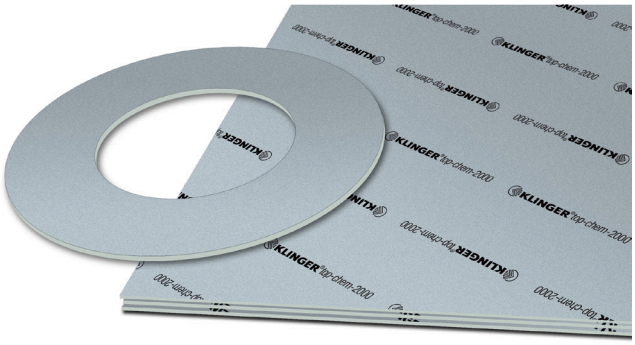
# KLINGER®
# top-chem 2000

KLINGER Dichtungstechnik

**KLINGER®top-chem 2000 - the universal heavy-duty gasket filled with silicon carbide with Fire Safe certificate.**

The only PTFE gasket worldwide to have been awarded a Fire Safe certificate, KLINGER®top-chem 2000 is a universal heavy-duty gasket filled with silicon carbide. Continuously providing best performance in applications with high mechanical requirements at high temperatures, this gasket material features excellent acidic and alkaline resistance and versatility in steam versatility in steam applications. It is primarily used in the chemical, the petrochemical and the maritime industry.




| | |
|---|---|
| **Basis composition** | PTFE gasket filled with SiC (Silicon carbide) |
| **Color** | Grey |
| **Certificates** | DIN-DVGW, DIN-DVGW W 270, KTW-Guideline, WRAS approval, Oxygen-tested, TA-Luft (Clean air), Fire-Safe acc. to DIN EN ISO 10497, FDA compliant (PTFE), Regulation (EU) No. 1935/2004 (incl. 10/2011), DNV GL approval |
| **Sheet size** | 1500 x 1500 mm |
| **Thickness** | 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

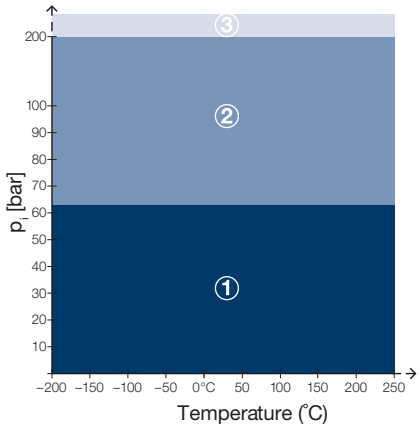
**Industry**

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

**TECHNICAL DATA** - Typical values for a thickness of 2.0 mm

| | | | |
|---|---|---|---|
| Compressibility | ASTM F 36 M | % | 4 |
| Recovery | ASTM F 36 M | % | 50 |
| Stress relaxation DIN 52913 | 30 MPa, 16 h/150°C | MPa | 28 |
| | 50 MPa, 16 h/260°C | MPa | 36 |
| KLINGER cold/hot compression | thickness decrease at 23°C | % | 5 |
| 50 MPa | thickness decrease at 260°C | % | 11 |
| Tightness | DIN 28090-2 | mg/(s x m) | 0.08 |
| Specific leakrate | VDI 2440 | mbar x l/(s x m) | 4.46E-06 |
| Thickness/weight increase | $H_2SO_4$, 100%: 18 h/23°C | % | 1/1 |
| | $HNO_3$, 100%: 18 h/23°C | % | 1/2 |
| | NaOH, 33%: 72 h/110°C | % | 1/3 |
| Density | | g/cm³ | 2.5 |
| Average surface resistance | ρO | Ω | 6.9x10E12 |
| Average specific volume resistance | ρD | Ω cm | 2.2x10E12 |
| Average dielectric strength | Ed | kV/mm | 3.6 |
| Average power factor | 50 Hz | tan δ | 0.166 |
| Average dielectric coefficient | 50 Hz | εr | 10.6 |
| Thermal conductivity | λ | W/mK | 0.60 |
| ASME-Code sealing factors | | | |
| for gasket thickness 2.0 mm | tightness class 0.1mg/s x m | MPa | y 15 |
| | | | m 3.2 |

## P-T diagram - thickness 2.0 mm




### The area of the P-T diagram

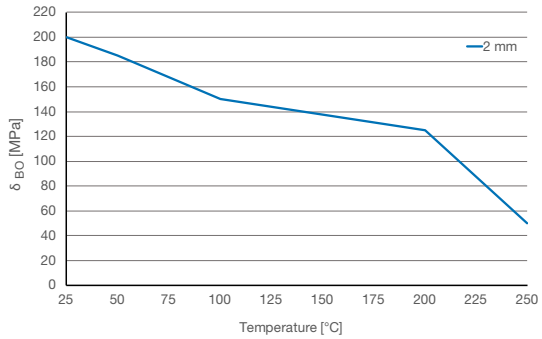
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

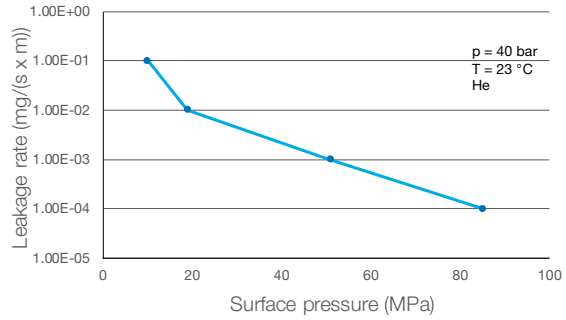
## Sigma BO




### 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 Qsmax 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:

**KLINGER®top-chem 2000** — **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** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** |

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



Certified acc. to DIN EN ISO 9001:2015 Subject to technical alterations. Status: April 2020
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# KLINGER® top-chem 2003

KLINGER Dichtungstechnik

**KLINGER®top-chem 2003 - PTFE material filled with hollow glass-microspheres.**

Consisting of PTFE filled with hollow glass-microspheres, this gasket material provides high adaptability and tightness even at low surface loads. Its chemical properties make it the ideal choice for strongly acidic and alkaline applications as well as for medium temperatures and loads.

| | |
|---|---|
| **Basis composition** | PTFE filled with hollow glass-microspheres. |
| **Color** | White |
| **Certificates** | BAM tested, DIN-DVGW, DIN-DVGW W 270, KTW-Guideline, DNV GL approval, TA-Luft (Clean air), FDA conformity (components of KLINGER®topchem 2003 comply with the FDA requirements), Regulation (EU) No. 1935/2004 (incl. 10/2011) |

| | |
|---|---|
| **Sheet size** | 1500 x 1500 mm |
| **Thickness** | 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

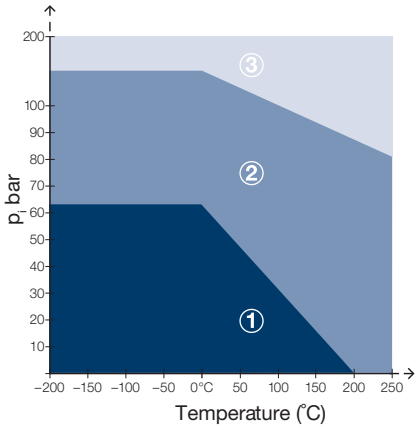
**Industry**

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

**TECHNICAL DATA** - Typical values for a thickness of 2.0 mm

| | | | |
|---|---|---|---|
| Compressibility | ASTM F 36 M | % | 18 |
| Recovery | ASTM F 36 M | % | 35 |
| Stress relaxation DIN 52913 | 30 MPa, 16 h/150°C | MPa | 13 |
| KLINGER cold/hot compression | thickness decrease at 23°C | % | 10 |
| 25 MPa | thickness decrease at 260°C | % | 39 |
| Tightness | DIN 28090-2 | mg/(s x m) | 0.01 |
| Specific leakrate | VDI 2440 | mbar x l/(s x m) | 3.29E-06 |
| Thickness/weight increase | $H_2SO_4$, 100%: 18 h/23°C | % | 1/1 |
| | $HNO_3$, 100%: 18 h/23°C | % | 0/5 |
| | NaOH, 33%: 72 h/110°C | % | 1/5 |
| Density | | g/cm³ | 1.7 |
| Average surface resistance | ρO | Ω | 9x10E12 |
| Average specific volume resistance | ρD | Ω cm | 2.6x10E12 |
| Average dielectric strength | Ed | kV/mm | 16.7 |
| Average power factor | 50 Hz | tan δ | 0.085 |
| Average dielectric coefficient | 50 Hz | εr | 2.8 |
| Thermal conductivity | λ | W/mK | 0.18 |
| ASME-Code sealing factors | | | |
| for gasket thickness 2.0 mm | tightness class 0.1mg/s x m | MPa | y 8 |
| | | | m 2.7 |

## P-T diagram - thickness 2.0 mm




### The area of the P-T diagram

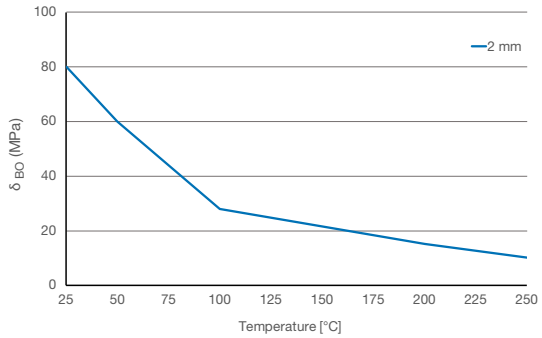
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

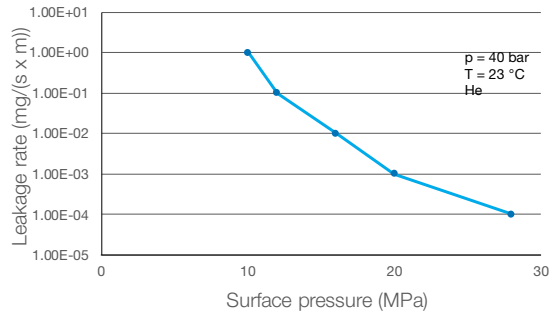
## Sigma BO




### 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 Qsmax 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:

**KLINGER®top-chem 2003** — **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** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** |

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



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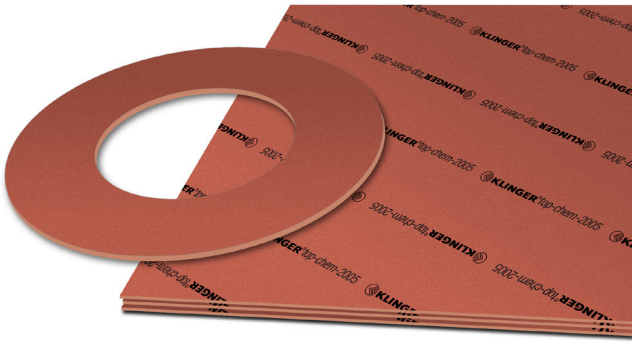
# KLINGER® top-chem 2005

KLINGER Dichtungstechnik

**KLINGER®top-chem 2005 - a PTFE material with inorganic fillers with a high chemical resistance in acidic applications.**

A PTFE material with inorganic fillers, this gasket features a high chemical resistance in strongly acidic applications. Ideal for the chemical industry, it also offers very good mechanical properties at medium temperatures.



| | |
|---|---|
| **Basis composition** | PTFE filled with inorganic fillers. |
| **Color** | Red |
| **Certificates** | BAM-tested, DIN-DVGW, WRAS approval, KTW-Guideline, DNV GL approval, TA-Luft (Clean air), FDA conformity (components of KLINGER®topchem 2005 comply with the FDA requirements), Regulation (EU) No. 1935/2004 (incl. 10/2011) |

| | |
|---|---|
| **Sheet size** | 1500 x 1500 mm |
| **Thickness** | 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

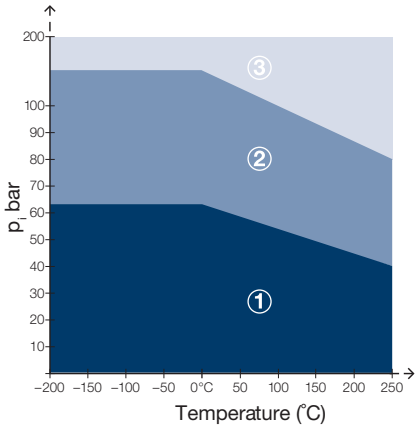
**Industry**

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

**TECHNICAL DATA** - Typical values for a thickness of 2.0 mm

| | | | |
|---|---|---|---|
| Compressibility | ASTM F 36 M | % | 4 |
| Recovery | ASTM F 36 M | % | 40 |
| Stress relaxation DIN 52913 | 30 MPa, 16 h/150°C | MPa | 25 |
| KLINGER cold/hot compression | thickness decrease at 23°C | % | 5 |
| 50 MPa | thickness decrease at 260°C | % | 35 |
| Tightness | DIN 28090-2 | mg/(s x m) | 0.02 |
| Specific leakrate | VDI 2440 | mbar x l/(s x m) | 8.75E-07 |
| Thickness/weight increase | $H_2SO_4$, 100%: 18 h/23°C | % | 1/1 |
| | $HNO_3$, 100%: 18 h/23°C | % | 1/2 |
| | NaOH, 33%: 72 h/110°C | % | – |
| Density | | g/cm³ | 2.2 |
| Average surface resistance | ρO | Ω | 3.1x10E13 |
| Average specific volume resistance | ρD | Ω cm | 3.2x10E13 |
| Average dielectric strength | Ed | kV/mm | 23.8 |
| Average power factor | 50 Hz | tan δ | 0.071 |
| Average dielectric coefficient | 50 Hz | εr | 3.2 |
| Thermal conductivity | λ | W/mK | 0.42 |
| ASME-Code sealing factors | | | |
| for gasket thickness 2.0 mm | tightness class 0.1mg/s x m | MPa | y 12 |
| | | | m 2.8 |

## P-T diagram - thickness 2.0 mm




### The area of the P-T diagram

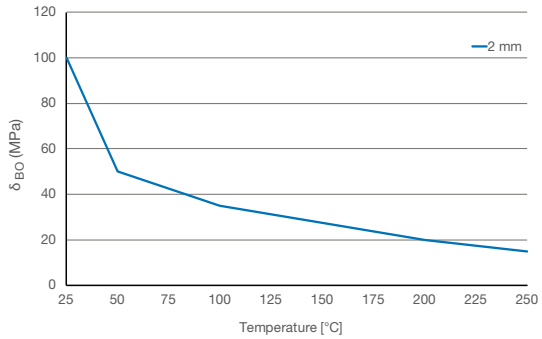
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

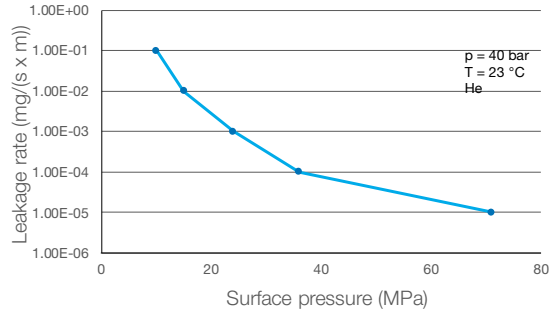
## Sigma BO




### 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 Qsmax 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:

**KLINGER®top-chem 2005** — **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** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** |

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



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# KLINGER® top-chem 2006

KLINGER Dichtungstechnik

**KLINGER®top-chem 2006 - PTFE filled with barium sulfate, this pigment-free gasket material with excellent resistance to strong alkalis.**

Produced from PTFE filled with barium sulfate, this pigment-free gasket material convinces with its excellent resistance to strong alkalis as well as with good mechanical properties at medium to low temperatures and loads. This gasket material is primarily used in the chemical industry.

| | |
|---|---|
| **Basis composition** | PTFE filled with barium sulfate. |
| **Color** | White |
| **Certificates** | BAM-tested, DIN-DVGW,<br>DNV GL approval,<br>TA-Luft (Clean air),<br>FDA conformity (components of KLINGER®topchem 2006 comply with the FDA requirements) |

| | |
|---|---|
| **Sheet size** | 1500 x 1500 mm |
| **Thickness** | 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

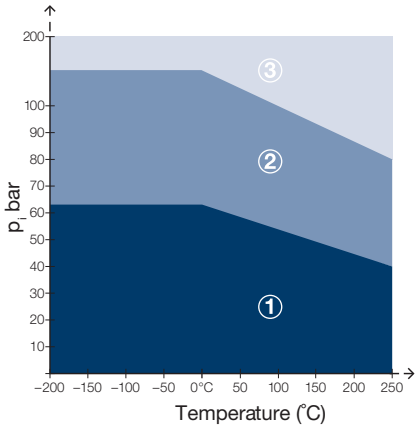
**Industry**

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

**TECHNICAL DATA** - Typical values for a thickness of 2.0 mm

| | | | |
|---|---|---|---|
| Compressibility | ASTM F 36 M | % | 4 |
| Recovery | ASTM F 36 M | % | 40 |
| Stress relaxation DIN 52913 | 30 MPa, 16 h/150°C | MPa | 18 |
| KLINGER cold/hot compression | thickness decrease at 23°C | % | 12 |
| 50 MPa | thickness decrease at 260°C | % | 41 |
| Tightness | DIN 28090-2 | mg/(s x m) | 0.01 |
| Specific leakrate | VDI 2440 | mbar x l/(s x m) | 3.60E-06 |
| Thickness/weight increase | $H_2SO_4$, 100%: 18 h/23°C | % | – |
| | $HNO_3$, 100%: 18 h/23°C | % | 1/2 |
| | NaOH, 33%: 72 h/110°C | % | 1/1 |
| Density | | g/cm³ | 3.0 |
| Average surface resistance | ρO | Ω | 1x10E13 |
| Average specific volume resistance | ρD | Ω cm | 1.2x10E13 |
| Average dielectric strength | Ed | kV/mm | 16.7 |
| Average power factor | 50 Hz | tan δ | 0.083 |
| Average dielectric coefficient | 50 Hz | εr | 4.2 |
| Thermal conductivity | λ | W/mK | 0.40 |
| ASME-Code sealing factors | | | |
| for gasket thickness 2.0 mm | tightness class 0.1mg/s x m | MPa | y 12 |
| | | | m 3.1 |

## 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.

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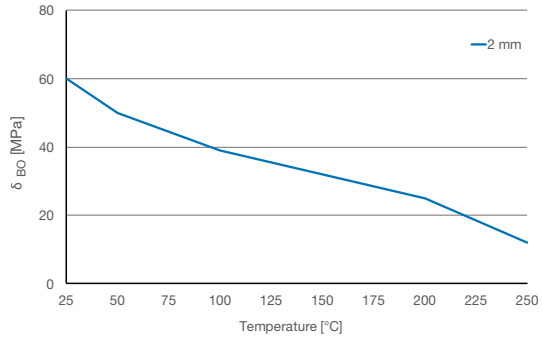
Always refer to the chemical resistance of the gasket to the media.

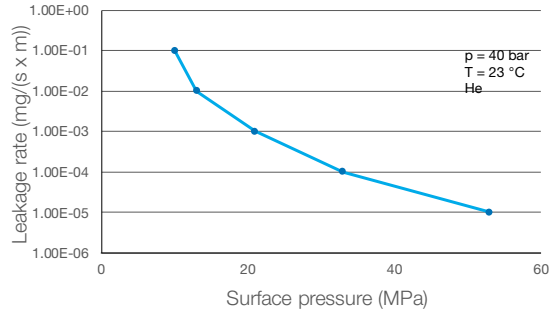
## Sigma BO




### 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 Qsmax according to EN 13555, the surface pressures specified here are based on a maximum permissible reduction in thickness.

## Tightness performance




### The tightness performance graph

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## Chemical resistance chart

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

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| Paraffinic hydrocarbon | Motor fuel | Aromates | Chlorinated hydrocarbon fluids | Motor oil | Mineral lubricants | Alcohol | Ketone | Ester | Water | Acid (diluted) | Base (diluted) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** |

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



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**NEED ADVICE?**

**TALK TO A TECHNICIAN**

Our highly experienced technicians can advise you on the best sheet materials and manufacturing processes for a wide range of gasket applications.

**TEL: (+44) 01535 607257**

**sales@dobsongasket.com**

**dobsongasket.com**