gasket compounds for Plate Heat Exchangers (PHE).

In plate heat exchangers (PHE), heat transfer occurs through the flow of hot and cold fluids between plates.The main advantages of plate heat exchangers are their large heat transfer surface area and easy access for surface cleaning. Rubber gaskets provide a complete seal between the plates, directing fluids between the plates as intended.

The correct selection of rubber gaskets for plate heat exchangers significantly reduces maintenance and repair costs, while also preventing severe and sometimes irreparable damage caused by the leakage of toxic substances into the environment. Some of the most important applications of plate heat exchangers include the dairy industry, sugar and confectionery production, oil, gas, and petrochemical sectors, chemical processing, marine industries, textile manufacturing, condenser and evaporator systems, swimming pool and Jacuzzi heating, hydraulic oil cooling, and more.

Rubber gasket compounds for plate heat exchangers, resistant to fluids and specific operating conditions, have been designed by BASPAR SAZEH TOOS in accordance with the products of the most reputable manufacturers.

Among the most important applications related to the food industry, plate heat exchangers are widely used in the dairy industry (milk processing equipment).

BASPAR SAZEH TOOS has developed a rubber gasket compound resistant to dairy products, capable of withstanding high temperatures (peak temperature of 150°C). This compound, based on EPDM, is designed

in both colored and black variants, compliant with the requirements of the Federal Institute for Risk Assessment (BfR) standard of Germany.

Bundesinstitut für Risikobewertung

The key features of this compound include:

1. Good resistance to detergents and disinfectants used for cleaning and sanitizing the food flow path.
2. High resistance to deformation throughout the optimal service life of the component.
3. No alteration in color, odor, or taste of dairy products.
4. No release of carcinogenic or toxic substances, such as nitrosamines, into dairy products.
5. Continuous operational temperature resistance up to 125°C.

The gasket compounds for plate heat exchangers designed by BASPAR SAZEH TOOS are capable of meeting the country's demand for various types of heat exchangers and reducing dependency on import. BASPAR SAZEH TOOS, by offering die design services and producing preform compounds tailored to the specific gasket type, enables the minimization of flash waste generated during the compression molding process.

Key features of the gasket compounds for plate heat exchangers designed by BASPAR SAZEH TOOS include:

1. High strength
2. Elasticity tailored to the specific application
3. High resistance to deformation during the optimal service life of the component
4. Thermal resistance compatible with the operating temperature of the heat exchanger.
5. Among the most important non-food-related applications of plate heat exchangers are industries such as oil, gas, and petrochemicals; chemical processing; marine; textiles; condenser and evaporator systems; swimming pool heating; Jacuzzis and showers; hydraulic oil cooling; and others. **BASPAR SAZEH TOOS** has designed rubber gasket compounds resistant to specific fluids used across various industries, including oils, acidic and alkaline solutions, various chemical solvents, and refrigerants. These compounds are formulated on different polymer bases and cover a range of operating temperatures, matching the quality of products from the most reputable manufacturers of plate heat exchanger gaskets. Manufactured on molding machines within production lines, these compounds can meet domestic demand and reduce reliance on foreign suppliers in this sector.

Manufacturer of specialized stator compounds for food industry Mono pumps

Mono pumps are a type of positive displacement pump, specifically known as Progressive Cavity Pumps, Eccentric Screw Pumps, or Cavity Pumps.

Mono pumps offer several benefits, including the ability to pump materials with very high viscosity, providing a smooth and continuous fluid flow, minimal noise, ease of assembly and disassembly, and simple maintenance and repair.

Mono Pumps are widely used in the production of chocolate, cream, cheese, yogurt, various types of pastes, concentrates, jams, honey, different pulps, sauces, ketchup, gluten, glucose starch, bread dough, biscuits, cakes, kashk (fermented whey), edible gelatin, cooking oil, fruit pulps, coffee, tea, liquid glucose, syrups, sugarcane industry products, and canned goods.

Since the rubber in the stator of food industry

mono pumps comes into direct contact with food products, it is a key component in ensuring both the quality of the food and the health of the consumer.

The stator compound for mono pumps at BASPAR SAZEH TOOS has been designed and manufactured in accordance with the requirements of the Federal Institute for Risk Assessment (BfR) standard of Germany**.** Produced using molding machines on production lines, this compound is capable of meeting domestic demand and reducing reliance on foreign suppliers in this field.

Bundesinstitut für Risikobewertung

Key features of the food industry stator compound designed by BASPAR SAZEH TOOS include:

- Suitable resistance to detergents and disinfectants used for cleaning and sanitizing the food flow path.
- The compound exhibits excellent physical, mechanical, and chemical properties, including high elasticity and resistance to deformation.
- These characteristics help prevent rapid wear of the mono pump stator during extended operating hours.

Manufacturer of specialized compounds for milking liners

Since the milking liner is the only part of the milking machine that comes into direct contact with the animal, it is a key component in ensuring both the quality and quantity of the milk as well as the health of the animal.

The milking liner compound at BASPAR SAZEH TOOS is designed and manufactured in accordance with the standards of the **Federal Institute for Risk Assessment (BfR) of Germany** and the **U.S. Food and Drug Administration (FDA)**. Produced using molding machines on production lines, this compound is capable of meeting domestic demand and reducing reliance on import.

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FDA APPROVED

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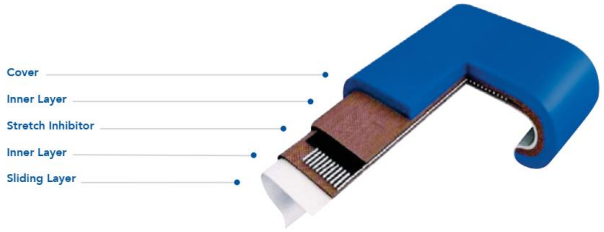
Key features of the milking liner compound designed by BASPAR SAZEH TOOS include:

- Suitable resistance to detergents and disinfectants used for cleaning and sanitizing milking equipment.
- The compound possesses excellent physical, mechanical, and chemical properties, including high elasticity and resistance to deformation, which effectively prevent rapid wear of the milking liner during extended operation.

Additionally, the company has successfully developed surface modification technology for milking machine components, resolving the issue of noise caused by suction during milking. This innovation reduces stress on the animals and ultimately improves the efficiency of the milking process.

Compound for Handrail Coating of Escalators and Moving Walkways

The handrails of escalators and moving walkways are composite structures composed of a slippery plastic layer, reinforcing fabrics, metal cables, and rubber compounds. The handrail coating layer must protect the underlying components from environmental factors. Therefore, this coating layer requires high mechanical strength, good abrasion resistance, relatively high hardness to prevent deformation and ensure dimensional stability, and excellent ozone resistance.



Another crucial factor is that, since the handrail coating is in direct contact with users' skin, the compound must not contain materials prone to migrating to the surface that could cause staining or skin irritation. Typically, such materials are used in compounds to provide ozone resistance. Without these materials, ozone degradation quickly manifests as fine cracks, eventually leading to tearing and peeling of the part. However, **BASPAR SAZEH TOOS** has successfully developed a compound that offers excellent ozone resistance without containing these sensitizing substances, thus preventing irritation.

BASPAR SAZEH TOOS can design compounds with the above requirements at two quality and price levels:

Quality Level One:

A compound based on CSM, similar to the handrail coating of Semperit (one of the world's leading handrail manufacturers), offering resistance to environmental conditions, ozone, petroleum oils, with flame-retardant properties, nail tear resistance, and suitable mechanical strength.

Quality Level Two:

Similar to Quality Level One but without resistance to oils, flame retardancy, and nail tear resistance.

In addition to black, production of compounds in other colors according to customer specifications is also possible.

Compounds for Industrial Valve Liners

Industrial valves play a crucial role in controlling fluid flow. In a category of industrial valves, a rubber lining (liner) covers the valve disc or metal body, providing a seal to prevent fluid leakage and protecting the metal components from chemical corrosion and abrasion.

The rubber liner must meet the following requirements:

The rubber liner must meet the following requirements:

- Possess adequate mechanical strength to prevent tearing of the rubber during valve opening and closing operations.
- Have high abrasion resistance to ensure that minor wear does not cause fluid leakage.
- The liner must have high resilience and maintain this resilience over time at a high percentage; in other words, it should have low permanent set. If the rubber's resilience significantly deteriorates over time, its sealing ability diminishes, leading to leakage under fluid pressure.
- It must have good temperature resistance suitable for the operating temperature of the fluid.
- It should exhibit high chemical resistance to the fluid, meaning the rubber used must have minimal chemical reactivity with the fluid. Additionally, the rubber should experience minimal volume change upon contact with the fluid. Specifically, the rubber must neither swell (which reduces mechanical properties and ultimately leads to tearing) nor shrink (which causes leakage).

BASPAR SAZEH TOOS currently supplies compounds for certain industrial valves and is prepared to design and produce suitable compounds with various polymer bases according to customer requirements, including NR, SBR, BR, EPDM, NBR, and CSM.

For example:

- Rubber compounds based on NR, SBR, and BR are suitable for water valves operating at ambient temperature (such as agricultural water valves).
- NBR-based rubber is suitable for contact with oily, petroleum-based fluids and hydrocarbon solvents.
- EPDM-based rubber is suitable for water and aqueous solutions at higher operating temperatures (up to 100°C, and with special design, up to 120°C). EPDM also offers resistance to weak acids and bases as well as polar fluids. Moreover, with appropriate compound design, EPDM can meet health requirements for contact with food or hygienic materials (in accordance with the German BfR standard).
- For resistance to concentrated acids, CSM-based rubber is appropriate.

Air Spring Compounds

Air springs are an emerging generation of springs in the automotive industry, and their production is rapidly growing. An air spring not only functions as a spring but also provides vehicle height adjustment. These components absorb vibrations from the wheels of various vehicles using compressed air generated by a compressor. The use of air springs in vehicle suspension systems represents a significant advancement in enhancing passenger comfort. Applications of these components include suspension systems for trailers, trucks, buses, train cars, as well as luxury and comfort-oriented passenger vehicles.

One of the most important components of these assemblies is the rubber airbag. This rubber airbag must have adequate mechanical strength to withstand the severe stresses applied without tearing, therefore, the specifications of the rubber compound used in manufacturing these components are of great importance. Among the key standards for designing air spring rubber compounds are the Mercedes-Benz standard (DBL 5558) and the Japanese JASO C613-87 standard.

Baspar Sazeh Toos has designed and supplied air spring rubber compounds in two quality grades, complying with DBL 5558 Version 23 (Class A) and JASO C613-87 (Class B) standards. These compounds are formulated considering the requirements of the calendaring process and are produced on molding machines capable of meeting the country's demand and eliminating dependence on foreign suppliers in this field.

Key features of the air spring rubber compounds designed by Baspar Sazeh Toos include:

1. High strength
2. Application-appropriate elasticity
3. High tear resistance
4. Strong resistance to deformation during the component's optimal service life
5. Thermal resistance suitable for the component's operating temperature

6. High resistance to ozone degradation
7. Excellent low-temperature performance

EPDM-Based Compound for Electrical Cable Insulation and Sheathing with Flame Retardant and Halogen-Free Properties

Various plastic- and rubber-based compounds are widely used in the electrical cable industry as insulation (insulator) and sheathing (sheath) materials. Compared to plastics, rubber compounds have lower hardness and modulus, which provide cables with rubber insulation and sheathing much greater flexibility—especially since most plastics become brittle and stiff below freezing temperatures, while rubbers remain flexible at much lower temperatures. temperatures.
Fire risk in electrical cables is a critical concern. In some applications, flame retardancy and low flame propagation rates are mandatory. Additionally, in enclosed environments, it is essential that the smoke generated by burning insulation and sheathing materials does not contain harmful halogenated substances such as chlorine or fluorine.
BASPAR SAZEH TOOS has successfully designed and produced an EPDM-based compound for cable insulation and sheathing with flame retardant and halogen-free properties (HFFR: Halogen-Free Flame Retardant). This compound is available in various colors and complies with IEC 60502-1 (and the national standard INSO 3569-1) as well as IEC 60245-1 (and the national standard INSO 1926-1).

Since rubber compounds require curing and heat treatment after extrusion and coating the cable conductor surface (unlike plastics), it is essential to employ a continuous pressurized curing system downstream of the extruder to ensure a void-free coating with a smooth surface. The necessary pressure in this continuous curing system can be provided by either steam or nitrogen gas.

Baspar Sazeh Toos is a manufacturer of specialized tire tread compounds containing nanomaterials.

The specialized tire tread compound designed by Baspar Sazeh Toos is developed based on extensive research to meet the required performance properties, utilizing up-to-date formulations with nano-silica and carbon black as key components. This formulation leverages the advantages of nano-silica to enhance fatigue life, sliding performance, and grip—especially on wet surfaces—while also reducing rolling resistance. The specialized tire tread compounds from Baspar Sazeh Toos are engineered for compatibility with both cold and hot retreading processes.

Nanomaterial-Enhanced Specialized Tire Tread Compound Applied on Baspar Sazeh Toos Forklift Tire Sample

The tire retreading process requires the preparation of the worn tire as well as the creation of conditions that ensure proper adhesion of the uncured compound to the prepared tire in the hot method, and adequate bonding of the cured tread to the prepared tire in the cold method. Therefore, a special adhesive compound has been developed by the compound design experts at **Baspar Sazeh Toos**, which ensures proper bonding between the layers of the retreaded tire and consequently increases the tire's service life. Figure 3 shows samples of forklift tires retreaded by Baspar Sazeh Toos using the specially designed compounds. These tires have demonstrated excellent performance on both wet and dry surfaces under various operating conditions over the course of one year of continuous use in material handling at the company. It is anticipated that the retreaded tire samples under review will have a durability of up to three years.

Specialized Manufacturer of Gasket Compounds for Window Glass Seals in Building Construction

Today, one of the primary reasons for using double-glazed aluminum and UPVC windows is their excellent sound insulation and energy-saving properties. To achieve these benefits, sealing strips—or gaskets—that are standard-compliant, suitable, and of high quality are utilized.

Polymeric gaskets not only provide excellent sealing performance but also exhibit exceptional corrosion resistance. These gaskets come in various types, with polymeric variants classified into eight categories based on their material composition: EPDM, Silicone, Pyrophyllite, Fluoroelastomer, PTFE, Polyethylene, Polypropylene, and Chloroprene.

In manufacturing sealing strips, our company uses high-quality raw materials, specifically Ethylene Propylene Diene Monomer (EPDM). This material demonstrates excellent resistance to pressure, vibration, ozone, sunlight, acids, steam, and weathering. The gaskets produced by our company are suitable for both exterior façades and interior applications in buildings, including windows.

Another key feature of these sealing strips is their wide operational range and long-term flexibility. This means that under various weather conditions and despite repeated opening and closing of double-glazed window sashes, they retain their elastic properties. These sealing strips, made from specialized EPDM rubber, offer excellent resistance to ultraviolet (UV) radiation from sunlight and do not become brittle or oxidized over time, therefore: the compounds produced by our company undergo rigorous testing in accordance with the German standard DIN 7863-1, including hardness, tensile strength, tear resistance, ozone resistance, aging, and more, ensuring that the product reaches the consumer with the highest quality.

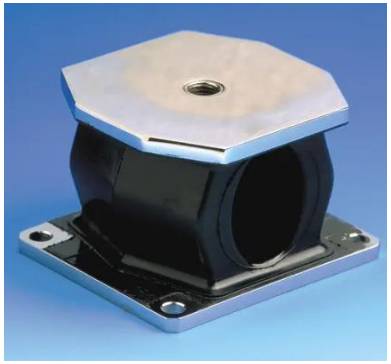
Rubber Vibration Isolator Compound for Erte'ashat E Sanati Iran based on EPDM and NR/SBR

Dynamic equipment in pipeline systems—such as pumps, compressors, fans, turbines, and others—generate internal movements that induce vibrations in the pipeline. These vibrations cause noise, premature wear of the pipeline and associated components, and various other issues.

One effective method to prevent the transmission of these vibrations to other parts of the pipeline is the use of rubber vibration isolators. A very common application of rubber isolators is in the suction and discharge sections of pumps, where they not only absorb existing vibrations but also help eliminate water hammer and shock impacts. Another application of rubber isolators is to accommodate movements caused by dimensional changes in the pipelines.

A major advantage of rubber vibration isolators compared to bellows-type connectors is their suitability for use in highly corrosive environments, although these isolators generally have limited temperature and pressure tolerances. Additionally, rubber isolators are sometimes used to prevent electrical conduction.

Typical industries utilizing rubber vibration isolators include chemical, pharmaceutical, marine, HVAC, steel, oil, gas, and petrochemical sectors.



Rubber Expansion Tank Compound for Water Pumps

Providing adequate water pressure to the upper floors of buildings is a common challenge that is nowadays addressed by installing water pumps. To ensure smoother pump operation and to prevent frequent cycling on and off, a rubber expansion tank is installed in the pump system. Water pressure is maintained through the air pressure in the space between the rubber bladder and the metal body of the tank.

The requirements for this rubber component are as follows:

- Due to its contact with water, it must have minimal adverse effects on water quality and safety.
- It must exhibit long-term resistance to water as well as good environmental durability.
- It should possess high mechanical strength to prevent rupture under operating pressure.
- It must have high tear resistance (especially at elevated temperatures) and high elongation percentage to avoid tearing during molding and demolding from the mold core.

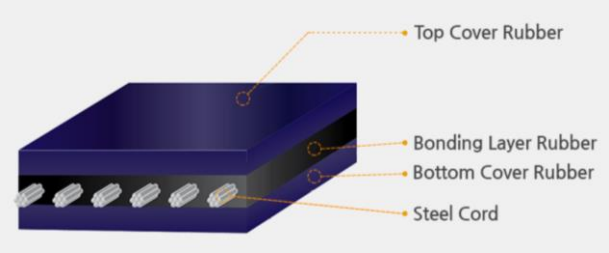
Baspar Sazeh Toos has successfully developed an EPDM-based compound meeting these requirements and is ready to supply this compound to manufacturers of this component.

Conveyor Belt Compounds

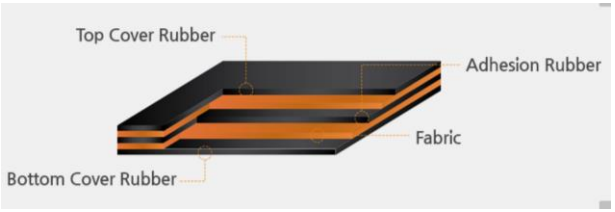
Material handling using conveyor belts is an automated, fast, and reliable method of transportation that also offers cost advantages over other labor-intensive methods. A conveyor belt system consists of two pulleys—one or both connected to a driving motor—and a continuous closed-loop belt that moves around the pulleys, carrying materials placed on the belt from one point to another.

Basic requirements for conveyor belts:

- They must be sufficiently flexible to easily move around the pulleys.
- They must have adequate resistance against the effects of materials placed on them, including impact, tearing, abrasion, chemical corrosion, and thermal damage.
- They must have a reinforcing structure, usually made of steel cords or fabric. This structure's role is to prevent deformation of the belt under pulley tension, the weight of the materials, and impacts caused by material dropping, while providing sufficient strength. For proper conveyor belt performance, strong adhesion between the layers and the reinforcing structure is essential.



Steel cord conveyor belt



Fabric conveyor belt

The ISO 10247 standard defines the mechanical strength, abrasion resistance, and thermal resistance properties of conveyor belt cover layers across three classes: H, D, and L. In addition to these classes, the K class cover layer is specified for flame resistance and anti-static properties—featuring sufficient electrical conductivity to prevent the buildup of static electric charge and the resulting sparks—making it suitable for applications such as underground coal mining. In coal mines, flammable gases like methane may accumulate. If static electricity builds up on the conveyor belt surface due to its movement, it could generate sparks, leading to explosions and fires. Therefore, conveyor belts used in such environments must possess both anti-static and flame-resistant characteristics. The adhesion (tie) layer must bond strongly to the reinforcing structure (steel cord or fabric) as well as to the cover layer. Adhesion requirements are outlined in ISO 15236-1 and ISO 22721 standards.

Baspar Sazeh Toos Company has successfully developed various cover layer compounds meeting the L, D, H, and K class requirements. The tie layer compounds are specially formulated depending on whether they bond to fabric or steel cord. Baspar Sazeh Toos is ready to supply these conveyor belt compounds to manufacturers in the conveyor belt industry.