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Carbon Polymer

**SEALING
MATERIALS**





Founded in 2005, the company LLC "CARBON-POLYMER" today is a leader in our local market in the production of graphite products and polymers.

We produce a wide range of products based on graphite and polymers sealing materials according to international standards and drawings of customers which are used in thermal power engineering, oil refining and petrochemical industries. Our flange and gland seals of all types guarantees reliable sealing of any types of connections:

We produce gaskets with a diameter of up to 4 meters operating at pressures up to 50 Mpa and temperatures up to 650°C in aggressive environments and high speeds shaft rotation.

LLC "CARBON-POLYMER" annually produces up to 100,000 sealing products.

At present, the main distinguishing features of our company is: High quality of the products offered, guarantee of trouble-free operation of equipment of any complexity level and fulfillment of orders as soon as possible.

Our customers in the Uzbekistan market are large enterprises such as: JSC "Navoi Mining and Metallurgy Combinat", JSC "Almalyk Mining and Metallurgical Combinat", JSC "Uzmetkombinat", JSC "Uzbekistan Railways", JSC "Uzbekenergo", JSC "Navoiazot" and other units of JSC "Uzkimyoimpex", LLC "Shurtan Gas Chemical Complex", LLC "Uzbekistan GTL" and other units of JSC "Uzbekneftegaz".

Hoping for fruitful cooperation, we present to your attention catalog of our company's products.

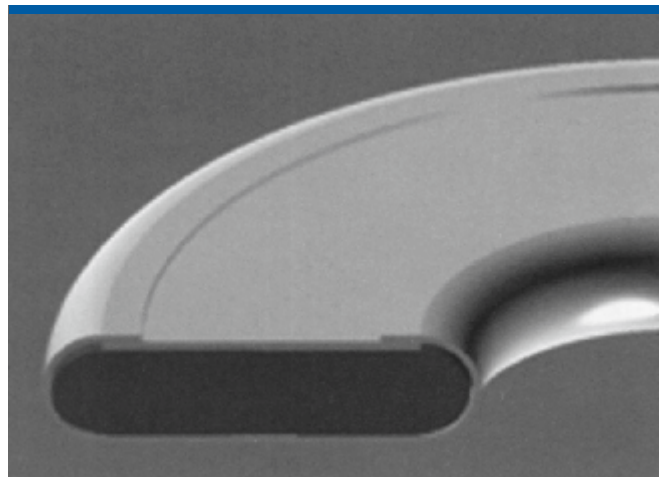
We hope to see you among our regular partners.



PRODUCTS:

- sheet non-asbestos gasket materials
- flanged graphite gaskets: reinforced with perforated stainless steel foil and not reinforced with graphite sheets
- special gaskets for heat exchangers
- flange gaskets on a steel base
- flange gaskets on a wave base
- flange rolled gaskets
- stuffing box rings and sets made of thermally expanded graphite
- stuffing box packings (based on thermally expanded graphite, fluoroplastic and special fibers)
 - spiral-wound SNP gaskets filled with thermally expanded graphite, fluoroplastic or mica
- metal gaskets: oval, octagonal, lens
- fluoroplastic gaskets
- rubber gaskets (MBS, acid-resistant)
- silicone gaskets.

FLANGED ROLLED GASKETS



Flanged rolled gaskets are used in various industries with aggressive environments and high temperatures. Because of gas-tight seals are especially in demand in gas processing industry. Used for sealing flange connections fittings, heat exchangers, vessels and pipelines.

MANUFACTURING

The filler material is completely enclosed by a two-component metal shell—internally and outer diameters, and along contact surfaces. Gaskets can be manufactured with a field width of 8 mm depending on the diameter, which can reach 4000 mm. The thickness of the gasket is ≥ 3.0 mm at filler thickness of at least 1.5 mm.

SIZES

Overall and mounting dimensions of gaskets correspond to flanges manufactured according to:

- GOST, OST, standards of manufacturers; international standards ASME, ANSI, API, DIN.
- It is possible to produce non-standard sizes and complex configuration, including with partitions for special orders in accordance with drawings (sketches) of the Customer.

PERFORMANCE CHARACTERISTICS

Working environment pressure	Up to 40 Mpa
Working environment temperature	From -200°C up to +600°C

MATERIALS

The following grades of steel are used as the steel shell material:

- steel 08X18H10T, 10X17H13M3T and other corrosion-resistant steels according to GOST 5632, Monel, nickel, titanium, aluminum, copper;
- steel 20, 35, 40 according to GOST 1050-88 and other carbon steels, as well as their foreign analogues. Maybe production of flange gaskets from other brands steels.





Graphite stuffing box rings and kits are used in chemical, petrochemical, gas, oil refining, industry, thermal and nuclear power for sealing stuffing box chambers, shut-off, regulating, protective and special fittings.

MANUFACTURING

Gland sealing rings and sets of them are manufactured from graphite material by cold pressing.

TYPES AND SIZES OF GLAND SEALING RINGS

Dimensions of stuffing box rings and sets of them correspond to the dimensions of standard stuffing box imported shut-off and control valves. It is possible to produce stuffing box rings of non-standard sizes and complex configurations according to special orders in accordance with the drawings (sketches) of the Customer.



PERFORMANCE CHARACTERISTICS

Working environment pressure	UP to 50 Mpa
Ensuring the tightness of the fittings during	10 000 round (cycle)
Working environment temperature	From -253°C up to +650°C
Density	1.3-1.7 g/cm³
Coefficient of friction on steel	Air 0.1-0.15 water, water steam 0.01-0.02

FLANGE GASKETS ON A STEEL BASE



Flange gaskets on a steel base are used in the chemical, petrochemical, oil refining, gas industry, thermal and nuclear energy for sealing flange connections of valves, heat exchangers, vessels and pipelines.

MANUFACTURING

Manufactured by applying graphite material on a serrated or smooth steel base pressing method.

PERFORMANCE CHARACTERISTICS

Working environment pressure	Up to 40 Mpa
Working environment temperature	From -200°C up to +800°C

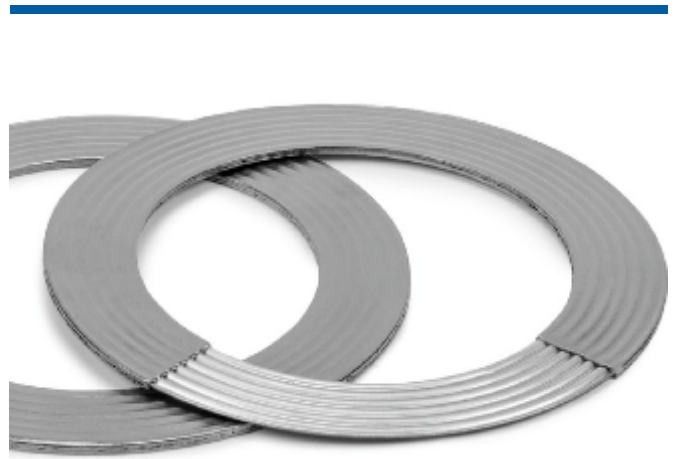
SIZES

Standard thicknesses from 2 to 4 mm. Diameter up to 4 m. It is possible to produce non-standard sizes and complex configuration for special orders in accordance with the Customer's drawings (sketches). Overall and mounting dimensions of gaskets correspond to flanges manufactured according to:

- GOST, OST, standards of manufacturers;
- international standards ASME, ANSI, API, DIN



FLANGE WAVE GASKETS



Wave based flange gaskets are used in the chemical, petrochemical, oil refining, gas industry, thermal and nuclear energy for sealing flange connections of valves, heat exchangers, vessels, and pipelines.

MANUFACTURING

The gasket is a flat metal ring with concentrically located wavy protrusions and depressions, in cross section representing a sinusoid, clad in two layers flexible graphite of varying thickness depending on requirements for the total thickness of the gasket. This structure gaskets give it additional strength but compression, bending, stretching, which is very important during transportation, installation and operation.

Gaskets are manufactured with standard sizes according to standards ASME B16.21 BS EN (DIN) 1514.4, BS EN12560-4 and other regulatory documents for flanged connections according to GOST 12815-12822, GOST 28759 33259-2015, ASME B16.5, ASME B16.47 BS EN (DIN) 1092.1 BS EN 1759-1. Upon request, wave gaskets of non-standard sizes: round, square, rectangular, oval shape with any types of jumpers.

PERFORMANCE CHARACTERISTICS

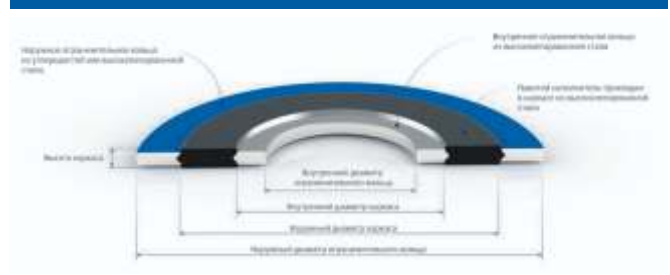
Working environment pressure	Up to 40 Mpa
Working environment temperature	From -253°C up to +1000°C

ADVANTAGES

1. Application in a wide temperature range.
2. High chemical resistance.
3. The shape of the gasket can have different configurations
4. High ability to compensate for defects sealing surface of the flanges.
5. Maintaining the tightness of the connection under thermal cyclic loads.



FLANGE SPIRAL WOUND GASKETS (SWG)



Spiral wound gaskets are designed to seal flange connections of fittings, pipelines, vessels, apparatus, pumps and components parts of equipment in the chemical, petrochemical, oil refining, gas and gas processing industry, thermal and nuclear energy and other industries.

MANUFACTURING

Spiral-wound gaskets are made by winding onto a mandrel alternating layers of a frame (metal tape of a V-shaped profile) and a filler - tape of thermally expanded graphite, fluoroplastic, mica. Spiral wound gaskets are round in shape, but can also be produced in rectangular, oval and other custom shapes upon request. Depending on the type of sealing surface, the gasket is equipped with an internal compression limiter and/or an external restrictive ring.

SIZES

Standard thicknesses of spiral-wound frame gaskets: 2.5 mm; 3.2 mm, 3.5 mm, 4.5 mm; 6.5 mm. It is possible to produce non-standard sizes up to 4 meters, in accordance with the Customer's requirements. Spiral-wound gaskets are manufactured according to: GOST, OST, standards of manufacturers; International standards ASME, ANSI, DIN.

PERFORMANCE CHARACTERISTICS

Working environment pressure	Up to 40 Mpa
Working environment temperature	From -253°C up to +650°C



FLANGE GRAPHITE GASKET

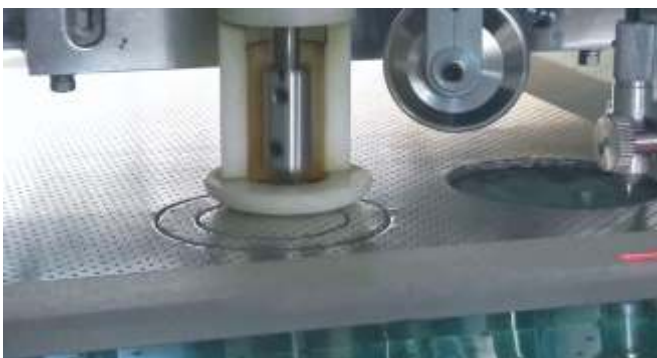


Flange graphite gaskets are used to seal flange connections of vessels and apparatus, pipelines and fittings in the chemical industry, petrochemical, oil refining, gas industry, thermal and nuclear energy.

MANUFACTURING

Flanged graphite gaskets are manufactured:

Made from graphite sheet reinforced with perforated stainless steel foil. Made from unreinforced graphite sheet by method cuttings or clippings. In order to avoid contact of the gasket material with an aggressive environment, or air at a temperature above +400°C, flange gaskets can be equipped with protective devices (shutters). To prevent possible damage seals are used to seal "loaded" connections in the design of flange gaskets compression limiters.



SIZES

Standard thickness is from 1 to 5 mm. Maximum outer diameter of seamless gaskets round molds up to 1500 mm. Seamless gaskets of complex configuration manufactured in widths up to 1.5 m and lengths up to 3 m. It is possible to produce non-standard sizes and complex configuration for special orders in accordance with the Customer's drawings (sketches). Overall and mounting dimensions of gaskets correspond to flanges manufactured according to: GOST, OST, standards of manufacturers; international standards ASME, ANSI, API, DIN, EN.

PERFORMANCE CHARACTERISTICS

Working environment pressure	Up to 40 Mpa
Working environment temperature	From -200°C up to +650°C

FRICION PAIR RINGS FOR MECHANICAL SEALS



Friction pair rings are the main sealing element of the end seals, which are two rings, smoothly ground on their side contact. The movable and stationary rings are pressed tightly against each other each other and prevent the medium from the sealing chamber from penetrating beyond equipment. The sealing surfaces are pressed against each other due to the hydraulic force of the fluid being compacted and the compression force of the spring (seal design). In this way a compaction is formed, preventing leakage of medium between the rotating part (shaft) and the stationary part of the pump.

WE MANUFACTURE friction pair rings for end seals according to drawings or samples provided by the Customer.

LIST OF MATERIALS from which we manufacture friction pair rings for seals:

- silicon carbide,Q1 (SiC);
- silicon carbide,Q2 (SiC+Si);
- siliconized graphiteSG-P,Q3 (SiC+C+Si);
- carbon graphite impregnated with antimony,A;
- carbon graphite impregnated with synthetic resin, B;
- graphite impregnated with lead AG1500-CO5;
- tungsten carbide with cobalt binder,U1
- (WC+Co);
- tungsten carbide with nickel binder,U2 (WC+Ni);
- tungsten carbide with cobalt and nickel bundles, U3 (WC+Co+Ni).

Working environment pressure	From 10 up to 40 Mpa
Working environment temperature	From -40°C up to +500°C



Please note that the products will work reliably and for a long time only when the equipment provides the necessary and sufficient conditions for compaction. In approximately 90% of cases, the main determining factors factors influencing the accelerated failure of mechanical seals are inappropriate conditions installation and operation, unsatisfactory technical condition of the equipment.



Metal oval, octagonal, lens gaskets are designed for sealing special flange connections of fittings and pipelines in equipment operating in environments with high temperature and pressure.

MANUFACTURING

Metal gaskets are manufactured using mechanical processing on machines; metal gaskets can be produced with various section shapes.

PERFORMANCE CHARACTERISTICS

Working environment pressure	Up to 42 Mpa
Working environment temperature	From -70°C up to +600°C

SIZES

Overall connecting dimensions of metal gaskets correspond to flanges manufactured according to:

- GOST, Ost, standards of manufacturers:
- International standard ASME, ANSI, API, DIN:
- Oval gaskets: from DN10mm to DN600mm:
- Octagonal gaskets: from DN400mm to DN1600mm
- Lens spacers: from DN10mm to Dn400mm.





Gland packings are designed to seal movable and fixed joints fittings, pumps, machines and apparatus, pipelines operated on enterprises of all industries and utilities.

GLAND PACKINGS TYPES

Gland Packings based on thermally expanded graphite.

They have a low coefficient of friction, high elasticity and are used for sealing rods and shafts operating at low and medium pressure.

Gland Packings based on expanded fluoroplastic.

They have a low coefficient of friction, high chemical resistance and are used for sealing highly aggressive environments.

Gland Packings based on aramid fibers.

They have high strength characteristics and are used to retain media with high pressure and high abrasive ability.

Carbon fiber based gland packings.

They are distinguished by high strength characteristics and high inertness to various environments. Used as closing rings in compositions sets.

Combined packings.

Combining all of the above materials. Used for difficult sealing cases. To give the packings additional properties, Various types of impregnations are used.

PERFORMANCE CHARACTERISTICS

Ph Working environment	From 0 to 14
Working environment pressure	Up to 50 Mpa
Working environment temperature	From -200°C up to +1100°C
Linear sliding speed	Up to 30m/sec



SEALING GRAPHITE RIBBONS



Sealing graphite tape is used for sealing flange and threaded joints of valves, pipelines, heat exchangers in various industries.

PRODUCTION

Graphite tape is a roll material obtained by cutting foil from thermally expanded graphite. Tape technology is a unique solution for express repair. Sealing tapes serve to seal fixed detachable joints of complex shape and large overall dimensions.

ADVANTAGES

1. Application in a wide temperature range.
2. High chemical resistance.
3. The ability to manufacture a seal of the required size directly on the flange at the installation site.
4. Working pressure: up to 50.0 MPa
5. Working medium: natural gas, steam, water, petroleum products, organic solvents and other media.

CHALLENGES TO BE SOLVED

1

Recovery metal. oval rings. or octagonal sections



2

Formation gaskets on flange



3

Recovery damaged seals



4

Recovery surfaces flange







5

Seal threads



Recommended Ribbon Brands

Photo	Symbol
	Finely corrugated self-adhesive tape, unreinforced
	Corrugated self-adhesive tape, unreinforced
	Smooth tape, reinforced with polymer film
	Smooth self-adhesive tape reinforced with glass fiber Designed to seal threads with a diameter greater than 20 mm

GASKET SHEET MATERIALS



Gasket sheet materials are intended for the manufacture of gaskets used for sealing flanges and connecting parts of pipelines, fittings, machines, instruments, apparatus and tanks used in gas, petrochemical, food industry and public utilities.

PRODUCTION

Graphite Sheet Materials are manufactured the following types: reinforced with layers of perforated and flat stainless steel. Non-asbestos sheet materials are made based on composite fibers. Gaskets based on composite fibers are substitutes for asbestos-containing sealing materials (paronite).

PERFORMANCE CHARACTERISTICS

Working environment pressure	Up to 40 Mpa
Working environment temperature	From -200°C up to +800°C

SIZES

- Length: up to 3 m; Width: 1.5 m;
- Thickness: from 0.3 to 5 mm;



PTFE GASKETS



PTFE gaskets are rings made of Teflon, or as is customary fluoroplastic-4 (PTFE), are the sealing material of flange connections. The gasket must reliably seal any flange connections, the diameter of which varies from 10 to 1000 mm. It is worth noting that the fact that fluoroplastic when the temperature rises above +260 degrees Celsius, begins to actively lose its physical and mechanical properties. At temperatures above + 340 degrees Celsius, fluoroplastic begins to melt. This should be taken into account when choosing fluoroplastic gaskets as a sealant on certain types of pipelines.

PERFORMANCE CHARACTERISTICS

According to its performance characteristics fluoroplastic is significantly superior to other polymers.

The properties of the material have led to its wide use in a wide variety of industries, among which:

- food industry;
- nuclear power;
- aircraft manufacturing;
- automotive industry;
- medicine and pharmaceutical industry;
- chemical and petrochemical industry;
- instrument making;
- electrical engineering;
- light industry

PTFE seals are also used in plumbing, hot and cold water supply systems, heating and d/r. They are not squeezed out when tightening the connection, do not get wet, do not deteriorate due to temperature changes, and at the same time provide excellent tightness.

CHEMICAL RESISTANCE:

All mineral and organic acids, alkalis, organic solvents, oxidizing agents, gases.

Maximal working temperature	From -269°C up to +260°C
The best quality fluoroplastic gaskets withstand pressure	From 0.1 up to 30 Mpa
Density	2.17-2.2 g/cm²





Silicone gaskets are designed to seal two or more mating surfaces. They prevent leakage of liquids or gases, prevent the penetration of various contaminants from the outside.

BASIC PROPERTIES AND ADVANTAGES OF SILICONE GASKETS

They are made from organosilicon polymer compounds (siloxanes). Production based on a polymerization reaction and subsequent vulcanization with organic peroxides or γ -radiation.

Silicone gaskets are impact resistant atmosphere, temperature changes, and the action of reagents. They demonstrate ablative stability, i.e. Not are destroyed under mechanical, thermal and thermo-oxidative loads. According to this indicator they superior to all other polymer seals.

Silicone gaskets retain their functions in temperature range: -60°C to $+250^{\circ}\text{C}$.

The main advantages of silicone gaskets:

- Wide operating temperature range
- Resistance to pressure, radiation, compression, electromagnetic influence and aggressive environments
- High strength
- Dielectric properties
- Excellent flexibility
- Lack of smell and taste
- Hygienic and non-toxic
- Long service life
- Non-flammability



SILICONE GASKET APPLICATIONS

Silicone gaskets are widely used in energy – thanks to their excellent sealing properties and heat resistance, they provide a long-lasting seal of heating pipes.

Silicone gaskets are used in electrical applications when laying a cable to insulate it and protect it from external influences.

Due to the chemical neutrality and environmental safety of silicone, gaskets made from this material are widely used in the food industry -for sealing chambers, units, containers in contact with food.

Silicone gaskets are also used for medicine production – for filling equipment, sterilization, etc. In everyday life, silicone gaskets are used for laying pipes and assembling plumbing fixtures (faucets, boilers, sinks).

In household appliances they perform a sealing function; in watches they are used for protection. working mechanisms from the ingress of dust, dirt and foreign objects.

In aircraft construction using silicone gaskets seal, insulate, seal aircraft systems and components. Gaskets in cars made of silicone provide a tight seal valve cover. In this way it is possible to avoid oil leaks and penetration of various contaminants into the engine.

Great importance when choosing silicone sealing materials for cars does not play only their resistance to high temperatures, but also their ability not to be destroyed under the influence of petroleum products.

APPLICATION OF SILICONE GASKETS IN INDUSTRY:

- aerospace
- electric
- chemical
- Surgical and food industry
- Office machines
- Electrical safety
- Wire and cable sheathing
- Conductive profiled silicone seals

RUBBER SEALING RINGS



O-ring sealing device torus-shaped. Used in hydraulic, fuel, lubricant and pneumatic devices, namely in regulators, valves and other moving and fixed connections.

BASIC PROPERTIES

O-rings are necessary to maintain a tight seal, including protection against ingress gaseous or liquid medium inside. Can be made from different types of rubber.

Working environment pressure	Up to 40 Mpa
Working environment temperature	From -50°C up to +140°C

OIL AND PETROL RESISTANT MBS

Oil and petrol resistant options, as follows from names, little susceptible to chemical influence petroleum products such as diesel fuel, fuel oil, gasoline, lubricants, mineral and synthetic oils, water, fats, gases such as butane and propane, alcohol, acids (diluted), salts, 40% aromatic substances. Moreover, they are characterized high elasticity and low residual deformation. They are also called petrol resistant (on based on properties) and NBR rings (based on the original material).





Fluorine rubbers – synthetic fluorine-containing high molecular weight elastomers that have high wear resistance, heat resistance and chemical resistance to a wide variety of aggressive environments, such as acids, organic solvents, fuel, various lubricants, oils, etc. They designed to operate in harsher environments than those typically experienced natural and hydrocarbon rubbers are used.

PERFORMANCE CHARACTERISTICS

Fluorine rubber, the properties of which are insignificant vary depending on molecular composition, used in the following industries:

- automotive industry;
- oil refining complexes;
- transport and chemical industry;
- pharmacy and food industry.

HIGHLY RESISTANT

Petroleum products
 Fuel or mixture with methyl or ethyl alcohols
 Diesel or mixtures with biodiesel
 Mineral oils and lubricants
 Silicone oils and greases
 Strong vacuum
 Ozone, weather conditions and high temperature air
 Strong acids

WORKING TEMPERATURE:

Working environment pressure	Up to 16 Mpa
Working environment temperature	From -40°C up to +200°C

LOW STABILITY

Ketones
 Low molecular acids (formic and acetic acids)
 Superheated steam
 Low molecular weight ethers and esters
 Hydraulic fluids based on phosphoric acid esters



WE CREATE THE MOVEMENT!

Uzbekistan, Almalik city, Totuvlik street -5

Tel.: +99870 613 79 10

Fax: +99870 613 78 91

E-mail: kva-servis@mail.ru, carbonpolymer@mail.ru

www.uzkva.com, www.carbon-polymer.uz