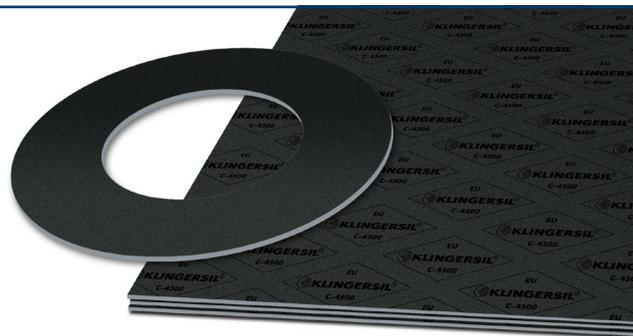




KLINGERSIL® C-4500 - superior-performance gasket material designed especially for the chemical industry.

Combining carbon fibers and special heat-resistant additives with an NBR bonding, this superior-performance gasket material has been designed specifically for the chemical industry. Higher temperatures, alkaline media and superheated steam are typical application scenarios where operators also profit from its resistance against oils, gases, salt solutions, fuels, alcohols, moderate organic and inorganic acids, hydrocarbons, lubricants and refrigerants.



Basis composition Carbon fibers and special heat-resistant additives bonded with NBR.

Color Black

Certificates BAM-tested, DIN-DVGW, DIN-DVGW W 270, Elastomer-Guideline, ÖVGW, DNV GL approval, TA-Luft (Clean air), Fire-Safe acc. to DIN EN ISO 10497

Sheet size 1000 x 1500 mm, 2000 x 1500 mm

Thickness 0.5 mm, 1.0 mm, 1.5 mm, 2.0 mm, 3.0 mm

Tolerances
Thickness according to DIN 28091-1
Length: ± 50 mm
Width: ± 50 mm

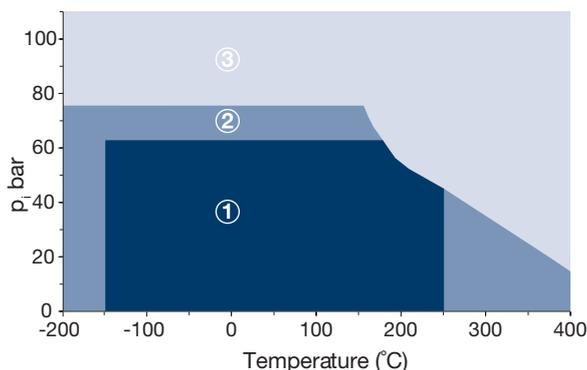
Industry

General industry / Chemical / Oil & Gas / Energy / Infrastructure / Pulp & Paper / Marine / Automotive / Food & Beverage

TECHNICAL DATA - Typical values for a thickness of 2.0 mm

| | | | |
|--|-----------------------------|-------------------|-----------|
| Compressibility | ASTM F 36 J | % | 11 |
| Recovery | ASTM F 36 J | % | 60 |
| Stress relaxation DIN 52913 | 50 MPa, 16 h/175°C | MPa | 38 |
| | 50 MPa, 16 h/300°C | MPa | 30 |
| Stress relaxation BS 7531 | 40 MPa, 16 h/300°C | MPa | 30 |
| KLINGER cold/hot compression 50 MPa | thickness decrease at 23°C | % | 10 |
| | thickness decrease at 300°C | % | 15 |
| Tightness | DIN 28090-2 | mg/(s x m) | 0.05 |
| Specific leakrate | VDI 2440 | mbar x l/(s x m) | 4.94E-06 |
| Thickness increase after fluid immersion ASTM F 146 | oil IRM 903: 5 h/150°C | % | 3 |
| | fuel B: 5 h/23°C | % | 5 |
| Density | | g/cm ³ | 1.6 |
| Average surface resistance | ρ _O | Ω | 8.0x10E04 |
| Thermal conductivity | λ | W/mK | 0.43 |
| Classification acc. to BS 7531:2006 | Grade AX | | |
| ASME-Code sealing factors for gasket thickness 2.0 mm | tightness class 0.1mg/s x m | MPa | y 20 |
| | | | m 1.6 |

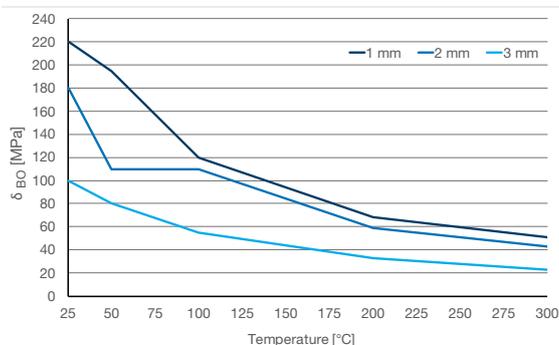
P-T diagram - thickness 2.0 mm



The area of the P-T 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.

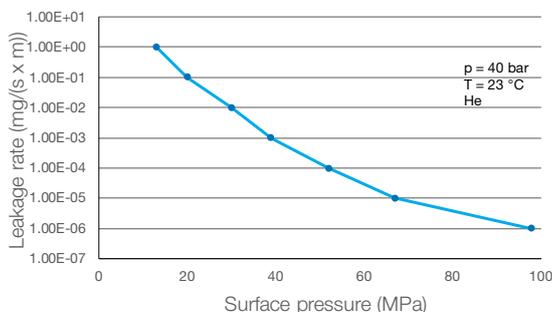
Sigma BO



Maximum surface pressure in operating conditions of Sigma BO

This diagram shows the maximum surface pressure in MPa with which the sealing material may be loaded, depending on the operating temperature. The characteristic curves apply to the specified sealing thicknesses. In contrast to Q_{smax} according to EN 13555, the surface pressures specified here are based on a maximum permissible reduction in thickness.

Tightness performance



The tightness performance graph

The graph shows the required stress at assembling to seal a certain tightness class. The determination of the graph is based on EN13555 test procedure which applies 40bar Helium at room temperature. The sloping curve indicates the ability of the gasket to increase tightness with raising gasket stress.

Chemical resistance chart

Simplified overview of the chemical resistance depending on the most important groups of raw materials:

| KLINGERSIL® C-4500 | | | | | | A: small or no attack | B: weak till moderate attack | C: strong attack | | | |
|------------------------|------------|----------|--------------------------------|-----------|--------------------|-----------------------|------------------------------|------------------|-------|----------------|----------------|
| Paraffinic hydrocarbon | Motor fuel | Aromates | Chlorinated hydrocarbon fluids | Motor oil | Mineral lubricants | Alcohol | Ketone | Ester | Water | Acid (diluted) | Base (diluted) |
| A | B | C | C | A | B | A | C | C | A | A | A |

For more information on chemical resistance please visit www.klinger.co.at.

All information is based on years of experience in production and operation of sealing elements. However, in view of the wide variety of possible installation and operating conditions one cannot draw final conclusions in all application cases regarding the behaviour in gasket joint. The data may not, therefore, be used to support any warranty claims. This edition cancels all previous issues. Subject to change without notice.