

The following guidelines are designed to ensure the optimum performance of a reliable flange connection.

1. Choosing the gasket

There are many factors which must be taken into account when choosing a gasket material for a given application including temperature, pressure and chemical compatibility. Please refer to the information given in our data sheets or, for advice to our gasket calculation software program KLINGER®expert. If you have any questions regarding the suitability of a material for a given application please contact KLINGER Technical Department.

2. Gasket thickness

The gasket chosen should be as thin as technically possible. To ensure optimum performance a minimum thickness/width ratio of 1/5 is required (ideally 1/10).

3. Flange connection

Ensure all remains of old gasket materials have been removed and the flanges are clean, in good condition and parallel.

4. Gasket dimension

Ensure gasket dimensions are correct. The gasket should not intrude into the bore of the pipework and should be installed centrally.

5. Gasket compounds

Ensure all gaskets are installed in a dry state. The use of gasket compounds is not recommended as this has a detrimental effect on the stability and load bearing characteristics of the material. In its uncompressed form the gasket can absorb liquid and this may lead to failure of the gasket in service. To aid gasket removal, KLINGER materials are furnished with a non-sticking finish.

Selecting gaskets with pT diagrams

Maximum temperature and pressure values alone cannot define a material's suitability for an application. These limits are dependent upon a multiplicity of factors like flanges, bolts, installation, process control, fluctuating loads etc. The pT-diagram therefore provides only guidelines.

The areas of the pT-diagram

- ① In area one, the gasket material is normally suitable subject to chemical compatibility.
- ② In area two, the gasket material may be suitable but a technical evaluation is recommended.
- ③ In area three, do not install the gasket without a technical evaluation.

Always refer to the chemical resistance of the gasket to the media.

KLINGER®expert – our versatile gasket calculation software

For technical evaluation we recommend our gasket calculation program KLINGER®expert. This versatile software assists users in the selection of non-metallic gasket materials. Please register directly on our website www.klinger.co.at/en/services for free download.

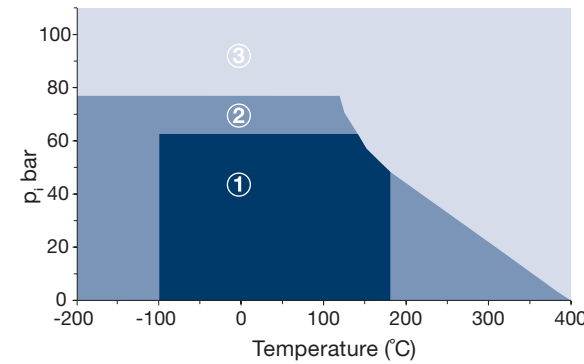
MATERIAL FINDER – Safe and reliable selection of suitable gasket materials

The KLINGER Dichtungstechnik material finder enables a fast definition of the required material for almost any need.

The selection is based on the requirements from the industrial application considering:

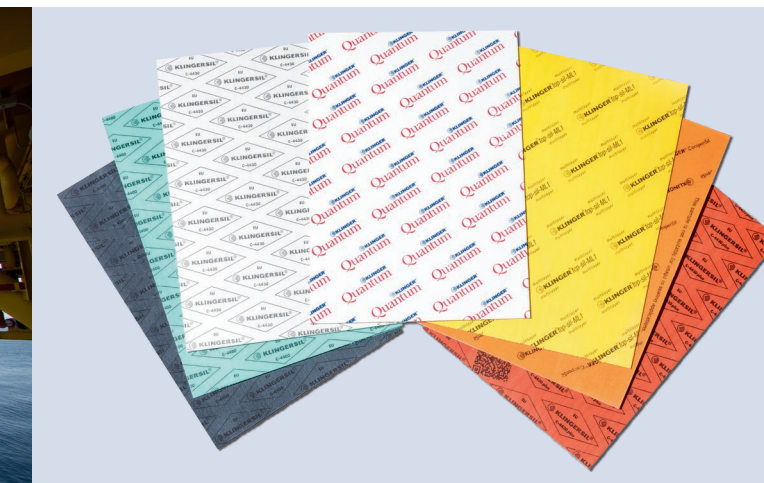
- » Certifications
- » Pressure x temperature
- » Medium
- » Chemical resistance
- » Sealing performance

For more information please visit our website www.klinger.co.at/en/services.



PRODUCT PORTFOLIO

Soft sealing materials
based on fibers / PTFE



Rich. KLINGER Dichtungstechnik GmbH & Co KG
Am Kanal 8-10 » 2352 Gumpoldskirchen » Austria
Tel: +43 2252 62599-137 » Fax: +43 2252 62599-296
marketing@klinger.co.at

GASKET MATERIALS

for various industrial applications

BASIS FIBERS

| | C-4240 | C-4300 | C-4324 | C-4400 | C-4430 | C-4500 | Quantum | Top-sil-ML1 | CompenSil |
|--|--|---|---|---|---|--|---|---|---|
| KLINGERSIL® KLINGER®Quantum KLINGER®CompenSil KLINGER®top-sil ML1 | | | | | | | | | |
| Gaskets on basis of fibers | | | | | | | | | |
| Fibers | Cellulose | Aramid | Aramid/Glass | Aramid | Glass/Aramid | Carbon/Aramid | Glass/Aramid | Glass/Aramid | Aramid/Mineral |
| Binder | NBR | NBR | NBR | NBR | NBR | NBR | HNBR | HNBR/NBR | NBR |
| Density | 1.75 g/cm³ | 1.6 g/cm³ | 1.85 g/cm³ | 1.6 g/cm³ | 1.8 g/cm³ | 1.6 g/cm³ | 1.7 g/cm³ | 1.7 g/cm³ | 1.5 g/cm³ |
| Compressibility ASTM F 36 J | 10% | 14% | 10% | 11% | 9% | 11% | 10% | 9% | 22% |
| Recovery ASTM F 36 J | 45% | 50% | 55% | 55% | 55% | 60% | 50% | 50% | 45% |
| Stress relaxation DIN 52913 50 MPa/300°C | 35 MPa (50 MPa/175°C) | 20 MPa | 20 MPa | 25 MPa | 35 MPa | 30 MPa | 30 MPa | 28 MPa | 18 MPa |
| Tightness DIN 28090-2 | 0.01 mg (s*m) | 0.03 mg (s*m) | 0.03 mg (s*m) | 0.02 mg (s*m) | 0.05 mg (s*m) | 0.05 mg (s*m) | 0.02 mg (s*m) | 0.05 mg (s*m) | 0.01 mg (s*m) |
| Typical applications | Drinking water , oils, fuels, hydrocarbons, inert gases | Hot water, steam, hydrocarbons, oils | Water, oils, hydrocarbons | Universal quality, gas, water, oils | Universal quality, hot water, steam | Hot water, steam , alkalis | High universal quality, steam, hot oils , food | Oils, water, steam , gases, salt solutions | Oils, refrigerants , gases , hydrocarbons |
| Certificates and approvals | Elastomer Guideline (KTW-BWGL), WRAS, DIN-DVGW, DIN-DVGW W 270 | DIN-DVGW, DIN-DVGW W 270, Elastomer Guideline, DNV GL, SVGW | DIN-DVGW, WRAS, Elastomer Guideline, DNV GL, SVGW | Oxygen-tested, DIN-DVGW, DIN-DVGW W 270, DVGW VP 401, Elastomer Guideline, ÖVGW Reg.No. G 1.912, DNV GL, TA-Luft (Clean air), SVGW, Fire-Safe | Oxygen-tested, DIN-DVGW, DIN-DVGW W 270, DVGW VP 401, Elastomer Guideline, WRAS, DNV GL, TA-Luft (Clean air), SVGW, Fire-Safe | Oxygen-tested, DIN-DVGW, DIN-DVGW W 270, Elastomer Guideline, ÖVGW Reg.No. G 2.143, DNV GL, TA-Luft (Clean air), Fire-Safe | Oxygen-tested, DIN-DVGW, TA-Luft (Clean air), Fire-Safe, FDA conformity | Oxygen-tested, DIN-DVGW, DNV GL, TA-Luft (Clean air), Fire-Safe | DIN-DVGW, DVGW VP 401, TA-Luft (Clean air), DNV GL |
| pT-diagram | | | | | | | | | |

BASIS PTFE

| | Top-chem 2000 | Top-chem 2003 | Top-chem 2005 | Top-chem 2006 | Top-chem 2000soft | Soft-chem |
|---|--|--|--|--|--|--|
| KLINGER®top-chem KLINGER®soft-chem | | | | | | |
| Gaskets on basis of PTFE | | | | | | |
| Filler | Silicon carbide | Hollow glass-microspheres | Silicon dioxide | Barium sulfate | Silicon carbide | - |
| Density | 2.5 g/cm³ | 1.7 g/cm³ | 2.2 g/cm³ | 3.0 g/cm³ | 2.1 g/cm³ | 0.9 g/cm³ |
| Compressibility ASTM F 36 M | 4% | 18% | 4% | 4% | 15% | 55% |
| Recovery ASTM F 36 M | 50% | 35% | 40% | 40% | 20% | 15% |
| Stress relaxation DIN 52913 50 MPa/260°C 30 MPa/150°C | 36 MPa 28 MPa | 13 MPa | 25 MPa | 18 MPa | 30 MPa 25 MPa | 15 MPa |
| Tightness DIN 28090-2 | 0.08 mg (s*m) | 0.01 mg (s*m) | 0.02 mg (s*m) | 0.01 mg (s*m) | 0.05 mg (s*m) | 0.01 mg (s*m) |
| Typical applications | Pipeline flanges, narrow screw joints, extremely stable, almost all media | At low surface loads, apparatus- and container flanges, plastic-, glass- and enamel flanges | Pipeline flanges, optimized for acid applications (except hydrofluoric acid) | Pipeline flanges, optimized for alkaline applications, as well as hydrofluoric acid | Pipeline flanges, optimized for acid and alkaline applications | Expanded PTFE, at low surface loads, plastic-, glass- and enamel flanges |
| Certificates and approvals | DIN-DVGW, DIN-DVGW W 270, oxygen-tested, KTW-BWGL, DNV GL, WRAS, TA-Luft (Clean air), Fire-Safe, FDA conformity (PTFE), compliant with regulation (EU) 10/2011 | DIN-DVGW, DIN-DVGW W 270, oxygen-tested, KTW-BWGL, DNV GL, TA-Luft (Clean air), FDA conformity (components comply with the FDA requirements), compliant with regulation (EU) 10/2011 | DIN-DVGW, oxygen-tested, KTW-BWGL, WRAS, DNV GL, TA-Luft (Clean air), FDA conformity (components comply with the FDA requirements), compliant with regulation (EU) 10/2011 | DIN-DVGW, oxygen-tested, DNV GL, TA-Luft (Clean air), FDA conformity (components comply with the FDA requirements), compliant with regulation (EU) 10/2011 | TA-Luft (Clean air), FDA conformity (PTFE), compliant with regulation (EU) 10/2011 | FDA conformity (components comply with the FDA requirements), compliant with regulation (EU) 10/2011 |
| pT-diagram | | | | | | |