tsrholding.com

About TSR Holding

A leading group in the Iranian polymer and chemical industries

TSR stands as a pioneer in the polymer and chemical industries in Iran, boasting over 60 years of successful experience. Beyond the diversity and high quality of its extensive product range, the group offers a variety of services through the continuous development of the business value chain. Along this trajectory, TSR assumes a significant role beyond providing essential raw materials, extending into consulting for production, complete supply chain management, and more. These value-added services, coupled with a steadfast commitment to quality and product diversity, constitute the key differentiating factor that sets TSR apart in the industry within Iran and the region.

Amidst these endeavors, the expansion of the key raw material value chain has become a pivotal aspect of TSR Group's operations. Beyond its primary products, the group's units and research laboratories are actively engaged in commercializing and producing numerous related and similar products. In doing so, they effectively contribute to completing the value chain within these industries.

Today, TSR stands at the forefront of the highest levels of quality and global standards through the development and modernization of production technologies, knowledge management, and the adoption of contemporary approaches to management. The group distributes its products under three brands: polysun, olsun, and barysun, supplying numerous companies and factories in Iran and the region.

TSR's main core is in the polymer and chemical industries, and it has allocated the majority share of its production to itself. However, this group has also invested and created value in other areas of business, such as commerce and human resources management. It intends to expand its activities into other domains as well.

TSR

History of TSR

From a Family Business to an Entrepreneurial Industry

TSR is a family-owned business established by the late "Gholamreza Mosabeh." He was engaged in the production of traditional shoes known as "Giveh" (a type of local footwear) in 1939 and in the 1950s and 1960s he started the production of "Galesh" (traditional Persian footwear). However, with the market's growing interest in rubber shoes, he steered his business towards manufacturing this type of footwear.

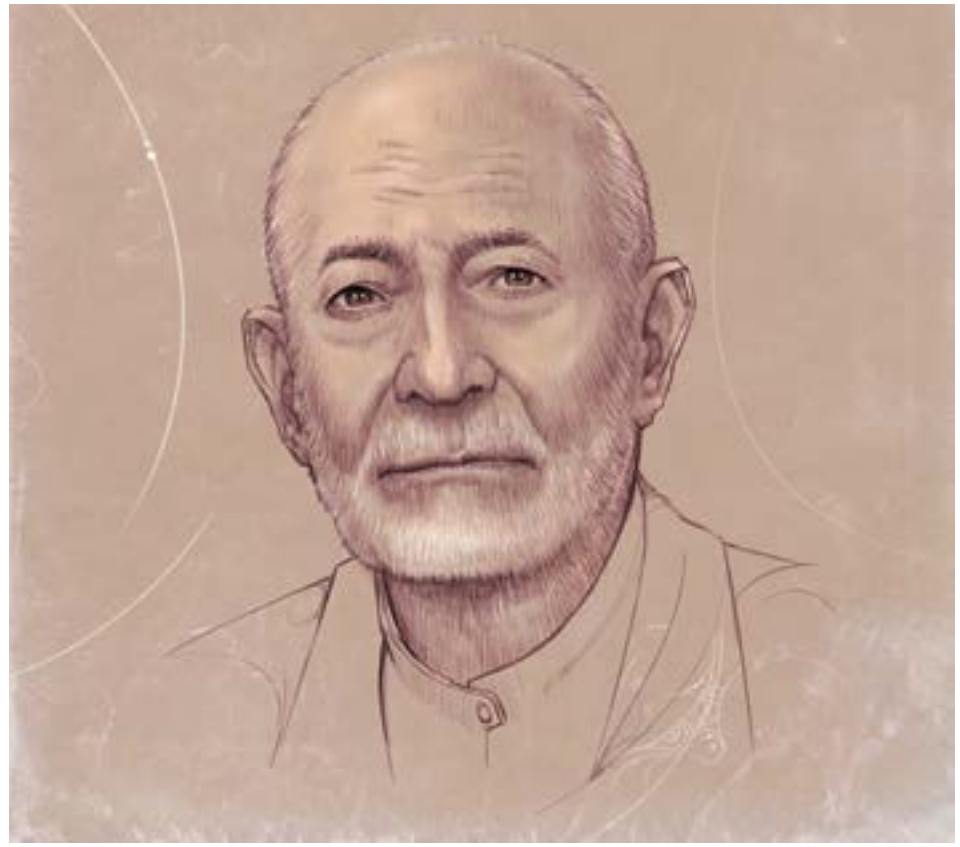
Nevertheless, during that era, the industry faced numerous challenges due to the lack of technology, equipment, and raw materials. For instance, manufacturers used to vulcanize rubber, manually assemble the upper and sole, and create natural rubber with additives like carbonates. Despite all these limitations, the production wheel of the factory never stopped turning.

In 1979, "Hassan Mosabeh" and his brothers entered the industry, marking a significant milestone. In 1981, they initiated the production of PVC shoes, a time when other businesses were also starting their activities by importing shoe-manufacturing machinery. During that time, the required granules for shoe production were sourced from other companies.

With the onset of the Iran-Iraq War, granule distribution became rationed. In 1983, the Mosabeh family took their first step towards completing the value chain of their family business by obtaining the license to produce supplementary shoe granules, aiming to address this issue. As other businesses entered this manufacturing sector, the industry of PVC granule production began to grow.

The Mosabeh family continued producing granules within their shoe production factory, enabling them to fulfill a portion of the market's consumption needs in addition to their own requirements. Subsequently, in 1989, with the expansion of granule production, the group established a separate factory for granule production. From 1991, shoe and sole production ceased in order to focus on granule production.

At the end of the 1990s, Gholamreza Mosabeh entrusted the leadership of the business to the next generation. In 2001, Hassan and Mohsen Mosabeh launched a DOP oil production factory to further enhance the value chain of TSR products.



The portrait of "Gholamreza Mosabeh". By: Amin Montazeri

In 2004, Hasan Mosabeh established the Tose'e Sanaye Reza company and obtained the license for the P.A.F. project, and started the steps through development. The development continues by entering his son, Ali Mosabeh, into the business as a third generation since 2007.

In 2010, the installation of a phthalic anhydride and plasticizers production line was completed through the purchase and installation of machinery and equipment. With the expansion of this business, the group also ventures into other industries such as mining and barium salts.

Pursuing the development, the companies' group was established and the modern thinking era started in the family business in the middle of 2010s. simultaneously, the reproduction of PVC granules started effectively for specialized markets.

Since 2021, the business initiated activities in other business areas such as human resources management and commerce, and the company group united under TSR holdings through organizational structure reforms and the business perspective transformation.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Events Timeline

1939 — Initiation of Gholamreza Mosabeh's activity in the production of traditional shoes known as "Giveh" (a type of local footwear)

1956 — Ceasing the production of Giveh and beginning the production of Galesh (traditional Persian footwear)

1964 — Ceasing the production of Galesh and beginning the production of PVC shoes

1979 — The entry of Gholamreza Mosabeh's son, Hasan, into the business.

1980 — The establishment of Bazargan shoe company and production of PVC shoes.

1983 — Obtaining a license for the production of supplementary shoe granules by Bazargan company in Qom and the beginning of supplementary shoe granules and shoe soles production.

1985 — The beginning of a partnership with BootsIran company and the production of two-tone boots

1989 — The establishment of Sadaf Granule company in order to produce granules.

1991 — Ceasing shoe and sole production and focusing on granule production.

1998 — The assignment of partnership with BootsIran and ceasing granule production

2000 — Retirement of Golamreza Mosabeh and leaving all responsibilities and charges to his children.

2001 — The establishment of Mosabeh DOP production factory and production of DOP plasticizer.

2003 — Gholamreza Mosabeh passed away on July 24, 2003

2004 — Registration and establishment of "Tose'e Sanaye Reza" company and obtaining the license for the R.A.F. project

2007 — Ali Mosbeh's entry into business and the commencement of development and rejuvenation

2009 — Mahdi Mosbeh's entry into business and the commencement of systemization

2010 — The start of production of phthalic anhydride and plasticizers

2015 — Entering High Tech, researching, and knowledge-based issues.

2016 — Formation of a Group of Companies and the Commencement of the Modern Era in Advancing Affairs

Reinvigoration and Robust Start of PVC Granule Production for Specialized Markets

2018 — Involving Mohammad Mosabeh into the business and the beginning of thinking in unity way

Entering refinery business in a small scale

2019 — The production of mineral salts

2021 — Development of the supply chain in the production of mineral salts.

2022 — Establishment of the first specialized human resources agency

2023 — Integration of the group of companies under the TSR Holding establishment.

Subsidiary Units

The TSR Group, with over sixty years of history and experience, has evolved into a dynamic and extensive holding comprising multiple subsidiary factories and companies across various industrial sectors. These units, ranging from advanced polymer granule production to commerce and human resources management, collectively contribute to completing the value chain of this group.

The core of the organization consists of two primary units: the Atisun and the Polysun Complexes. The Atisun complex focuses on producing plasticizers, phthalates, and resins, while the Polysun unit is engaged in the production of various specialized granules, masterbatches, and airblowings.

The Tam Azerbaijan Mining Plant, located in East Azerbaijan province, was established for the extraction and processing of barite stone. The products of this plant serve as raw materials in the production of various barium salts at the "Barisun Factory," the first producer of barium salts and an affiliate of TSR Holding in the mining industry. This plant produces products such as barium carbonate, barium sulfate, and barium chloride, and the strontium salt lines of this complex will soon be operational as well.

The Kimia Sanaye Reza factory, a subsidiary of the TSR Group, is the primary and largest producer of various barium compound salts in Iran's mining industry. It manufactures products such as barium carbonate, barium sulfate, and barium chloride. The strontium salt production lines of this facility are also expected to start operating soon.

Kimia Baspar Sabz Kavir consists of two units: Kimia 1 and Kimia 2 factories. The Kimia 1 factory, alongside the Kooh Sefid unit, is responsible for producing various specialized granules and airblowings. The Kimia 2 factory, which serves as a light refinery, is tasked with purifying different types of oils.

"Ramona Peyvand Fidar" company is another subsidiary of the group, which has taken shape as a dynamic and agile human resources agency to provide a platform for collaboration and synergy in the Iranian human resources community. This company, known by the brand name "Toplicant," strives to offer logical, creative, and effective solutions for human resources-related issues.

"MahradTech" company, another subsidiary of the TSR group, is a knowledge-based entity that provides integrated services to innovative companies in need of completing, registering, and valuing their innovations. From technology monitoring to investment and technology transfer, this company offers services to not only convert innovation into assets but also enhance the competitive advantage of ideas in the market.

In this way, the TSR group has embarked on a path of diversity and sustainable development to create value for both the industry and society.

Polysun products

“polysun”, one of TSR Holding’s brands, produces a wide range of polymer products for various applications. High-quality PVC granules, diverse compounds, general and colored masterbatches, specialized masterbatches, as well as Acrylonitrile Butadiene Rubber (NBR) and airblowings are among the products offered by this brand. polysun delivers these products for a diverse spectrum of applications, including industries such as footwear, automotive, construction, hoses, electronics, telecommunications, and more.

Compounds

TSR Group produces various compounds in powder and granule forms, tailored to the final products. In the production of these compounds, raw materials are compounded to achieve optimal, efficient, and cost-effective performance for specific applications.

PVC Granules

In the production of soft PVC granules, or flexible PVC, 40-60% of the composition consists of additives. Plasticizers or PVC plasticizers, in particular, make up the largest share of additives in the production of PVC granules. Other additives in the production of soft PVC granules include heat stabilizers like lead, barium-cadmium (for general applications), calcium-zinc (for medical devices and food packaging), lubricants (waxes and epoxidized oils), anti UV stabilizers and etc.

The TSR Group produces and supplies various PVC granules for diverse applications in three types: transparent, opaque, and PVC/NBR blends. PVC granules blended with NBR (Nitrile Butadiene Rubber) or Acrylonitrile Butadiene Rubber offer better resistance to oils, fuels, and chemicals, making them an excellent choice for applications requiring strong performance in challenging environments.

Shoes and Footwear Industry

The footwear industry is a lucrative and creative sector that utilizes diverse materials, including polymers, advanced technologies, and innovative designs to produce a variety of shoes. Beyond its economic significance, this industry significantly impacts the comfort and lifestyle of individuals.

The history of the footwear industry dates back centuries. From the inception of simple shoes to the evolution of designs and the use of optimized materials, this industry has accumulated countless experiences.

Just as pioneers in this industry have adapted and evolved over time to meet the changing needs of users, the future holds the potential for further advancement through the integration of cutting-edge technology and innovative materials. Advanced production methods will allow the industry to continue its pursuit of innovation and address the diverse needs of producers and consumers. Smart shoes and sustainable comfort will cater to a wide spectrum of users' needs.

TSR Group produces a variety of polymer materials that are used in the production of highly durable, safe, flexible, and attractive shoes, including everyday and sports shoes, as well as specialized footwear for specific environments. The diverse range of TSR's products, spanning various features, qualities, and grades, enables the creation of aesthetically appealing footwear with additional properties like water resistance and abrasion resistance, resulting in enhanced durability and prolonged use. The granules produced by TSR Group can be used in a wide range of shoe industry applications, including shoe soles, insoles, shoe uppers, and more.

PVC granules for shoe soles

TSR's PVC granules enable footwear manufacturers to create durable and versatile soles, allowing them to produce shoes that combine comfort, resilience, and aesthetics. These granules can be used in the production of suitable soles for various types of footwear, including boots, everyday shoes, sports shoes, and more.

PVC granules for slipper insoles

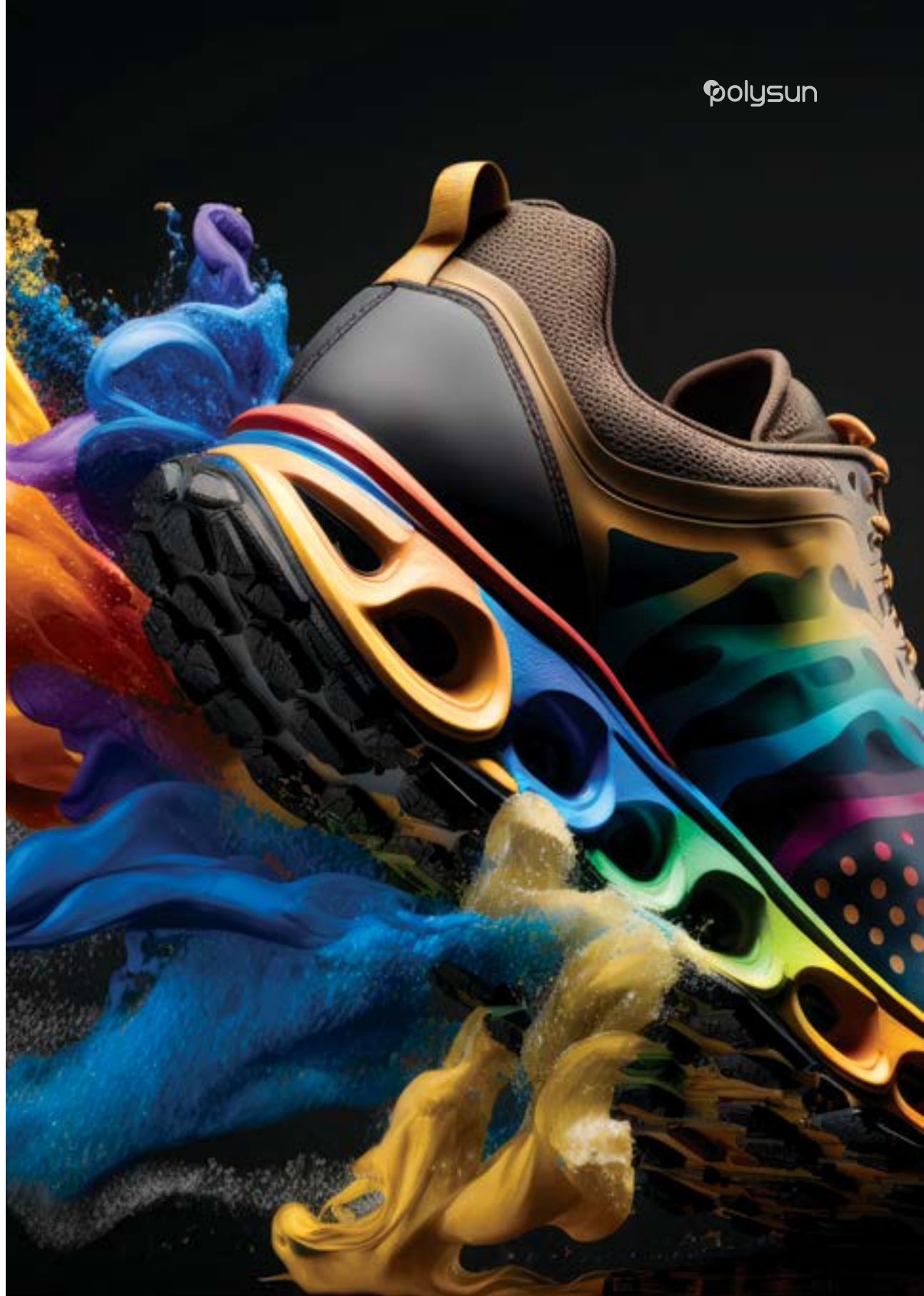
TSR produces various PVC granules that are specifically designed for creating slipper insoles, enabling the combination of durability, comfort, and appealing design. Utilizing these polymer materials in insole production enhances their resistance to wear and tear, leading to increased durability and a final product that boosts extended longevity.

Transparent PVC granules for footwear industries

TSR utilizes a formulation of transparent granules composed of a combination of PVC and plasticizers along with additives. This approach results in granules that are softer and lighter compared to other types. These characteristics make TSR's granules a suitable choice for producing products in the footwear industry, particularly for boots, shoe soles, and slipper insoles.

Grade	Tensile (N/mm2)	Elongation (%")	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
50	5.5 ± 1	490 ± 25	1.13 ± 0.01	39 ± 2	18 ± 3
60	6.5 ± 1	480 ± 25	1.14 ± 0.01	43 ± 2	18 ± 3
70	7.5 ± 1	470 ± 25	1.15 ± 0.01	47 ± 2	18 ± 3
80	9.5 ± 1	460 ± 25	1.16 ± 0.01	55 ± 1	18 ± 3
100	11 ± 1	450 ± 25	1.165 ± 0.01	59 ± 1	18 ± 3
102	11.5 ± 1	440 ± 25	1.17 ± 0.01	61 ± 1	16 ± 3
104	13 ± 1	430 ± 25	1.175 ± 0.01	65 ± 1	16 ± 3
106	13.5 ± 1	420 ± 25	1.18 ± 0.01	67 ± 1	16 ± 3
108	14 ± 1	410 ± 25	1.185 ± 0.01	69 ± 1	16 ± 3
110	15 ± 1	390 ± 25	1.19 ± 0.01	72 ± 1	16 ± 3
115	16.5 ± 1	380 ± 25	1.21 ± 0.01	76 ± 1	16 ± 3
120	18 ± 1	365 ± 25	1.22 ± 0.01	80 ± 1	16 ± 3
129	19 ± 1	350 ± 25	1.23 ± 0.01	82 ± 1	16 ± 3
135	20 ± 1	340 ± 25	1.24 ± 0.01	83 ± 1	14 ± 3

● The datasheet gives information about several commonly used products as an overview. After receiving the datasheet, offering advice, or getting samples, TSR can make the specific grade for clients in accordance with their needs and finished goods.



Opaque PVC granules for footwear industries

TSR's opaque granules consist of polymer materials containing various percentages of fillers. These fillers come with diverse characteristics and colors that can be utilized across various industries. Fillers offer a range of advantageous properties to polymer materials, including increased flexibility, improved processability, and other beneficial traits. Besides their versatile applications, these types of granules are also extensively used in the footwear industry, particularly for boot soles, shoe soles, and boot uppers.

Grade	Tensile (N/mm2)	Elongation (%")	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
Sole Grade 100 Type 1	11 ± 1	430 ± 25	1.22 ± 0.02	60 ± 2	80 ± 3
Sole Grade 100 Type 2	10 ± 1	390 ± 25	1.25 ± 0.02	61 ± 2	80 ± 3
Sole Grade 100 Type 3	9.5 ± 1	350 ± 25	1.29 ± 0.02	62 ± 2	80 ± 3
Sole Grade 102 Type 1	12 ± 1	410 ± 25	1.23 ± 0.02	64 ± 2	80 ± 3
Sole Grade 102 Type 2	11 ± 1	380 ± 25	1.26 ± 0.02	65 ± 2	80 ± 3
Sole Grade 102 Type 3	10 ± 1	340 ± 25	1.30 ± 0.02	66 ± 2	80 ± 3
Sole Grade 100 Type 1 TPR	10 ± 1	480 ± 25	1.20 ± 0.02	56 ± 2	80 ± 3
Sole Grade 102 Type 1 TPR	11 ± 1	470 ± 25	1.21 ± 0.02	60 ± 2	80 ± 3
Boot vamp	11 ± 1	380 ± 25	1.18 ± 0.02	62 ± 2	80 ± 3
Boot sole	13 ± 1	350 ± 25	1.22 ± 0.02	64 ± 2	80 ± 3

● The datasheet gives information about several commonly used products as an overview. After receiving the datasheet, offering advice, or getting samples, TSR can make the specific grade for clients in accordance with their needs and finished goods.

Hose Industry

Hoses are used in various industries, including agriculture, construction, oil and gas, food, automotive, medical, and more, for fluid transportation. In the hose industry, they are categorized into lines that possess soft properties and flexibility. Therefore, hoses can be divided into two categories: rubber and plastic. Among plastics, flexible PVC granules are considered one of the most important plastics for the production of various hoses due to their high flexibility and suitable environmental resistance.

PVC granules for the hose industry

TSR's polymer products play a crucial role in the production of various types of hoses, offering features such as flexibility, resistance to pressure and heat, and chemical resistance. These characteristics make hoses manufactured using TSR's polymer products highly suitable for conveying different substances in industries like agriculture, construction, oil and gas, chemicals, and food.

Opaque PVC granules for Hose Industry

Grade	Tensile (N/mm2)	Elongation (%")	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
104	11.5 ± 1	265 ± 25	1.31 ± 0.01	69 ± 2	80 ± 10
104	11 ± 1	265 ± 25	1.43 ± 0.01	74 ± 2	80 ± 10
106	12.5 ± 1	265 ± 25	1.31 ± 0.01	71 ± 2	80 ± 10
106	11.5 ± 1	265 ± 25	1.45 ± 0.01	76 ± 2	80 ± 10
108	13 ± 1	265 ± 25	1.32 ± 0.01	71 ± 2	80 ± 10
108	12 ± 1	265 ± 25	1.45 ± 0.01	78 ± 2	80 ± 10
110	14 ± 1	260 ± 25	1.34 ± 0.01	73 ± 2	80 ± 10
110	13 ± 1	260 ± 25	1.46 ± 0.01	80 ± 2	80 ± 10
115	15.5 ± 1	250 ± 25	1.345 ± 0.01	79 ± 2	80 ± 10
115	15 ± 1	250 ± 25	1.47 ± 0.01	85 ± 2	80 ± 10
129	17 ± 1	245 ± 25	1.365 ± 0.01	83 ± 2	80 ± 10
129	15.5 ± 1	245 ± 25	1.48 ± 0.01	86 ± 2	80 ± 10

Transparent PVC granules for Hose Industry

Grade	Tensile (N/mm2)	Elongation (%")	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
104	13 ± 1	430 ± 25	1.175 ± 0.01	65 ± 1	16 ± 3
106	13.5 ± 1	420 ± 25	1.18 ± 0.01	67 ± 1	16 ± 3
108	14 ± 1	410 ± 25	1.185 ± 0.01	69 ± 1	16 ± 3
110	15 ± 1	390 ± 25	1.19 ± 0.01	72 ± 1	16 ± 3
115	16.5 ± 1	380 ± 25	1.21 ± 0.01	76 ± 1	16 ± 3
120	18 ± 1	365 ± 25	1.22 ± 0.01	80 ± 1	16 ± 3
129	19 ± 1	350 ± 25	1.23 ± 0.01	82 ± 1	16 ± 3

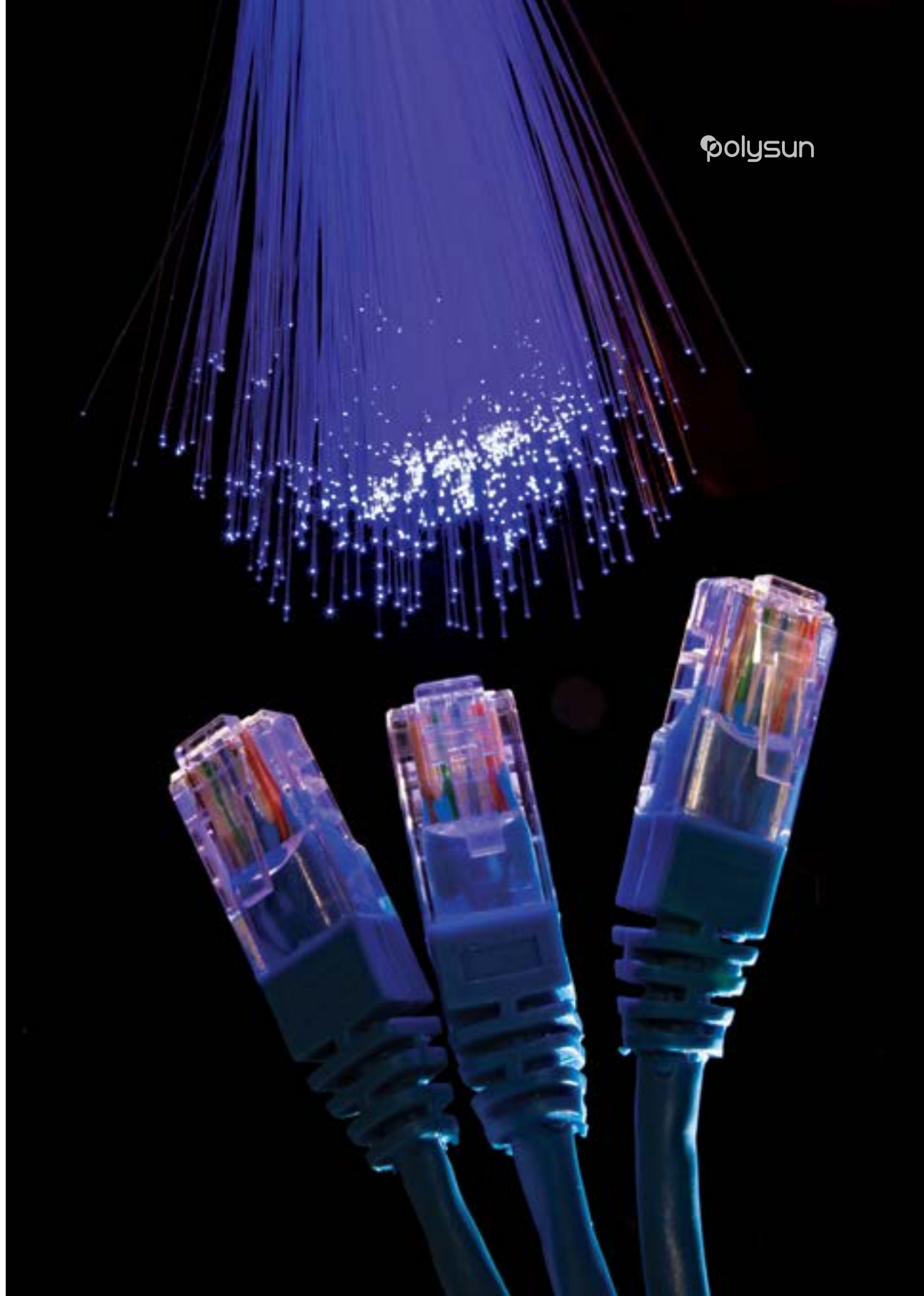
Electrical and Telecommunications Industry

Polymers, as one of the most important insulators, play the role of preventing electrical contact and connection between conductive lines in electrical circuits. Additionally, another property of polymers is protecting against the influence of physical factors and safeguarding against electrical discharge. Polymer materials, due to their insulating properties and resistance, have a significant role in creating stable and secure electrical connections. Given these insulating properties, polymers find numerous applications in telecommunication cables and electrical wires.

PVC, in particular, is the most widely used thermoplastic polymer in the field of low-pressure wires and cables. Thanks to its unique properties, such as fire resistance and self-extinguishing characteristics, PVC has long been utilized as an insulator and sheathing material for various types of wires and cables.

PVC Granules for the Electrical, Power and Telecommunications Industries

TSR Group, with its extensive knowledge of the wire and cable industry and familiarity with all the expected standards in this field, produces a wide range of soft granules suitable for the wire and cable industry, in accordance with parts of the global standards IEC60502 and IEC60227.



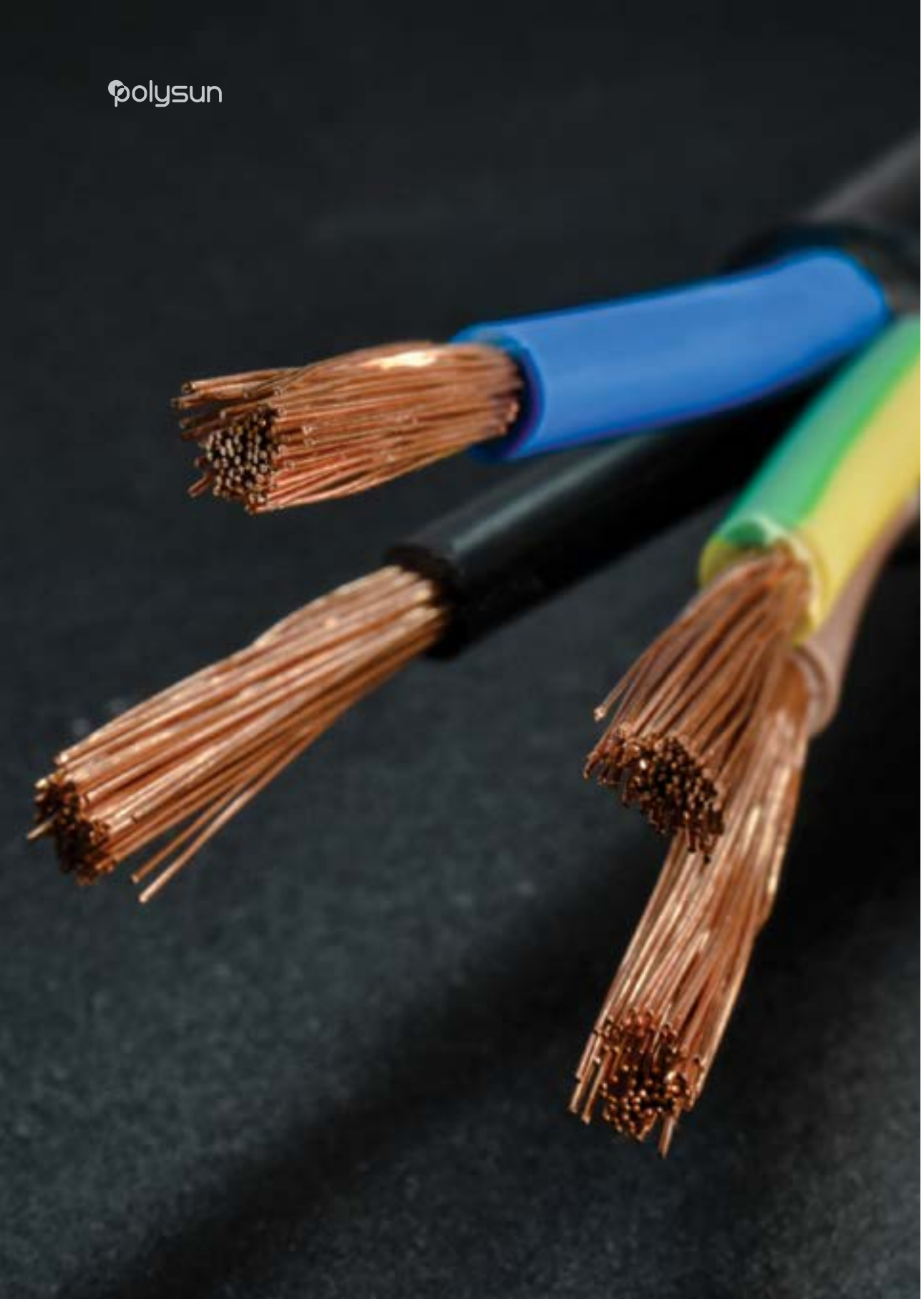
PVC granules for cable sheathing

TSR Group manufactures various types of sheaths required by the wire and cable industry, including single strand wire sheaths, multi-strand wire sheaths, telecommunications sheaths, network cable sheaths, coaxial cable sheaths, and more, in accordance with international standards.

PVC granules for beddings

TSR Group has the capability to produce soft PVC granules suitable for use in various bedding sheaths, especially in high-power cables, including multi-layer and armored cables, with the highest quality.

Grade	Tensile (N/mm2)	Elongation (%')	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
Sheathing of Flexible Cable(ST5)	12.5 ± 1	275 ± 25	1.46 ± 0.01	80 ± 1	80 ± 10
Sheathing of Flexible Cable(ST5)	13.5 ± 1	250 ± 25	1.48 ± 0.01	82 ± 1	80 ± 10
NBR Welding cable	13 ± 1	400 ± 50	1.30 ± 0.01	70 ± 2	75 ± 10
Welding cable	8.5 ± 1	400 ± 50	1.34 ± 0.01	67 ± 2	75 ± 10
Sheathing of super flexible Cable	11 ± 1	275 ± 25	1.46 ± 0.01	76 ± 2	70 ± 10
Sheathing of super flexible Cable	11.5 ± 1	300 ± 25	1.33 ± 0.01	71 ± 1	70 ± 10
Sheathing of Fixed Installation Cables(ST1,ST2)	15.5 ± 1	275 ± 25	1.45 ± 0.01	84 ± 1	80 ± 10
Sheathing of Fixed Installation Cables(ST1,ST2)	16.5 ± 1	250 ± 25	1.50 ± 0.01	89 ± 1	80 ± 10
Sheathing of Fixed Installation Cables(ST4)	15 ± 1	250 ± 25	1.48 ± 0.01	86 ± 1	80 ± 10
Sheathing of Fixed Installation Cables(ST4)	16 ± 1	250 ± 25	1.45 ± 0.01	86 ± 1	80 ± 10
Bedding Of Cables	9 ± 1	200 ± 25	1.73 ± 0.01	89 ± 1	60 ± 10



PVC granules for cable insulations

TSR Group produces various types of granules used in the wire and cable industry's insulations, including single strand wires, multi-strand wires, flexible wires, phone and data wire insulations, flat cord wire insulation, one-kilovolt insulation, and more, in accordance with international standards.

PVC granules for fillers

TSR Group produces a variety of PVC granules that serve as versatile fillers in various industries, including the electrical and power sector, with wide-ranging applications.

Grade	Tensile (N/mm2)	Elongation (%")	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
Insulation of Fixed Installation Cables(PVC/A)	20 ± 1	260 ± 25	1.43 ± 0.01	92 ± 2	100 ± 10
Insulation of Fixed Installation Cables(PVC/C)	16.5 ± 1	245 ± 25	1.48 ± 0.01	89 ± 1	80 ± 10
Insulation of Fixed Installation Cables(PVC/C)	16 ± 1	250 ± 25	1.46 ± 0.01	88 ± 1	80 ± 10
Insulation of Flexible Cable(PVC/D)	15.5 ± 1	260 ± 25	1.48 ± 0.01	86 ± 1	80 ± 10
Insulation of Flexible Cable(PVC/D)	16 ± 1	260 ± 25	1.45 ± 0.01	86 ± 1	80 ± 10
Insulation of Flat Flexible Cable (PVC/D)	11.5 ± 1	275 ± 25	1.54 ± 0.01	82 ± 1	80 ± 10
Filler	3 ± 0.5	190 ± 20	1.87 ± 0.02	81 ± 1	45 ± 10
Filler	8 ± 1	200 ± 25	1.75 ± 0.02	86 ± 1	50 ± 10
Filler	3 ± 0.5	180 ± 25	1.91 ± 0.02	83 ± 1	40 ± 10

Construction Industry

Polymers have been around for quite some time, with the first plastics being invented in the early 1900s. Since then, these human-made materials have become increasingly prevalent in our daily lives. Polymers are widely used in various industries due to their unique chemical and physical properties, and they have gained tremendous popularity in the construction industry. However, their use in construction is relatively recent.

Polymeric materials are used extensively in the construction industry due to their superior chemical and physical properties. They are employed in tasks such as wall insulation, wiring and cabling, piping, and insulation for water pipes.

Commonly used polymers in construction include organic silicon resins (OSR), phenolic resins (PF), polypropylene (PP), polystyrene (PS), polyester resins (PR), polymethyl methacrylate (PMMA), polyvinyl chloride (PVC), and polyethylene (PE).

PVC, in particular, has been widely utilized in construction products for over half a century. Its strong, lightweight, durable, and versatile properties make it ideal for window profiles. Its excellent flame resistance and electrical insulation properties make it ideal for cable applications. PVC is, to a large extent, the leading plastic in the European construction market. Seventy percent of all PVC produced in Europe is transformed into products such as windows, pipes, floor coverings, ceiling membranes, and other construction materials.

PVC granules for the construction industry

TSR's polymer products find applications in the construction industry for various purposes, including geomembranes, waterstops, and gaskets. These products possess high waterproofing properties, resistance to weather conditions, and a long lifespan. As a result, they contribute to enhancing the quality and durability of buildings.

Grade	Tensile (N/mm2)	Elongation (%")	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
Water Stop	13 ± 1	350 ± 25	1.33 ± 0.01	72 ± 1	70 ± 10
Geo Membrane	13.5 ± 1	310 ± 25	1.34 ± 0.01	74 ± 1	70 ± 10
PVC Inlay flower	2.5 ± 0.5	185 ± 25	1.91 ± 0.01	62 ± 1	60 ± 5
Gasket	15 ± 1	300 ± 25	1.28 ± 0.01	72 ± 1	60 ± 5

Medical and Healthcare Industry

PVC was introduced in World War II for medical applications to replace medical devices made of glass, metal, and ceramics, which required cleaning and sterilization between each use. PVC and plastics enabled the production of a wider range of medical devices that are safe, cost-effective, and disposable. This significantly reduced cross-contamination among patients and improved medical treatments.

PVC medical equipment is essential in creating modern healthcare systems and, with its various properties such as safety, chemical stability, biocompatibility, clarity and transparency, flexibility and durability, sterilizability, and recyclability, it plays a pivotal role in medical products. PVC is currently the most widely used plastic for single-use medical applications, pre-sterilized and ready for use. Its main applications in the medical field include wall coverings, floor coverings in healthcare facilities, bed linens, oxygen masks, hygiene gloves, blood bags, IV bags, and fluid transfer tubing.

PVC granules for the medical industry

The healthcare and medical industry utilizes polymers as fundamental materials in the production of medical devices, contributing to the improvement of healthcare services and overall public health. These materials, with a combination of safety, resistance, and biocompatibility, are among the most important factors in advancing the field of medicine.

TSR Group's products, manufactured in compliance with all international regulations and using authorized plasticizers in the medical industry suh as DOA, produce a wide range of soft PVC granules for use in the medical field, contributing to the advancement of medical science.

Automotive Industry:

The automotive industry, utilizing various materials and polymers in the interior and exterior structure of vehicles, has become a key representative of technology and efficiency in the modern world. These materials, with characteristics such as weather resistance, lightweight compared to other materials, and superior thermal insulation properties, contribute to the improvement of vehicle performance and safety.

The automotive industry, with advancements in technology and the societal need for convenience and speed in transportation, has undergone remarkable transformations. From the inception of early automobiles to the production of smart vehicles and advanced technologies, this industry is continuously growing. The development of electric and smart vehicles using polymers and advanced materials to increase fuel efficiency, enhance safety features, and reduce environmental impacts will be the path of progress in this industry.

In the automotive industry, polymer products are used in various critical components in the interior and exterior of vehicles. These materials, with attributes such as resistance to weather conditions, lighter weight compared to traditional materials, and superior thermal insulation properties, contribute to improving the performance and safety of automobiles.

PVC granules for the automotive industry

The automotive industry utilizes various types of PVC granules for a wide range of applications. From manufacturing hoses for automotive fluid transfer and underbody coatings to producing gaskets, floor modules, and automotive wiring, PVC granules serve as a fundamental source for advancements in this dynamic industry. In the automotive sector, TSR's polymer products are used in numerous critical components in both the interior and exterior of vehicles. These materials, with features such as resistance to weather conditions, lighter weight compared to conventional materials, and superior heat insulation properties, contribute to enhancing the performance and safety of automobiles.

Airblowings

Airblowing compounds are powdery formulations produced in four seasonal variations: spring, summer, autumn, and winter. They are used in various industries, particularly in the footwear industry for the production of boots, sport shoe soles, and slippers.

Furthermore, the TSR group can offer airblowing compounds in three forms: raw airblowing, semi-finished airblowing, and complete airblowing. Raw air-blowing is available along with an additive referred to as “semi-finished air-blowing,” while raw air-blowing combined with additives and coloring agents is known as “complete air-blowing.”

Airblowing compound-specific additives

All compounds are blended with a portion of additives to enhance processability, thermal stability, mechanical properties, and plasticity. With the expansion of its product portfolio, TSR group also produces a wide range of additives for its production and its trading partners.

Airblowing additives constitute a group of such products utilized for thermal stability, lightweightness, sponge-like final product form, and improved color dispersion in the manufacturing of products like slippers and sandal soles.

		Products recomendetation based on seasons			
Grades	DOP/PVC	Spring	Summer	Autumn	Winter
135-200	0.675	✓	✓✓		
145-200	0.725	✓✓	✓✓		
155-200	0.775	✓✓	✓✓	✓	
165-200	0.825	✓	✓✓	✓✓	✓
175-200	0.875			✓✓	✓✓
185-200	0.925				✓✓
195-200	0.975				✓✓

✓✓ Top Recomendation ✓ Secondary Option

NBR/PVC

Nitrile butadiene rubber, commercially known as NBR, is a material that, when added to PVC, imparts increased resilience and softness to the final product. This material finds applications in wire and cable sheaths, various specialized fuel lines, and the footwear industry. Additionally, it is used in products that require resistance to water and oil penetration.

The combination of PVC and NBR offers desirable properties such as UV, heat, and chemical resistance. The combinations of NBR with PVC can be highly diverse and tailored to meet customer needs and the technical specifications of the final product. TSR has the capability to produce NBR/PVC in any grade.

Grade	Tensile (N/mm2)	Elongation (%")	Density (gr/cm^3)	Hardness (Shore A)	Thermal Stability (Min)
Sole Grade 100 Type 1 TPR	10 ± 1	480 ± 25	1.20 ± 0.02	56 ± 2	80
Sole Grade 102 Type 1 TPR	11 ± 1	470 ± 25	1.21 ± 0.02	60 ± 2	80

- The datasheet gives information about several commonly used products as an overview. After receiving the datasheet, offering advice, or getting samples, TSR can make the specific grade for clients in accordance with their needs and finished goods.

Masterbatches

Masterbatches are concentrated additives with a solid polymer base used for coloring or improving the properties of polymers. TSR Group produces a variety of colored, general, and specialty masterbatches for a wide range of applications.

General and Special Masterbatches

TSR produces a variety of general and specialized masterbatches in different grades to meet the needs of the group and to enhance the product portfolio. The special masterbatches offered by TSR are designed to improve the properties of polymers. These masterbatches can add features such as resistance to oxidation, elimination of PVC yellowing, enhancing glossiness, anti-fungal and antibacterial properties, anti-mold and mildew properties, increased resistance to UV spectrum, improved impact resistance, anti-static properties, fog and scratch resistance, and reduced surface adhesion in the final product.

Grades	Density (g/cm^3)	Hardness (Shore A)	Dosage (%)	Application
Optical brightener masterbatch	1.25 ± 0.1	76 ± 3	1.5 - 2	Used to enhance the appearance of color, Causing a "whitening and bluish" effect
Anti Oxidant masterbatch	1.21 ± 0.1	76 ± 3	1.5 - 2	Increase protection the substrates against thermo-oxidative degradation, Enhance Thermal stability
Anti Bacterial masterbatch	1.25 ± 0.1	76 ± 3	1.5 - 2	Provide long-term protection against a broad spectrum of bacterial and fungal attack and will help prevent surface growth, musty odors, permanent staining, embrittlement, and premature product failure.
Anti Rodent masterbatch	1.25 ± 0.1	76 ± 3	1.5 - 2	Provide long-term Anti Termite & Rodent
Anti UV masterbatch	1.23 ± 0.1	76 ± 3	1.5 - 2	Imparts outstanding light an UV stability to final products
Impact Modifier masterbatch	1.20 ± 0.1	76 ± 3	4 - 5	Increase Impact strength of final product
Anti Static masterbatch	1.24 ± 0.1	70 ± 5	1.5 - 2	Provide Excellent Anti static and Internal Lubricancy to the final product
Anti Fog masterbatch	1.23 ± 0.1	75 ± 3	1.5 - 2	Provide Excellent Anti Fog Property to the final product
Anti Scratch masterbatch	1.15 ± 0.5	75 ± 3	1.5 - 2	Provide Excellent Anti Scratch and External Lubricancy Property to the final product
Anti Block(slip agent) masterbatch	1.17 ± 0.5	75 ± 3	1.5 - 2	Provide Excellent Anti Block and External Lubricancy Property to the final product

● The datasheet gives information about several commonly used products as an overview. After receiving the datasheet, offering advice, or getting samples, TSR can make the specific grade for clients in accordance with their needs and finished goods.

Color Masterbatch

One of the main and significant applications of masterbatches in the polymer industry is coloring various materials, including PVC. Color masterbatches are categorized into different groups based on their polymer base, their compositions, and color standards.

polysun's masterbatches are produced in a variety of colors (full RAL spectrum) and can be used for coloring a wide range of products in different industries.

Color Sample	Density (g/cm^3)	Hardness (Shore A)	Ral Color Number	Color
	1.40 ± 0.1	80 ± 2	1021	Rape Yellow
	1.55 ± 0.1	75 ± 2	2004	Pure Orange
	1.40 ± 0.1	80 ± 2	3000	Flame Red
	1.40 ± 0.1	80 ± 2	3020	Traffic Red
	1.45 ± 0.1	75 ± 2	4001	Red Lilac. Violet
	1.50 ± 0.1	80 ± 2	5015	Sky Blue
	1.40 ± 0.1	75 ± 2	6018	Yellow Green
	1.40 ± 0.1	75 ± 2	6024	Traffic Green
	1.50 ± 0.1	85 ± 2	7000	Squirrel Gray
	2.00 ± 0.1	85 ± 2	8002	Signal Brown
	1.55 ± 0.1	80 ± 2	8003	Clay Brown
	1.30 ± 0.1	80 ± 2	9005	Jet Black
	1.75 ± 0.1	75 ± 2	9010	Pure White

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Olsun products

“olsun”, one of TSR Holding’s brands, is one of the pioneers in the field of petrochemical and refinery products. It produces a wide range of plasticizers and essential raw materials for various industries. DOP, DOA, and DOTP plasticizers, along with phthalic anhydride, are among the products offered by this brand.

Plasticizers

Plasticizers are organic esters (usually colorless and odorless liquids) that are added to polymers to improve their flexibility and hardness. Approximately 80 to 90 percent of all plasticizer production is used in the soft PVC industry.

Soft PVC, and hence its plasticizers, find applications in various industries, including construction (flooring and wall coverings), electronics (wires and cables), consumer goods (toys, footwear, etc.), packaging, automotive (inside and outside vehicle parts), furniture, and medical (tubing and blood bags).

Phthalate esters, based on phthalic acid, are the primary types of plasticizers used because they meet a wide range of processing and performance needs. The most important phthalates include Di(2-ethylhexyl) phthalate (DEHP), also known as Di-Octyl Phthalate (DOP), Diisononyl phthalate (DINP), Diisodecyl phthalate (DIDP), and Di(2-propylheptyl) phthalate (DPHP). Over 55% of all plasticizer production in the world consists of phthalate-based plasticizers.

Non-phthalate plasticizers, on the other hand, are not based on phthalic acid and have different chemical structures and toxicological specifications. They include terephthalates, with Dioctyl terephthalate (DOTP) being the most significant, as well as epoxies, aliphatics, trimellitates, polymeric, phosphates, and others. Due to increasing regulations regarding certain phthalates driven by human health concerns, there is an ongoing shift towards the production of non-phthalate plasticizers worldwide.

Phthalic Anhydride

Phthalic anhydride is used as a chemical compound in the production of plastics from vinyl chloride. Additionally, this substance is employed in the production of phthalate esters.

It is also used in the production of polyester resins and alkyd resins utilized in paints and nail polishes, insect repellents, and polyester polyurethanes.

DOP Plasticizer

Phthalate esters, the primary type of PVC plasticizers, meet a wide range of processing and performance needs with the lowest cost. Di(2-ethylhexyl) phthalate (DEHP), also known as dioctyl phthalate (DOP), is the international standard plasticizer for PVC, and the properties of other plasticizers are usually reported relative to DEHP. Other general-purpose phthalates include Diisononyl phthalate (DINP), Diisodecyl phthalate (DIDP), and Di(2-propylheptyl) phthalate (DPHP).

Phthalates, as plasticizers for PVC, generally offer excellent compatibility, desirable permeability properties, and a set of performance properties that require little modification compared to other types of plasticizers for many applications.

The TSR Group established DOP plasticizer production lines in 2001 and became the largest producer and supplier of this product in Iran during the 2010s. Today, in addition to meeting a portion of Iran's consumption needs, it exports this product to regional countries as well.

Test	Unit	SPEC.	Test Method	Result
Appearence	-	Clear	-	OK
Color	APHA	Max 50	ASTM D1045	30
Specific Gravity (20/20C)	g/ml	0.980-0.986	ASTM D4052	0.982
Acid Value	KOH mg/g	Max 0.07	ASTM D664	0.036
Acid Value (After Heating)	KOH mg/g	Max 0.2	JIS K6751	0.1
Volatility (%)(125cx 3hr)	Wt%	Max 0.15	JIS K6751	0.09
Water Content	Wt%	Max 0.1	ASTM D1522	0.042
Ester Value	KOH mg/g	285 ± 3	ASTM D 1045	287
Purity	Wt%	Min 99.5%	GC	99.7

DOTP Plasticizer

Unlike phthalates, terephthalates are not based on phthalic acid. For example, the most common terephthalate is Dioctyl terephthalate (DOTP), which can be produced from terephthalic acid or dimethyl terephthalate. From a technical standpoint, phthalates, such as DEHP, DINP, DIDP, and DPHP, are considered ortho-phthalates, while terephthalates, including DOTP, are considered non-phthalates because they do not have a similar chemical structure or toxicological properties as phthalates.

Dioctyl terephthalate (DOTP), known by the trade name DOTP, is a non-phthalate plasticizer. This organic liquid compound is colorless, transparent, insoluble in water, and soluble in oils and nonpolar solvents.

DOTP is primarily used for plasticizing PVC and products made with this plasticizer meet various environmental regulations such as 16P, ROHS, and REACH. It has no adverse effects on human health.

Due to its transparency, durability, and high heat resistance, DOTP can be directly used as a replacement for DOP and DINP plasticizers in a wide range of applications. This product is suitable for various applications, including PVC compounds, rubber production, flooring coatings, roofing membranes, cables, wiring, vinyl wallpaper, food packaging films, and synthetic leather. It is also suitable for use in various processing methods, including extrusion, calendaring, and injection molding. DOTP can help address the fogging problem in automotive glass windows. Moreover, it is used in advanced coatings, precise instrument lubricants, nitrocellulose varnishes, paper softeners, and plasma storage bags.

DOA Plasticizer

A significant portion of these plasticizers consists of adipate esters, primarily Dioctyl adipate (DOA) or Di(2-ethylhexyl) adipate (DEHA). They are used either alone in applications such as food film or in combination with other plasticizers to achieve flexibility at low temperatures in PVC. Other aliphatic plasticizers include maleates, azelates, sebacates, and cycloaliphatics.

OLSUN

barysun products

"barysun", one of TSR Holding's brands, specializes in the production of a wide range of mineral salts. Various types of barium salts, including barium sulfate, barium carbonate, and barium chloride, as well as other compounds like sodium sulfide and sodium carbonate, are among the products of this brand. Additionally, production lines for strontium salts and other barium compound products will soon be launched to meet the material requirements of industries such as glass manufacturing, ceramic glazing, and agricultural pesticides.

barysun

Barium salts

Barium salts are a group of chemical compounds derived from the element barium. These salts exhibit various properties and have found diverse applications in industries ranging from medicine and electronics to agriculture and manufacturing. Known for their distinctive characteristics and versatile reactivity, barium salts play a crucial role in a wide array of processes and products, contributing to advancements in different sectors of science and technology.

Precipitated Barium Sulfate (Blanc Fixe)

Blanc Fixe, also known as Barium Sulfate or Precipitated Barium Sulfate, is a white, odorless powder composed of a combination of barium and sulfate. Its chemical formula is $BaSO_4$, and it is naturally found in certain mineral rocks. Blanc Fixe is utilized as a filler in industries such as paints, plastics, rubber, paper, clothing, food, and pharmaceuticals. It is also employed as a brightness-enhancing agent in the printing, publishing, painting, and interior decoration industries. Due to its insolubility in water, Blanc Fixe can be used as a narrow particle distribution agent in the coloring process. Additionally, Blanc Fixe is used as a contrast agent in medical imaging. In this process, it is suspended in water or oil and employed as a contrast-enhancing agent in radiology, X-ray imaging, and other medical procedures. Blanc Fixe contains barium, which is known to be toxic; hence, its usage requires careful consideration, and adherence to safety protocols, and regulations. If ingested, seek immediate medical attention.

Item	Standard
$BaSO_4$	99%
Whiteness	≥96
Volatile on 105℃	≤0.20
Water Soluble	≤0.20
Oil Absorption	10-15
PH Value (100g/L)	7.0-9.0
Residue on 45μm sieve)	≤0.2
Fe Content	0.001
Moisture	0.3
Specific Gravity (g/cm3)	4.2-4.4

Item	Standard
$BaCO_3$	99%
Total sulfur (On SO_4 basis)	0.3%MAX
HCL insoluble matter	0.25%MAX
Iron as Fe_2O_3	0.004%MAX
Moisture	0.3MAX
325mesh	3%MAX
Average Particle Size (D50)	1.5UM

Barium Carbonate

Barium carbonate is a chemical compound with the formula $BaCO_3$, consisting of one barium atom, one carbon atom, and three oxygen atoms. This compound is available as a white powder and finds applications in various industries, like the ceramics and glaze industry, Arcopal dishes, glass production, sanitary ceramics, paint, and pigment manufacturing, the ChlorAlkali industry, the oil and gas industry, and the extraction of lead and zinc.

It is insoluble in water and alcohol but soluble in various acids (HCl, H_2SO_4, HNO_3). It's worth noting that due to the toxicity of barium, barium carbonate must be used with caution and adherence to safety and health guidelines in various industries.

Barium Chloride

Barium chloride is a chemical compound composed of the elements barium (Ba) and chlorine (Cl), represented by the chemical formula $BaCl_2$. This chemical compound exists as a white solid without odor at room temperature and is soluble in water. Similar to other barium salts, it is toxic, and its flame color tends to be yellow-green. Barium chloride is a byproduct of radium production, discovered by Marie Curie. During the final purification of radium, the separation process leads to the production of both barium chloride and radium chloride.

Barium chloride is used in various industries including paint production, ChlorAlkali processes, plastics manufacturing, stabilizer production, rubber production, resin production, insulation, textile industries, thermal operations, medical industries, drilling, electronics industry, food industry, and the production of other chemical compounds.

Item	Standard
$BaCl_2$	99%Min
Calcium	0.03%MAX
Sulphide	0.003%MAX
Iron as Fe_2O_3	0.001%MAX
Water Insoluble Matter	0.03MAX
Sodium	0.03%MAX

Strontium salts

Strontium salts are chemical compounds that contain strontium, a chemical element with the symbol Sr and atomic number 38. These salts are formed by combining strontium with various other elements or groups. Strontium itself is a soft, silvery metal that is highly reactive with water and easily oxidizes in air. Strontium compounds have diverse applications in various industries, including pyrotechnics (fireworks), ceramics, glass manufacturing, and even in medical imaging as strontium compounds can mimic calcium in certain bodily processes. Strontium salts can produce vibrant colors in flames, which makes them valuable for creating colorful visual effects in fireworks displays.

Furthermore, the TSR group is in the process of expanding its production of strontium compounds and other derivatives of barium compounds to supply the needs of industries such as glass manufacturing, ceramic and tile glazing, and agricultural chemicals. These production lines are set to be inaugurated soon.

Other Mineral Salts

Sodium Carbonate

Sodium carbonate, also known as soda ash or washing soda, is a versatile chemical compound with the formula Na_2CO_3. It exists in various forms, including anhydrous (without water) and hydrated (with water) versions. Both forms are colorless, odorless, and highly soluble in water, producing alkaline solutions. Anhydrous sodium carbonate has a white crystalline appearance, while the hydrated form, often referred to as soda ash or soda crystals, appears as a white powder. Sodium carbonate has a wide range of applications across industries. In the realm of household cleaning, it is commonly used as a detergent booster, and pH regulator. In industry, sodium carbonate plays a crucial role in glass manufacturing, pulp and paper production, and chemical synthesis. Its alkaline nature also makes it valuable in water treatment to adjust pH levels. Moreover, sodium carbonate has applications in food, such as in baking as a leavening agent, and in the production of certain types of beverages. This compound's versatility and fundamental role in various processes make it a key ingredient in modern industrial and everyday applications.

Other Mineral Salts

Sodium Sulfide

Sodium sulfide is a chemical compound with the formula Na_2S, more commonly known in its hydrated form as $Na_2S \cdot 9H_2O$. Both forms are colorless, water-soluble salts that create highly alkaline solutions. When sodium sulfide and its hydrates are exposed to moist air, they release hydrogen sulfide gas, which has a smell similar to rotten eggs. Some industrial samples exist as sodium sulfide hydrates ($Na_2S \cdot xH_2O$) with a specific weight percentage of sodium sulfide. Common samples typically contain around 60% by weight of sodium sulfide ($Na_2S \cdot 3H_2O$). Such samples often appear somewhat yellow due to the presence of polysulfides and are known as "sodium sulfide flakes." Despite their yellowish appearance, these samples are colorless in solution. This compound exists as a white powder, yellow flakes, and red flakes, and is soluble in water. Sodium sulfide is used in various industries such as chemicals, textiles, papermaking, water treatment, and more. It is also employed in some food industries as a preservative and in the leather industry as a protective agent enhancer.

Item	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6
Fe	10ppm max	20ppm max	30ppm max	80ppm max	150ppm max	1500ppm max
Na_2S	60%min	60%min	60%min	60%min	60%min	60%min
Water insoluble	0.03%max	0.10%max	0.18%max	0.20%max	0.30%max	0.40%max
Na_2CO_3	1.80%max	1.80%max	1.80%max	2.00%max	3.00%max	5.00%max
Na_2SO_3	1.00%max	1.80%max	1.80%max	2.00%max	2.00%max	2.00%max
$Na_2S_2O_3$	2.00%max	2.00%max	2.00%max	2.00%max	2.00%max	2.00%max
Color	Yellow	Yellow	Yellow	Yellow	Yellow	RED