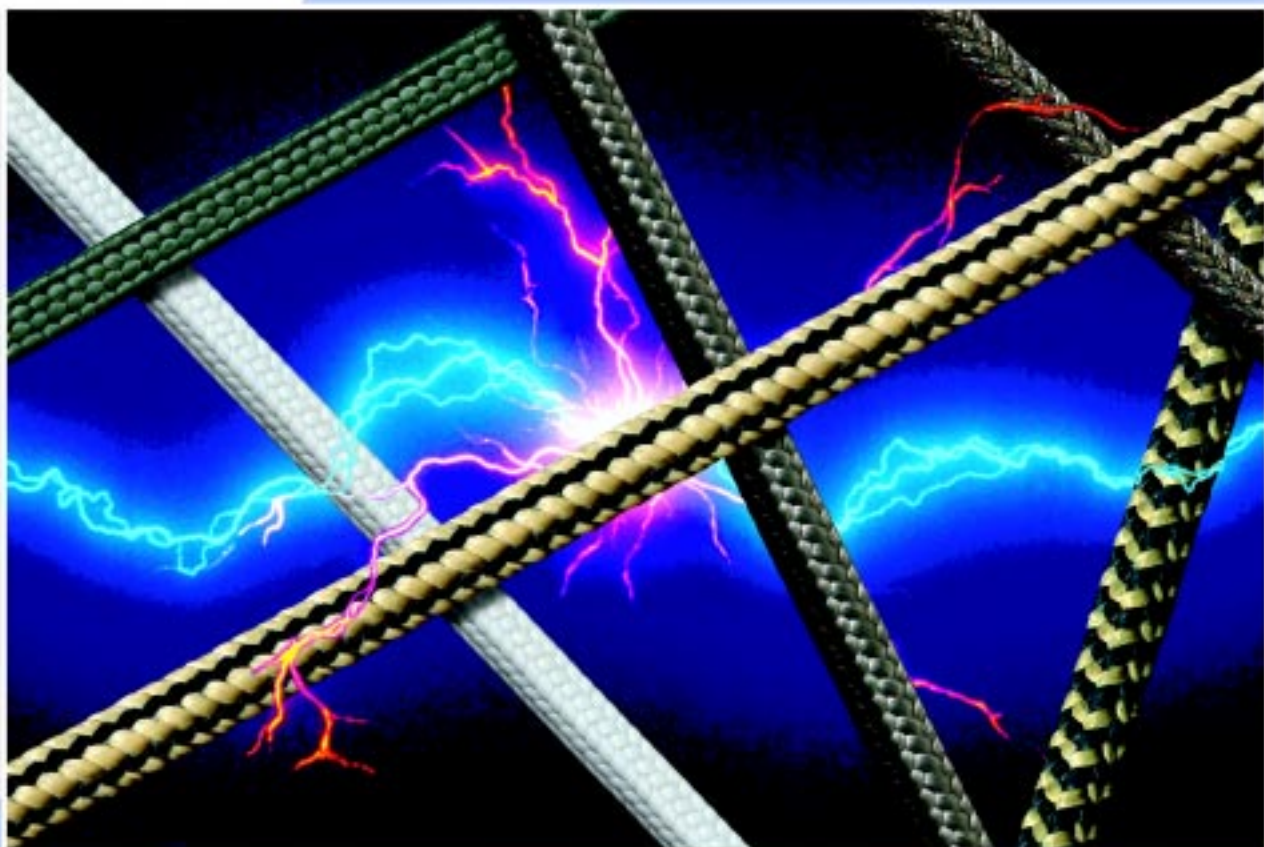




ISO 9001
ISO/TS 16949
ISO 14001
OHSAS 18001



BRAIDED PACKINGS

The company **GAMBIT Lubawka** has been established in 1962 and now is the leading Polish manufacturer of sealings and heat-insulations. The position of **GAMBIT** results not only from the manufacturing of perfect sealing and heat-insulating materials, but also from the wide customer service programme and from the very experienced consulting personnel.

The Company's mission is the manufacturing of high-quality, environment-friendly sealing, heat-insulating, rubber and brake materials and the sales thereof on the local and foreign market.

The products quality guarantee are, among others, the acquired quality certificates: **ISO 9001, ISO 14001, ISO/TS 16949**. The co-operation with the world-wide manufacturers (**Du Pont, LAPINUS FIBRES, W.L.GORE&Associates GMBH, Lenzing, Saint-Gobain Vertex**) secures not only the highest quality of raw materials used in production, but also allows the continuous improvement of products.

The own design office, research laboratories and highly qualified technical personnel are the source of innovations and secure the elastic response to the customer's questions. The top-modern stock of machine tools allows the perfect performance of standard GAMBIT products, as well as the individual and specific customer's orders.

GAMBIT Lubawka Ltd. offers:

- gasket sheets
- **braided packings for dynamic and static applications**
- heat-insulating cords and sealants
- heat-insulating boards and sheets
- high-temperature insulating fabrics and tapes
- textile compensators
- woven and pressed friction linings
- rubber, rubber-metal sealings and products
- rubber mixtures
- gaskets made of gasket sheets
- sealings and fittings made of heat-insulating material
- copper seals and washers
- copper rings with the sealing filling
- spiral wound gaskets



GAMBIT BRAIDED PACKINGS

Braided packings GAMBIT series are high quality products used in many branches of industry. Thanks to co-operation with the world-wide manufacturers of raw materials, modern machines and over forty-year-experience in the field of manufacturing, GAMBIT braided packings can satisfy requirements of the most demanding customers.

Due to the place of application the packings could be divided into two groups:

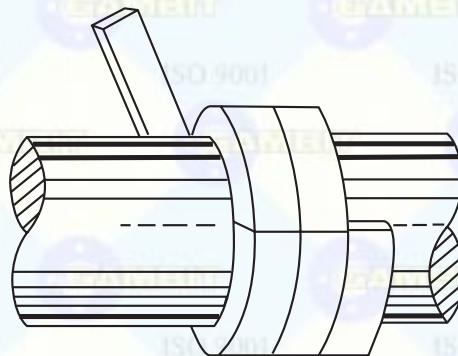
Packings for dynamic applications are the oldest and until now most common method of sealing used in pumps and fittings, thanks to ease of their usage, flexibility, durability and a relatively low price. Achievements of material engineering, new components and specialized compositions of materials combined with a proper assembly and exploitation guarantee more durable sealings of glands, fittings and shafts, mixers and mills. In connection with their working conditions, special compositions of yarns and impregnates are used in the production of the packings. They are used in all branches of industry, especially in chemistry, power engineering and municipal economy.

Packings for static applications, used as stuffings in elements of machines and devices, as well as all kinds of seals where the most important parameter is the temperature and pressure. Packings for static applications are produced of specially chosen yarns and impregnates. They are commonly used in metallurgy, power engineering, foundry, as well as in chemical and machine building industry.

GAMBIT packings are produced of natural yarns (mostly cotton), synthetic yarns (polyacrylonitrile, aramide), pure and modified PTFE yarns (filled with graphite, impregnated with oil), graphite yarns, carbon and ceramic yarns.

Pumps packings installation instructions:

1. Remove old packing from the stuffing box, clean the chamber and the shaft thoroughly, check the shaft or the sleeve. In case of excessive wear the sleeve it should be regenerated or replaced.
2. Choose the right size of the packing. It is needed to measure the diameter of the shaft or the sleeve and the outer diameter of the chamber in the sealing zone. Half of the difference between the diameters makes the demanded size of the packing.
3. The correctly cut packing and pressed in rings should be use for the montage in the chamber. In practice there are different methods of measuring a single length of the packing. However, the most popular is winding the packing around the pump's shaft taken out of the box or, better, around a wooden shaft of a diameter equal to the diameter of the pump's shaft in the sealing zone. The way of winding and cutting the packing shows the picture. The packing should be lightly tightened during cutting, but not stretched.



Pic. 1 The way of cutting the lengths of braided pumps packings.

4. The most effective method is applying pressed rings out of the chamber. In such a case the diameter of the press seat should be 0.05 mm bigger than the diameter of the shaft and same submeasure for the diameter of the stuffing box.
5. Pressed rings or suitably cut lengths of the packing are to be inserted individually into the chamber. Check whether the space to be sealed is properly filled, so that there is not an interstice between the ends of the ring. Next, by the means of a split sleeve, the rings are moved down to settle on the bottom of the box. Further rings are inserted in the same way moving the place of joining by 90° lightly pressing them onto formerly placed packings. It is advisable to turn the shaft at the same time in order to better form a single seals in the gland.

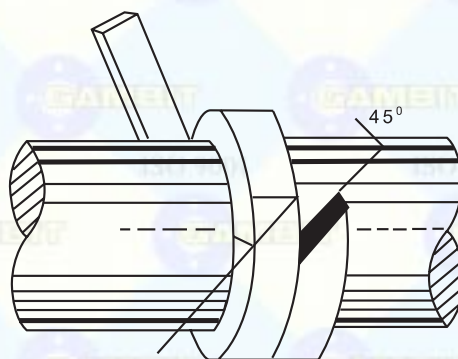
6. After placing the last ring in the chamber apply a gland. Manually fix the screws or lightly tighten them with a screw driver.
7. To ensure the proper work of the gland, the height of the sealing pack should be smaller than the length of the stuffing box by at least a half of the thickness of the packing.
8. Start the pump after filling it with a sealed medium. At the beginning the packing must leak, even the leakage is substantial. The leak in the first period of work will result in essential increase of the packing's durability. In this period the volume of the seal increases due to thermal expansion and absorption of the sealed medium. As the result of it the packing gets thicker and its pressure on the shaft increases, what causes self-sealing of the gland. In case the leak stops during the period, the gland should be loosen to get the leakage back.
9. After about 1 hour the gland should be gradually and evenly pressed. In most cases the nuts are screwed every 5 minutes by 1/6 of a turning. The pressing is continued until the leak reaches the level of 3-4 drops a minute per each centimeter of the shaft's diameter. For a proper function of the pumps packing the leak is essential. If the gland is screwed too tightly, what results in increased temperature and leak stop, the packing could be destroyed and the shaft or sleeve damaged.
10. During the use the leaks should be checked at least daily. In case of excessive leaks their level should be adjusted as described in point 9.
11. The total tightening the gland during use cannot exceed 40% of the initial height of the seal. Upon reaching that level, the packing must be replaced, because the packing causes most damage in the final period of use, when it lacks lubrication and has absorbed frictional particles from the sealed medium, as well as the products of the shaft's wear.

In case of the packing of centrifugal pumps the rotational speed of the shaft in relation to the seal is relatively high. As a result of it substantial amount of heat is emitted. Proper installation and use are the guarantee of the minimization of the thermal energy and its elimination from the friction zone.

Fittings packings installation instructions:

The movable part of the sealing knot in fittings rotates relatively slowly and sometimes it is associated with a certain limited on-axis movement. Slow rotary movements and thus relatively little friction energy released allow to use much stronger pressure of the gland and consequently almost leakproof work of the sealant. However, at the same time the increased pressure along with substantial interstices between the spindle and the housing of the stuffing box result in negative extrusion of the packing into the interstice. Therefore the packings used in fittings should have more compact structure and be more resistant to extrusion, than the pumps packings. In order to install the packing into the fittings' glands properly, the following steps are to be taken:




1. Prepare and place in the chamber a suitable sealing rings, according to the above instructions for pumps described in points 1-5.
2. Press the gland until a strong resistance is felt. At the same time turn the spindle of the valve in order to determine the possibility of the valve's adjustment.
3. After the valve is installed in technology line, the leakage should be controlled and after about 1 day of the use the gland should be tightened, even there is no leakage. In case of any leakage it should be stopped by tightening of the gland.















Pic. 2 The way of cutting the length of braided fittings packings.

All information presented in the catalogue is based on the many-years' experience in packings production and use. Because many of factors may affect the work of the packing in the stuffing box (e.g. the way of assembly, installation parameters, sealed medium) the referenced technical parameters are of approximate nature only and are not the basis for any claim. The specific application of the product require contact with the producer.









































Packings sizes and applications





































| Type of the packing |  |  |  | Static | Size range mm |
|---------------------|---|---|---|--------|---------------|
| 6055 | | | • | • | 8-25 |
| 605 | • | | | | 6-25 |
| 6051 | | | • | • | 6-25 |
| 645 | • | | • | | 6-25 |
| 6080 | | • | • | • | 4-25 |
| 6081 | • | • | • | | 4-25 |
| 608 | • | | • | • | 4-25 |
| 6084 | • | | | | 4-25 |
| 6085 | • | | | | 4-25 |
| 6088 | | • | • | • | 4-25 |
| 6086 | • | | | | 6-25 |
| 6087 | | • | • | • | 6-25 |
| 611 | • | • | • | • | 4-60 |
| 621 | • | • | • | • | 4-60 |
| 641 | • | • | • | • | 4-60 |
| 616 | | | | • | 4-60 |
| 626 | | | | • | 4-60 |
| 636 | | | • | • | 6-30 |
| 646 | | | | • | 6-30 |
| 6491 | • | • | • | • | 4-25 |
| 6493 | | • | • | • | 4-25 |
| 6493 GM | • | • | • | • | 4-25 |

• recommended packing

| Type and operating parameters | | | | Description | | |
|--|-------------|---|---|---|--|-----|
|  | 6055 |  |  |  | Packing made of expanded graphite yarn, specially reinforced. Recommended for use in fittings at very high temperatures and highest pressures, in contact with water, steam water, oils, solvents, acids and alkalis except for strong oxidants. Corrosion inhibitors incorporated in the packing structure protect cooperating elements against electrochemical corrosion. The material is not recommended for contact with liquid metals and abrasive media. | |
| | | T_{max} °C | -200°C + 600°C/2500°C* | | | |
| | | p_{max} bar | - | - | | 600 |
| | | V_{max} m/s | - | - | | 1,5 |
| | | pH | | 0-14 | | |
|  | 605 |  |  |  | Packing braided of expanded graphite yarn, led on a natural fibre thread. Recommended for use in centrifugal pump glands and fittings in temperatures up to 450°C, for contact with water, steam water, oils, solvents, acids and alkalis, except strong oxidants. Not recommended for contact with abrasive agents. A good technical state of the stuffing box is a must. Recommended especially for power engineering and heat engineering. | |
| | | T_{max} °C | -200°C + 600°C/2500°C* | | | |
| | | p_{max} bar | 40 | - | | 200 |
| | | V_{max} m/s | 40 | - | | 2 |
| | | pH | | 0-14 | | |
|  | 6051 |  |  |  | Packing made of reinforced yarn of expanded graphite. Recommended for use in fittings glands at very high temperatures and highest pressures, in contact with water, water steam, oils, solvents, acids and alkalis, except strong oxidants. The material is not recommended for contact with liquid metals and abrasive media. Especially recommended for power and heat engineering | |
| | | T_{max} °C | -200°C + 600°C/2500°C* | | | |
| | | p_{max} bar | - | - | | 320 |
| | | V_{max} m/s | - | - | | 2 |
| | | pH | | 0-14 | | |

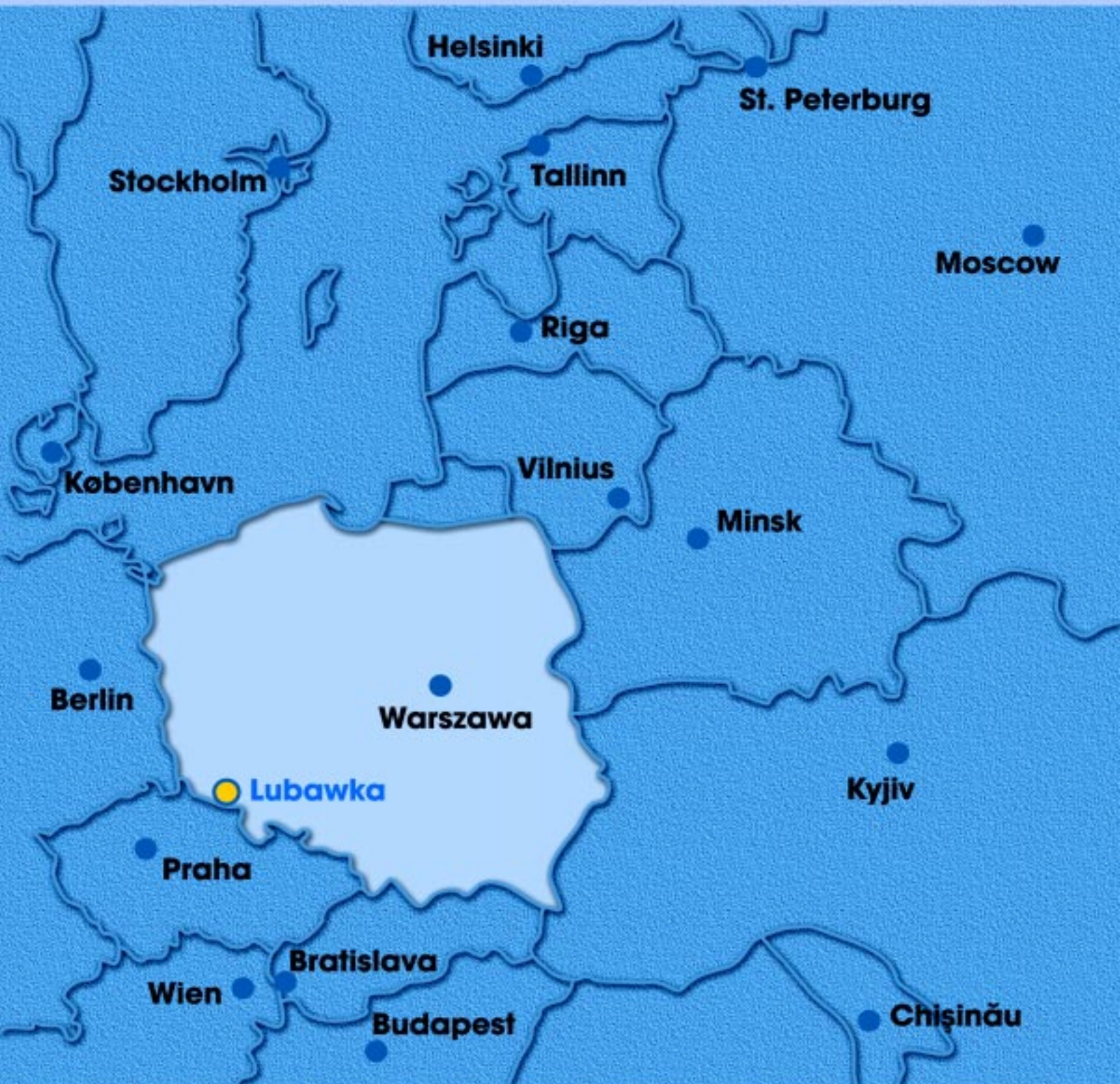
* in oxygene-free atmosphere

| Type and operating parameters | | | | Description | | | |
|--|------|---------------|---|--|--|-----|-----|
|  | 645 | |    | Packing braided of expanded pure graphite, led on a natural fibre thread, impregnated PTFE. Recommended for use in centrifugal pump glands and fittings for contact with water, water steam, oils, solvents, acids and alkalis, except strong oxidants. Not recommended for contact with abrasive agents. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | 25 | | | - | 100 |
| | | V_{max} m/s | 20 | | | - | 2 |
| | | pH | 0-14 | | | | |
|  | 6080 | |    | Packing made of pure PTFE yarn, without any lubricants. It is recommended for static applications and, at low speed, in reciprocating pumps, when absolute cleanness of the sealed medium is required: food, drinking water, medicines. It can be used in chemical industry, pharmaceutical industry, food processing and petrochemical industry. | | | |
| | | T_{max} °C | -150°C ÷ 280°C | | | | |
| | | p_{max} bar | 8 | | | 60 | 150 |
| | | V_{max} m/s | 8 | | | 2 | 2 |
| | | pH | 0-14 | | | | |
|  | 6081 | |    | Packing braided of pure PTFE yarn, saturated with impregnate without silicone oil. Resistant to water, steam water, oils, fuels, solvents, acids, alkalis, except strong oxidants. Approved by PZH (National Institute of Hygiene) for contact with food and drinking water. Recommended for use in centrifugal pumps, reciprocating pumps and industrial fittings, especially in food processing, chemical and pharmaceutical industry and water treatment stations. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | 10 | | | 20 | 20 |
| | | V_{max} m/s | 10 | | | 2 | 1 |
| | | pH | 0-14 | | | | |
|  | 608 | |    | Packing made of PTFE yarn, filled with graphite and saturated with oil. Recommended for pumps and fittings, in contact with water, steam water, oils, solvents, acids and alkalis, except strong oxidants. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | 20 | | | 100 | 100 |
| | | V_{max} m/s | 10 | | | 2 | 2 |
| | | pH | 0-14 | | | | |
|  | 6084 | |    | Packing braided of the highest quality PTFE yarn, filled with graphite and impregnated with oil. The packing is exceptional soft and flexible, characterized by a low friction factor and high thermal conduction. Recommended for high-speed centrifugal pumps glands and fittings, in contact with water, steam water, oils, solvents, acids and alkalis, except strong oxidants. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | 20 | | | - | - |
| | | V_{max} m/s | 15 | | | - | - |
| | | pH | 0-14 | | | | |
|  | 6085 | |    | Braided packing made of top quality GORE 100% GFO [®] yarn. Recommended mainly for centrifugal pumps in all branches of industry and economy. Thanks to its high resistance to media, such as water, steam water, oils, fuels, acids and alkalis, it could be applied in chemical industry, power engineering and municipal economy. Due to perfect thermal conduction the packing is recommended for high-speed centrifugal pumps. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | 20 | | | 150 | 200 |
| | | V_{max} m/s | 25 | | | 2 | 2 |
| | | pH | 0-14 | | | | |
|  | 6088 | |    | Packing made of GORE G4 yarn, composed of PTFE and graphite, with no lubricants. It is recommended especially for reciprocating pumps and fittings. It can work in water conditions, steam water, fuels, oils, solvents, as well as acids and bases, except strong oxidants. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | 50 | | | 200 | 300 |
| | | V_{max} m/s | 8 | | | 5 | 2 |
| | | pH | 0-14 | | | | |
|  | 6086 | |    | Packing braided of PTFE yarn, filled with graphite and aramide yarn. Thanks to the special braid the aramide yarn reinforces the whole cross-section of the packing, what results on its high mechanical resistance and low friction factor. It fits well in the stuffing box. Recommended for use in centrifugal pumps and other machines working in water conditions, hot water, most acids and bases, fuels, oils and solvents, as well as suspended solids in those media. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | 20 | | | - | 300 |
| | | V_{max} m/s | 20 | | | - | 2 |
| | | pH | 0-14 | | | | |
|  | 6087 | |    | Packing made of PTFE yarn, filled with graphite and aramide-yarn. Aramide yarn reinforces the corners of the packing, increasing its mechanical resistance. Recommended for pumps working with highly abrasive media. It is also recommended for reciprocating pumps, where the reciprocating motion soon damages classical packings. Its chemical resistance allows to use it in contact with water, fuel, oils, solvents and medium-strength acids and alkalis. | | | |
| | | T_{max} °C | -200°C ÷ 280°C | | | | |
| | | p_{max} bar | - | | | 200 | 300 |
| | | V_{max} m/s | - | | | 5 | 2 |
| | | pH | 0-14 | | | | |
|  | 611 | |    | Braided packing made of cotton yarn impregnated with a composition of lubricants, enriched with graphite. Its softness and flexibility is guaranteed by a special braid. The lubricant decreases friction and eliminates heat from the friction zone. It is recommended for fittings and high-speed centrifugal pumps working in contact with water, steam water, oils, as well as medium-strength acids and bases. | | | |
| | | T_{max} °C | -30°C ÷ 120°C | | | | |
| | | p_{max} bar | 10 | | | 20 | 60 |
| | | V_{max} m/s | 5 | | | 1,5 | 2 |
| | | pH | 0-14 | | | | |

| Type and operating parameters | | | | | Description | |
|--|---------------|---|---|---|---|-----|
|  | 621 |  |  |  | Braided packing made of cotton yarn impregnated with a composition of lubricants, enriched with talc. It could be used wherever any contamination with graphite is unacceptable. Recommended for pump glands and fittings in drinking water installations, laundries, dyehouses, textile and chemical industry. Especially recommended for mining industry. | |
| | | T_{max} °C | -30°C ÷ 120°C | | | |
| | | p_{max} bar | 10 | 20 | | 60 |
| | | V_{max} m/s | 5 | 1,5 | | 2 |
| | | pH | 5-9 | | | |
|  | 641 |  |  |  | Packing made of cotton yarn, saturated with a special impregnate on PTFE basis. It is universal packing, recommended for pumps and fittings in all branches of industry and in municipal economy. It is resistant to water, oils, fuels, lubricants and solvents, as well as to water saline solutions, weak acids and bases. | |
| | | T_{max} °C | -50°C ÷ 120°C | | | |
| | | p_{max} bar | 8 | 60 | | 150 |
| | | V_{max} m/s | 8 | 2 | | 2 |
| | | pH | 0-14 | | | |
|  | 616 |  |  |  | Packing braided of reinforced ceramic yarn, impregnated with a composition of lubricants and graphite. Especially recommended for static use in contact with water, steam water, saline solutions, medium-strength acids and bases, as well as mineral oils. The packing is resistant to the high temperatures. | |
| | | T_{max} °C | -200°C ÷ 800°C | | | |
| | | p_{max} bar | - | - | | 45 |
| | | V_{max} m/s | - | - | | 1 |
| | | pH | 2-9 | | | |
|  | 626 |  |  |  | Packing made of reinforced ceramic yarn impregnated with a composition of lubricants and talc. Thanks to the ceramic yarn it is resistant to the high temperatures. Especially recommended for low and medium-pressure fittings and static use, for contact with water, steam water, saline solutions, medium-strength acids and bases, as well as mineral oils. Recommended for iron and steel industry. | |
| | | T_{max} °C | -200°C ÷ 800°C | | | |
| | | p_{max} bar | - | - | | 45 |
| | | V_{max} m/s | - | - | | 1 |
| | | pH | 2-9 | | | |
|  | 636 |  |  |  | Packing made of reinforced ceramic yarn, saturated with elastomers impregnate with the high graphite content. Used in parts of machines and devices working in open air, water, saturated and overheated water steam. The packing is specially recommended for high temperature and high pressure fittings in power and heat engineering. | |
| | | T_{max} °C | -200°C ÷ 550°C | | | |
| | | p_{max} bar | - | - | | 100 |
| | | V_{max} m/s | - | - | | 2 |
| | | pH | 0-13 | | | |
|  | 646 |  |  |  | Braided packing made of ceramic yarn saturated with a special impregnating composition on PTFE basis. It is especially recommended for fittings, for contacts with water, water steam, saline solutions, acids, except phosphoric acid and hydrofluoric acid and for medium-strength alkalis. | |
| | | T_{max} °C | -200°C ÷ 280°C | | | |
| | | p_{max} bar | 25 | - | | 100 |
| | | V_{max} m/s | 8 | - | | 2 |
| | | pH | 2-13 | | | |
|  | 6491 |  |  |  | Packing braided of synthetic yarn of high thermal and chemical resistance, saturated with impregnating composition on PTFE basis. The packing is especially recommended for water steam as well as high pressure pumps and fittings in contact with water, saline solutions, medium-strength acids and alkalis and organic media such as fuels, oils, lubricants or solvents. It is used in all branches of industry and municipal economy. Especially recommended for papermaking industry | |
| | | T_{max} °C | -200°C ÷ 280°C | | | |
| | | p_{max} bar | 20 | 80 | | 100 |
| | | V_{max} m/s | 15 | 2 | | 2 |
| | | pH | 1-13 | | | |
|  | 6493 |  |  |  | Braided packing made of aramide yarn of high resistance to mechanical and chemical factors, suitable for elevated temperatures. Recommended for high-pressure pumps and fittings, in contact with water, steam water, saline solutions, medium-strength acids and bases and organic media such as fuels, oils, lubricants or solvents, as well as for abrasive media. Applicable in all branches of industry and in municipal economy. Especially recommended for mining industry. | |
| | | T_{max} °C | -200°C ÷ 280°C | | | |
| | | p_{max} bar | 25 | 100 | | 100 |
| | | V_{max} m/s | 8 | 2 | | 2 |
| | | pH | 2-13 | | | |
|  | 6493GM |  |  |  | Packing braided of synthetic yarn, impregnated with a special lubricant. It could be used in pumps and fittings both as seal or a sealing ring for other types of packings. Recommended for media including abrasive particles: sand, gravel, woodpulp and for installations working in water steam conditions, water and chemical media, e.g. in power engineering, petrochemical, chemical industry. | |
| | | T_{max} °C | -200°C ÷ 280°C | | | |
| | | p_{max} bar | 25 | 100 | | 100 |
| | | V_{max} m/s | 20 | 10 | | 2 |
| | | pH | 3-13 | | | |

Temperatures and pressures referenced in the catalogue are the maximum values. Those data are not finally and they depend on particular application.

The products presented in the catalogue are the most popular braided packings GAMBIF series. In our offer you could find a wide range of other products, aimed at individual requirements of our clients. At customer's request it is possible to realise the non-standard packing, on the new yarns or lubricants basis.



Warszawa - 480 km, Berlin - 280 km, Bratysława - 340 km, Praha - 170 km, Wien - 320 km, Budapest - 490 km, Kyjiv - 1240, Moscow - 1700 km



GAMBIT Lubawka Sp. z o.o.

58-420 Lubawka, ul. Wojska Polskiego 16, Poland
tel.: +48 75 74 49 301-307; fax: +48 75 74 49 310

e-mail: export@gambit-lubawka.pl www.gambit-lubawka.pl