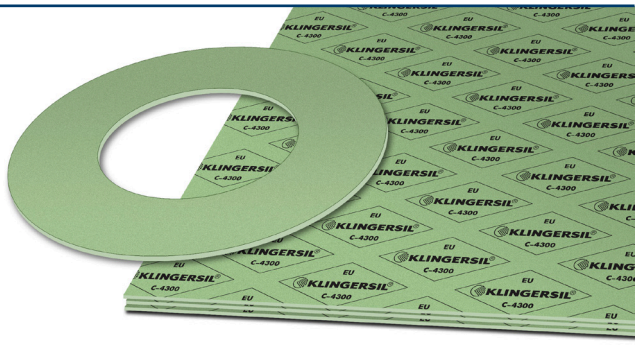
KLINGERSIL® C-4300

KLINGER Dichtungstechnik

KLINGERSIL® C-4300 - universal soft gasket material.

Consisting of aramid fibers bonded with NBR, this universal high-pressure gasket material is resistant to hot water, steam, oils, hydrocarbons and other chemicals. It provides increased plant safety for a wide range of applications.



Basis composition	Aramid fibers bonded with NBR.
Color	Olive green
Certificates	DIN-DVGW, DIN-DVGW W 270, Elastomer-Guideline, DNV GL approval, SVGW approval
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

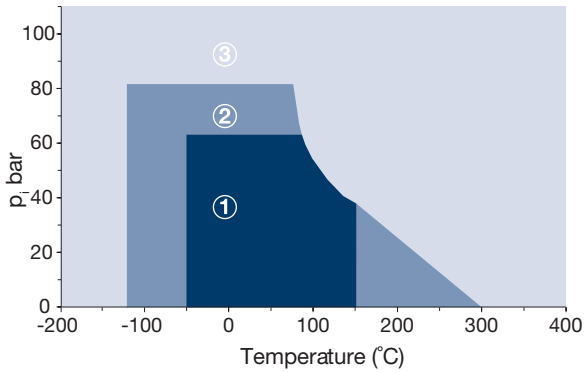
Industry

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	%	14
Recovery	ASTM F 36 J	%	50
Stress relaxation DIN 52913	50 MPa, 16 h/175°C	MPa	32
	50 MPa, 16 h/300°C	MPa	20
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	23
KLINGER cold/hot compression	thickness decrease at 23°C	%	10
50 MPa	thickness decrease at 300°C	%	22
Tightness	DIN 28090-2	mg/(s x m)	0.03
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	5
immersion ASTM F 146	fuel B: 5 h/23°C	%	10
Density		g/cm³	1.6
Average surface resistance	ρO	Ω	2.2x10E12
Average specific volume resistance	ρD	Ω cm	1.2x10E12
Average dielectric strength	Ed	kV/mm	10
Average power factor	50 Hz	tan δ	0.082
Average dielectric coefficient	50 Hz	εr	7.4
Thermal conductivity	λ	W/mK	0.39
Classification acc. to BS 7531:2006	Grade Y		
ASME-Code sealing factors			
for gasket thickness 2.0 mm	tightness class 0.1mg/s x m	MPa	y 15
			m 3.0

P-T diagram - thickness 2.0 mm



The area of the P-T diagram

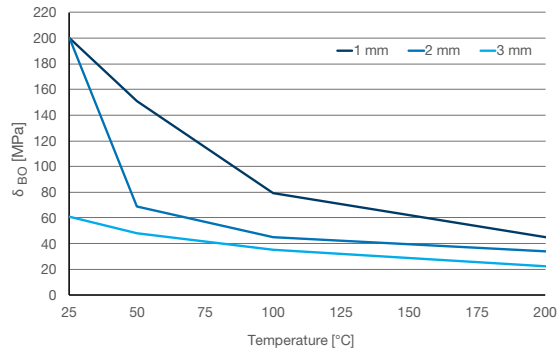
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

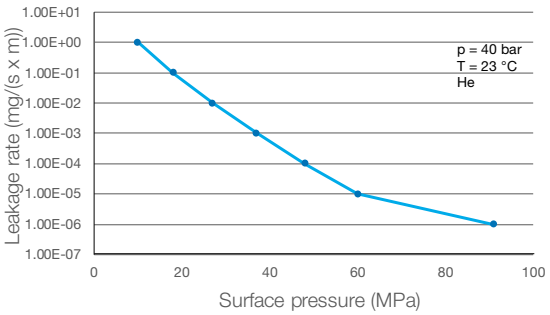
Sigma BO



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:

KLINGERSIL® C-4300 — **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.

Certified acc. to DIN EN ISO 9001:2015 Subject to technical alterations. Status: April 2020
Rich. Klinger Dichtungstechnik GmbH & Co KG / Am Kanal 8-10 / A-2352 Gumpoldskirchen, Austria
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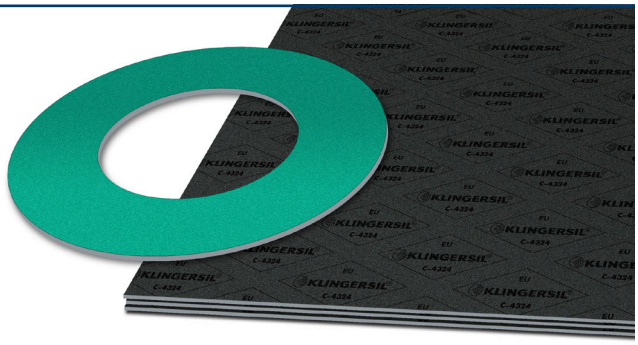
KLINGERSIL® C-4324

KLINGER Dichtungstechnik

KLINGERSIL® C-4324 - universal gasket material utilized in liquid and steam applications.

Manufactured from synthetic high-performance fibers bonded with NBR, this universal high-pressure gasket material is utilized in liquid and steam applications at lower pressures and temperatures. It is resistant to water, oils, hydrocarbons, refrigerants and other chemicals.



Basis composition	Synthetic high-performance fibers bonded with NBR.
Color	Black / Green
Certificates	DIN-DVGW, Elastomer-Guideline, WRAS approval, SVGW approval, DNV GL approval

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

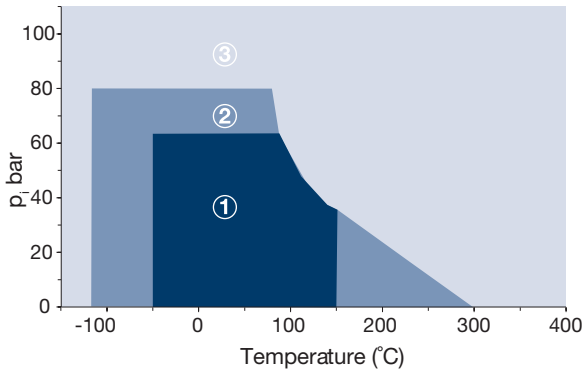
Industry

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	%	10
Recovery	ASTM F 36 J	%	55
Stress relaxation DIN 52913	50 MPa, 16 h/175°C	MPa	31
	50 MPa, 16 h/300°C	MPa	20
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	23
KLINGER cold/hot compression	thickness decrease at 23°C	%	10
50 MPa	thickness decrease at 300°C	%	25
Tightness	DIN 28090-2	mg/(s x m)	0.03
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	5
immersion ASTM F 146	fuel B: 5 h/23°C	%	10
Density		g/cm³	1.85
Average surface resistance	ρO	Ω	1.04x10E13
Average specific volume resistance	ρD	Ω cm	4.3x10E11
Average dielectric strength	Ed	kV/mm	12
Average power factor	50 Hz	tan δ	0.109
Average dielectric coefficient	50 Hz	εr	9
Thermal conductivity	λ	W/mK	0.50
Classification acc. to BS 7531:2006	Grade Y		
ASME-Code sealing factors			
for gasket thickness 2.0 mm	tightness class 0.1mg/s x m	MPa	y 15
			m 2.6

P-T diagram - thickness 2.0 mm



The area of the P-T diagram

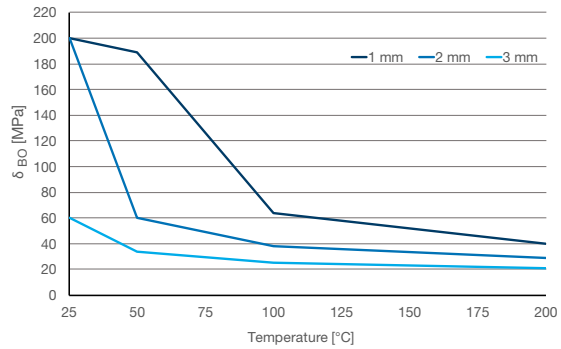
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

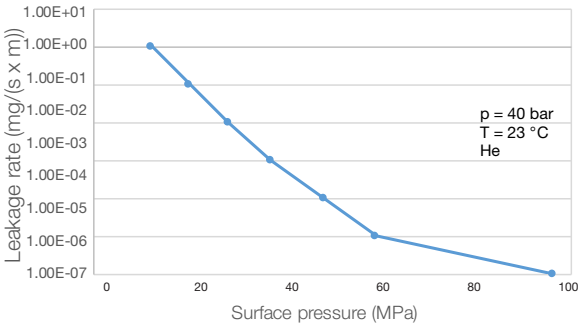
Sigma BO



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 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:

KLINGERSIL® C-4324 — **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.

Certified acc. to DIN EN ISO 9001:2015 Subject to technical alterations. Status: April 2020
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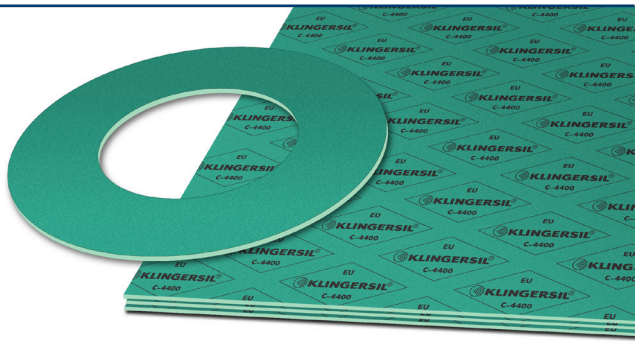
KLINGERSIL® C-4400

KLINGER Dichtungstechnik

KLINGERSIL® C-4400 - leading soft gasket material for safe and reliable sealing.

Consisting of aramid fibers bonded with NBR, this universal gasket material is a synonym for safe and reliable sealing. Its unique matrix makes it resistant to oils, water, steam, gases, salt solutions, fuels, alcohols, moderate organic and inorganic acids, hydrocarbons and lubricants as well as refrigerants.



Basis composition	Aramid fibers bonded with NBR.
Color	Green
Certificates	BAM-tested, DIN-DVGW, DIN-DVGW W 270, DVGW VP 401, Elastomer-Guideline, ÖVGW, TA-Luft (Clean air), DNV GL approval, 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

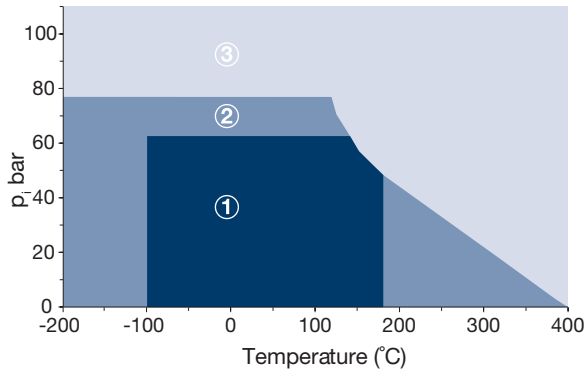
Industry

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	%	55
Stress relaxation DIN 52913	50 MPa, 16 h/175°C	MPa	37
	50 MPa, 16 h/300°C	MPa	25
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	25
KLINGER cold/hot compression	thickness decrease at 23°C	%	10
50 MPa	thickness decrease at 300°C	%	20
Tightness	DIN 28090-2	mg/(s x m)	0.02
Specific leakrate	VDI 2440	mbar x l/(s x m)	1.64E-08
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	3
immersion ASTM F 146	fuel B: 5 h/23°C	%	5
Density		g/cm³	1.6
Average surface resistance	ρO	Ω	1.4x10E12
Average specific volume resistance	ρD	Ω cm	1.2x10E12
Average dielectric strength	Ed	kV/mm	21.6
Average power factor	50 Hz	tan δ	0.131
Average dielectric coefficient	50 Hz	εr	9.2
Thermal conductivity	λ	W/mK	0.42
Classification acc. to BS 7531:2006	Grade AY		
ASME-Code sealing factors			
for gasket thickness 2.0 mm	tightness class 0.1mg/s x m	MPa	y 15
			m 1.6

P-T diagram - thickness 2.0 mm



The area of the P-T diagram

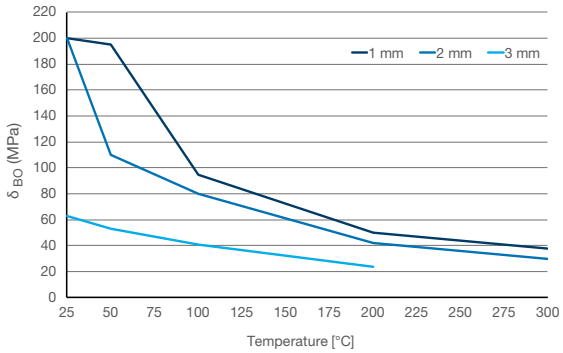
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

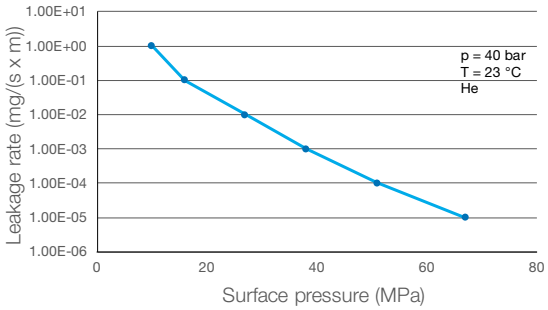
Sigma BO



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 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:

KLINGERSIL® C-4400 — **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.

Certified acc. to DIN EN ISO 9001:2015 Subject to technical alterations. Status: April 2020
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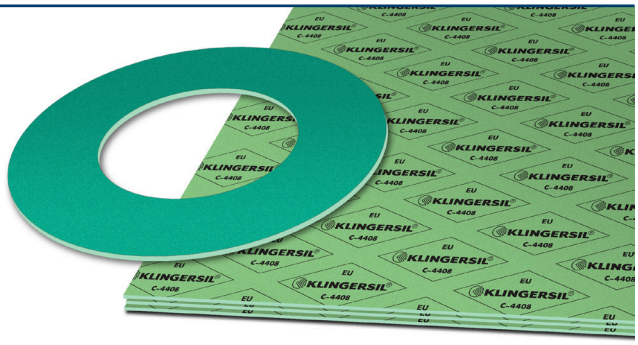
KLINGERSIL® C-4408

KLINGER Dichtungstechnik

KLINGERSIL® C-4408 - universal high-pressure gasket for use in a wide range of industrial applications.

Featuring aramid fibers bonded with NBR, this universal high-pressure gasket material is additionally reinforced by wire. Able to withstand high stress levels, it is used in industrial applications where operators profit from its resistance to oils, water, steam, gases, fuels, alcohols, hydrocarbons, lubricants and refrigerants.



Basis composition	Aramid fibers bonded with NBR.
Color	Green / Olive
Certificates	DNV GL approval

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

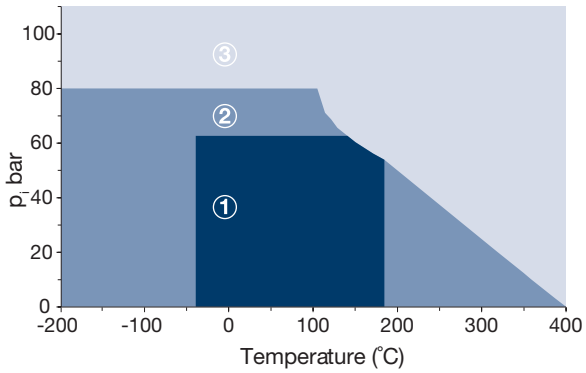
Industry

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

TECHNICAL DATA - Typical values for a thickness of 2.0 mm

Compressibility	ASTM F 36 J	%	8
Recovery	ASTM F 36 J	%	50
Stress relaxation DIN 52913	50 MPa, 16 h/300°C	MPa	28
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	28
KLINGER cold/hot compression	thickness decrease at 23°C	%	10
50 MPa	thickness decrease at 300°C	%	18
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	5
immersion ASTM F 146	fuel B: 5 h/23°C	%	5
Density		g/cm³	1.9
Classification acc. to BS 7531:2006	Grade Y		

P-T diagram - thickness 2.0 mm



The area of the P-T diagram

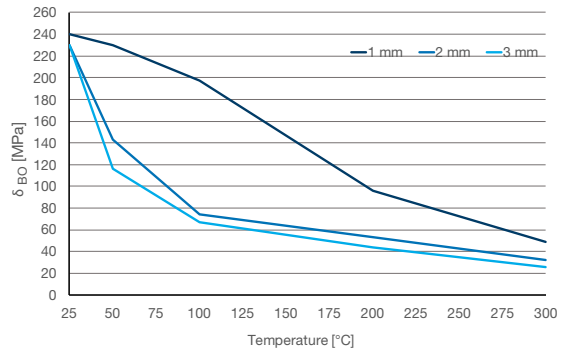
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

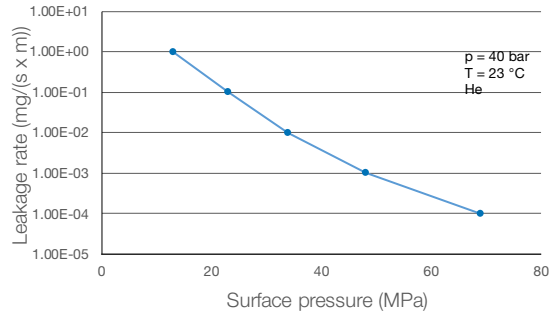
Sigma BO



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:

KLINGERSIL® C-4408 — **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**	**B**	**C**	**C**	**B**	**C**	**B**

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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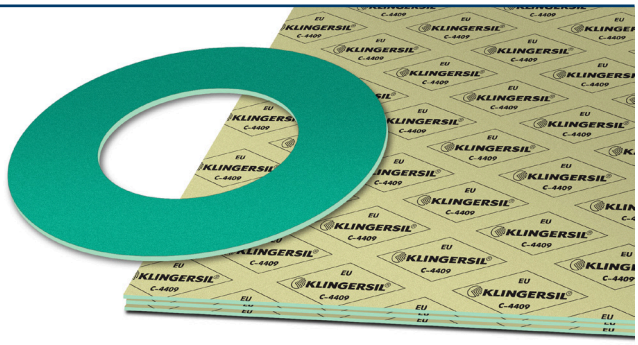
KLINGERSIL® C-4409

KLINGER Dichtungstechnik

KLINGERSIL® C-4409 - premium high-pressure gasket for exacting operations.

This high-pressure gasket material features synthetic fibers bonded with NBR and is suitable for high loads. Its expanded metal reinforcement makes it capable of withstanding high thermal and mechanical stress. It is resistant to oils, water, steam, hydrocarbons as well as to liquid and gaseous chemicals.



Basis composition	Synthetic fibers bonded with NBR.
Color	Green / Yellow
Certificates	TA-Luft (Clean air), DNV GL approval

Sheet size	1000 x 1500 mm, 2000 x 1500 mm
Thickness	1.0 mm, 1.5 mm

Tolerances

Thickness according to DIN 28091-1

Length: ± 50 mm

Width: ± 50 mm

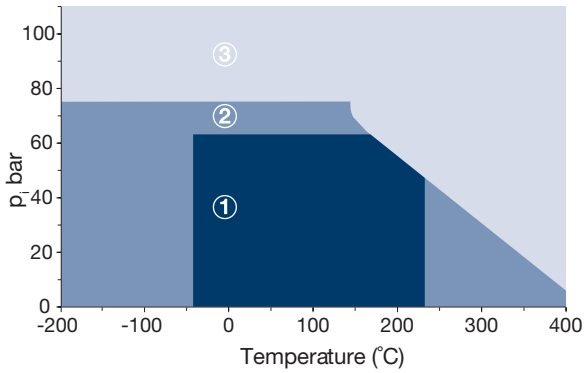
Industry

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

TECHNICAL DATA - Typical values for a thickness of 1.5 mm

Compressibility	ASTM F 36 J	%	7
Recovery	ASTM F 36 J	%	50
Stress relaxation DIN 52913	50 MPa, 16 h/300°C	MPa	35
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	32
KLINGER cold/hot compression	thickness decrease at 23°C	%	10
50 MPa	thickness decrease at 300°C	%	10
Specific leakrate	VDI 2440	mbar x l/(s x m)	5.2E-05
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	5
immersion ASTM F 146	fuel B: 5 h/23°C	%	10
Density		g/cm³	2.0
Classification acc. to BS 7531:2006	Grade Y		2.0
ASME-Code sealing factors			
for gasket thickness 1.5 mm	tightness class 0.1mg/s x m	MPa	y 30
			m 3.1

P-T diagram - thickness 1.5 mm



The area of the P-T diagram

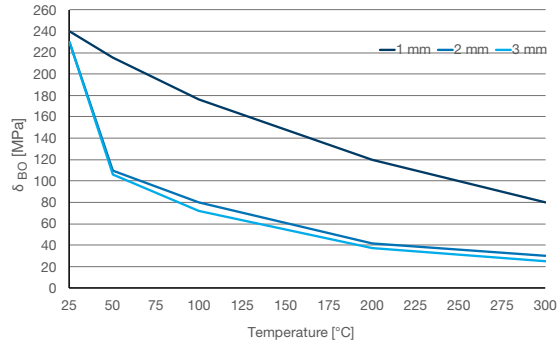
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

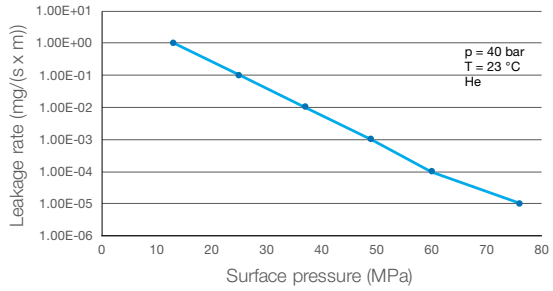
Sigma BO



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:

KLINGERSIL® C-4409 — **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.

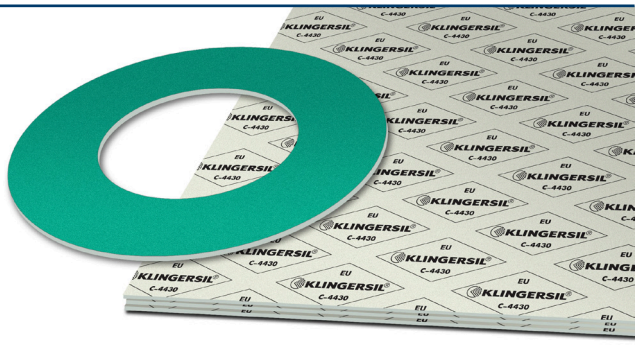
Certified acc. to DIN EN ISO 9001:2015 Subject to technical alterations. Status: April 2020
Rich. Klinger Dichtungstechnik GmbH & Co KG / Am Kanal 8-10 / A-2352 Gumpoldskirchen, Austria
Tel +43 (0) 2252/62599-137 / Fax +43 (0) 2252/62599-296 / e-mail: marketing@klinger.co.at

KLINGERSIL® C-4430

KLINGER Dichtungstechnik

KLINGERSIL® C-4430 - offers excellent stress relaxation.

Consisting of synthetic fibers bonded with NBR and offering excellent stress relaxation, this gasket material is used in hot water and higher-temperature steam applications. It is resistant to oils, gases, salt solutions, fuels, alcohols, moderate organic and inorganic acids, hydrocarbons, lubricants and refrigerants.



Basis composition	Optimum combination of synthetic fibers bonded with NBR.
Color	White / Green
Certificates	BAM-tested, DIN-DVGW, DIN-DVGW W 270, DVGW VP 401, Elastomer-Guideline, WRAS approval, TA-Luft (Clean air), DNV GL approval Fire-Safe acc. to DIN EN ISO 10497, Fire-Safe acc. to ISO 19921

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

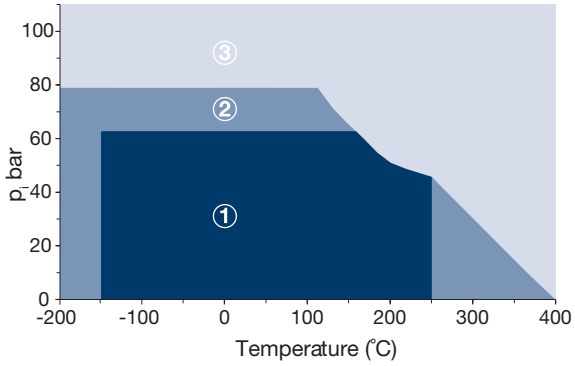
Industry

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	%	9
Recovery	ASTM F 36 J	%	55
Stress relaxation DIN 52913	50 MPa, 16 h/175°C	MPa	39
	50 MPa, 16 h/300°C	MPa	35
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	31
KLINGER cold/hot compression	thickness decrease at 23°C	%	8
50 MPa	thickness decrease at 300°C	%	11
Tightness	DIN 28090-2	mg/(s x m)	0.05
Specific leakrate	VDI 2440	mbar x l/(s x m)	2.13E-05
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	3
immersion ASTM F 146	fuel B: 5 h/23°C	%	5
Density		g/cm³	1.8
Average surface resistance	ρO	Ω	4.1x10E13
Average specific volume resistance	ρD	Ω cm	4.5x10E12
Average dielectric strength	Ed	kV/mm	21.3
Average power factor	50 Hz	tan δ	0.03
Average dielectric coefficient	50 Hz	εr	6.7
Thermal conductivity	λ	W/mK	0.38
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

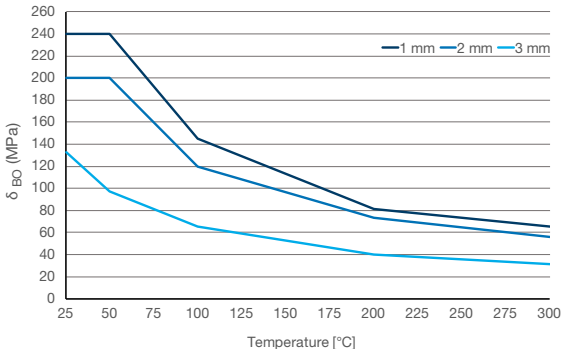
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

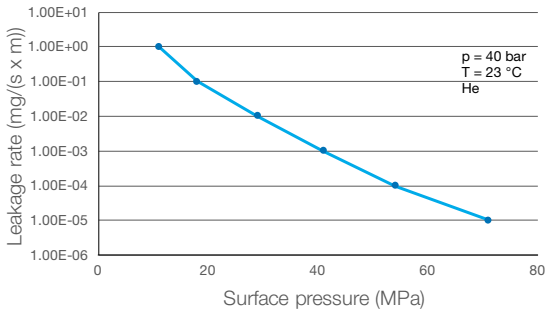
Sigma BO



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 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:

KLINGERSIL® C-4430 — **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.

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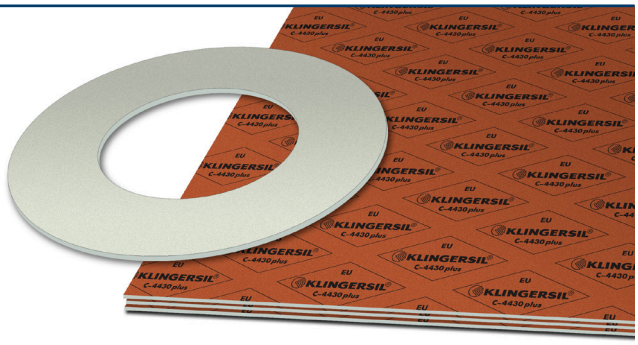
KLINGERSIL® C-4430plus

KLINGER Dichtungstechnik

KLINGERSIL® C-4430plus - premium gasket material providing industry-leading stress relaxation and outstanding chemical resistance.

Characterized by synthetic fibers bonded with NBR, this premium gasket material provides industry-leading stress relaxation and outstanding resistance to hot water and steam at higher temperatures. Operators also value it for its tried and proven resistance to oils, hydrocarbons, gases, salt solutions, fuels, alcohols, lubricants, refrigerants as well as to moderate organic and inorganic acids.



Basis composition	Optimum combination of synthetic fibers bonded with NBR.
Color	Red / White
Certificates	BAM-tested, DIN-DVGW, DIN-DVGW W 270, Elastomer-Guideline, WRAS 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

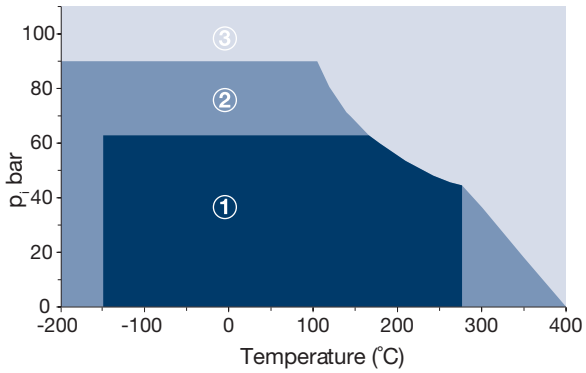
Industry

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	%	9
Recovery	ASTM F 36 J	%	55
Stress relaxation DIN 52913	50 MPa, 16 h/175°C	MPa	39
	50 MPa, 16 h/300°C	MPa	35
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	31
KLINGER cold/hot compression	thickness decrease at 23°C	%	8
50 MPa	thickness decrease at 300°C	%	11
Tightness	DIN 28090-2	mg/(s x m)	0.05
Specific leakrate	VDI 2440	mbar x l/(s x m)	2.9E-06
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	3
immersion ASTM F 146	fuel B: 5 h/23°C	%	5
Density		g/cm³	1.8
Average surface resistance	ρO	Ω	4.1x10E13
Average specific volume resistance	ρD	Ω cm	4.5x10E12
Average dielectric strength	Ed	kV/mm	21.3
Average power factor	50 Hz	tan δ	0.03
Average dielectric coefficient	50 Hz	εr	6.7
Thermal conductivity	λ	W/mK	0.38
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

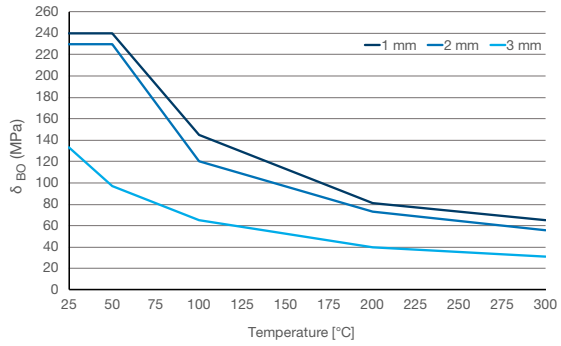
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

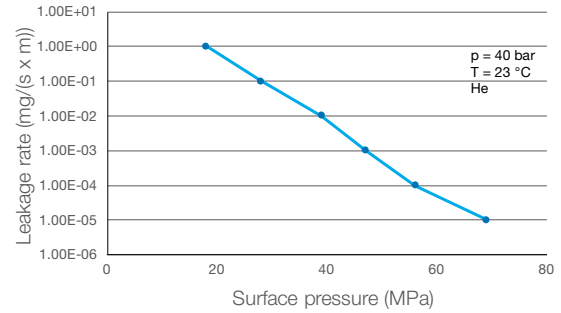
Sigma BO



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 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:

KLINGERSIL® C-4430plus — **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.

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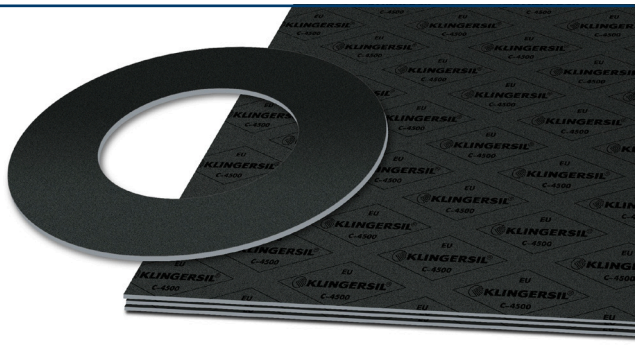
KLINGERSIL® C-4500

KLINGER Dichtungstechnik

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

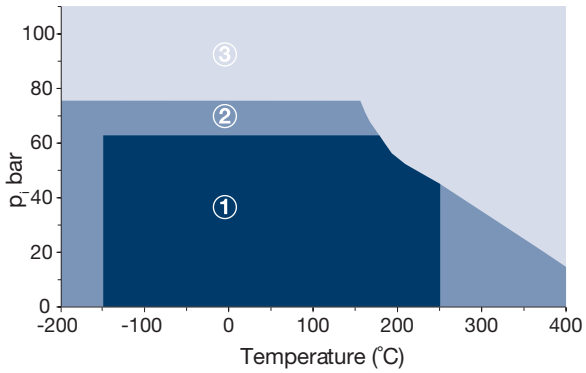
Industry

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	thickness decrease at 23°C	%	10
50 MPa	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	oil IRM 903: 5 h/150°C	%	3
immersion ASTM F 146	fuel B: 5 h/23°C	%	5
Density		g/cm³	1.6
Average surface resistance	ρO	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

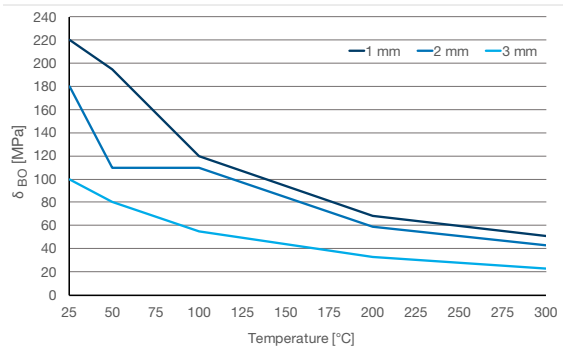
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

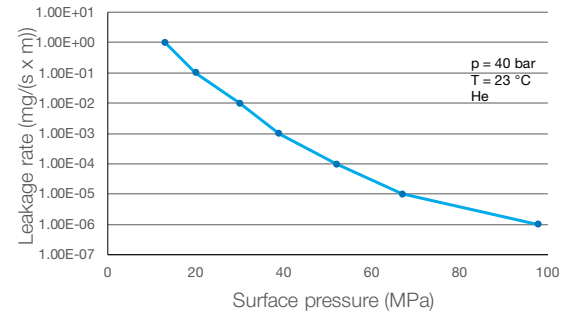
Sigma BO



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 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:

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.

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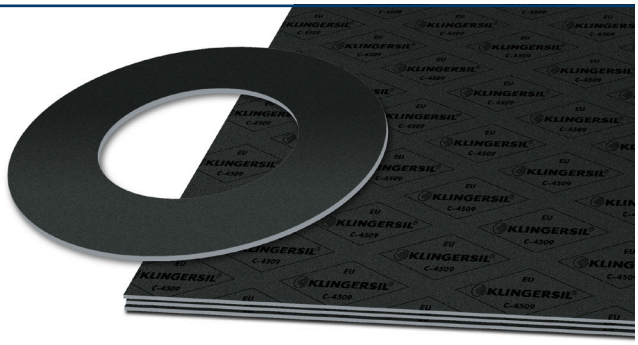
KLINGERSIL® C-4509

KLINGER Dichtungstechnik

KLINGERSIL® C-4509 - premium high-pressure gasket able to withstand very high thermal and mechanical stresses.

Carbon fibers, special high temperature-resistant additives and an NBR bonding make up this special high-pressure high-pressure gasket. Its expanded metal reinforcement makes it capable of withstanding the highest thermal and mechanical stresses and high bolt loads. This gasket material is the first choice for the chemical industry, where it is mainly used in tandem with alkaline media and steam. The basic material KLINGERSIL® C-4500 is a Fire-Safe grade.



Basis composition	Carbon fibers and special high temperature-resistant additives bonded with NBR.
Color	Black
Certificates	DNV GL approval

Sheet size	1000 x 1500 mm, 2000 x 1500 mm
Thickness	1.0 mm, 1.5 mm

Tolerances

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

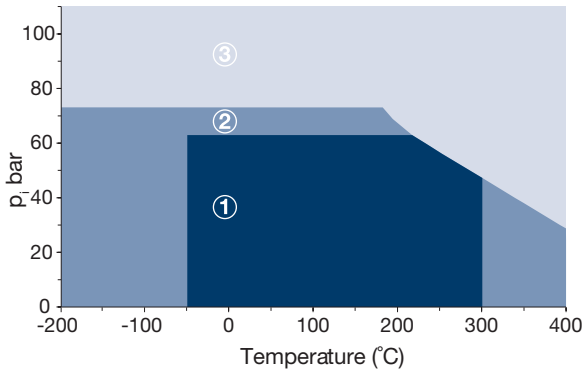
Industry

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

TECHNICAL DATA - Typical values for a thickness of 1.5 mm

Compressibility	ASTM F 36 J	%	10
Recovery	ASTM F 36 J	%	62
Stress relaxation DIN 52913	50 MPa, 16 h/300°C	MPa	43
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	41
KLINGER cold/hot compression	thickness decrease at 23°C	%	8
50 MPa	thickness decrease at 300°C	%	6
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	3
immersion ASTM F 146	fuel B: 5 h/23°C	%	5
Density		g/cm³	2.0
ASME-Code sealing factors			
for gasket thickness 1.5 mm	tightness class 0.1mg/s x m	MPa	y 30
			m 4.0

P-T diagram - thickness 1.5 mm



The area of the P-T diagram

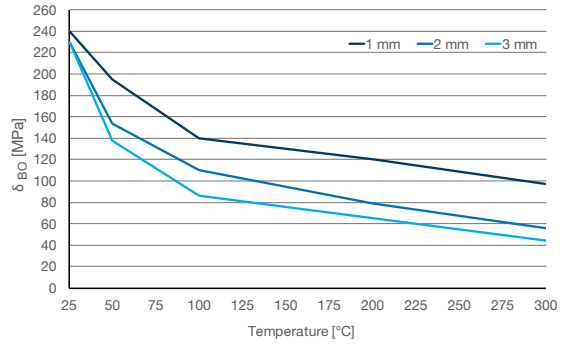
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

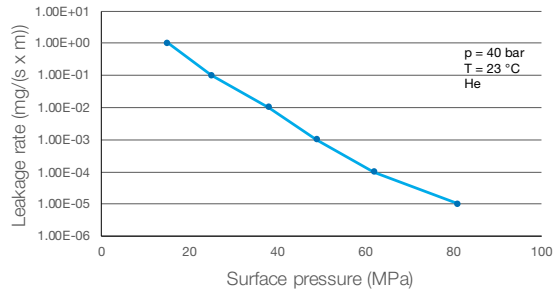
Sigma BO



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:

KLINGERSIL® C-4509 — **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.

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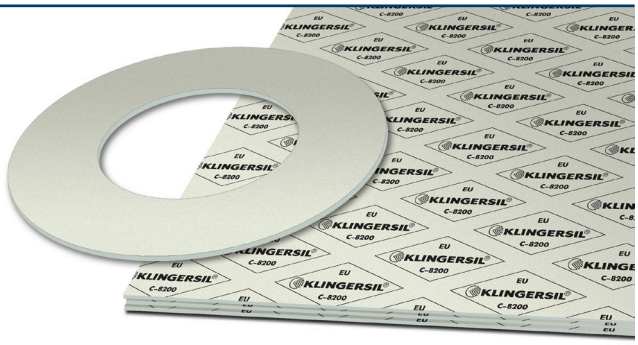
KLINGERSIL® C-8200

KLINGER Dichtungstechnik

KLINGERSIL® C-8200 - premium high-pressure gasket for use with acids.

Glass fibers bonded with special acid-resistant elastomers characterize this premium high-pressure gasket primarily used in tandem with concentrated acids. Highly versatile, it is also resistant to a wide variety of other media.



Basis composition	Glass fibers bonded with special acid-resistant elastomers.
Color	White
Certificates	DNV GL approval, TA-Luft (Clean air)

Sheet size	2000 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

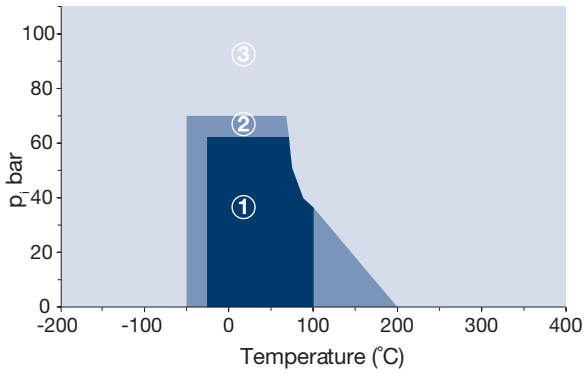
Industry

General industry / Chemical / Oil & Gas / Energy / Pulp & Paper

TECHNICAL DATA - Typical values for a thickness of 2.0 mm

Compressibility	ASTM F 36 J	%	9
Recovery	ASTM F 36 J	%	55
KLINGER cold/hot compression	thickness decrease at 23°C	%	7
25 MPa	thickness decrease at 200°C	%	15
Specific leakrate	VDI 2440	mbar x l/(s x m)	9.17E-09
Density		g/cm³	1.7
Acid tests			
Thickness increase after fluid	HNO_3, 96%, 18 h/23°C	%	unsuitable
immersion ASTM F 146	H_2SO_4, 96%, 18 h/23°C	%	15
	H_2SO_4, 65%, 48 h/23°C	%	8
	oil IRM 903: 5 h/150°C	%	5
	fuel B: 5 h/23°C	%	10
Average surface resistance	ρO	Ω	5.8x10E11
Average specific volume resistance	ρD	Ω cm	4.1x10E12
Average dielectric strength	Ed	kV/mm	17.0
Average power factor	50 Hz	tan δ	0.228
Average dielectric coefficient	50 Hz	εr	9.4
ASME-Code sealing factors			
for gasket thickness 2.0 mm	tightness class 0.1mg/s x m	MPa	y 20
			m 3.0

P-T diagram - thickness 2.0 mm



The area of the P-T diagram

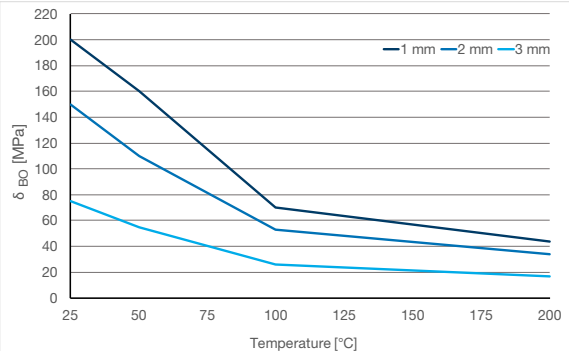
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

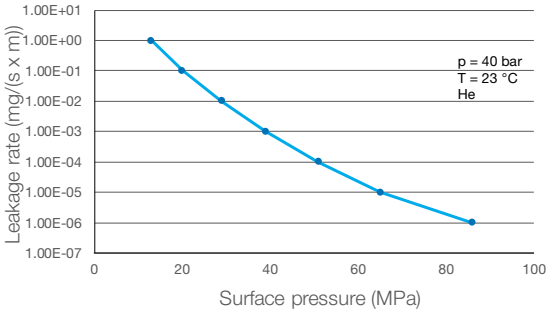
Sigma BO



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:

KLINGERSIL® C-8200 — **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)
C	**C**	**C**	**C**	**C**	**C**	**A**	**B**	**C**	**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
Rich. Klinger Dichtungstechnik GmbH & Co KG / Am Kanal 8-10 / A-2352 Gumpoldskirchen, Austria
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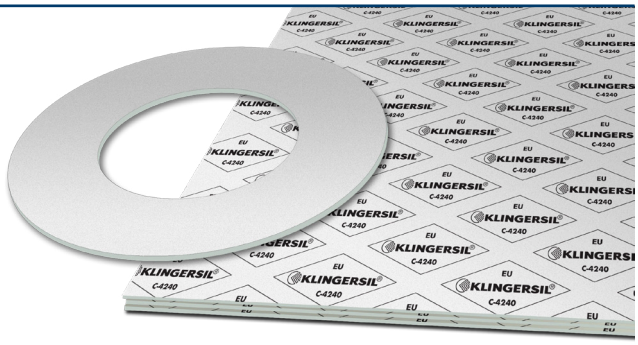
KLINGERSIL® C-4240

KLINGER Dichtungstechnik

KLINGERSIL® C-4240 is a gasket specially designed for the individual requirements of the drinking water supply.

Application in noncritical media such as drinking water, water, oils, fuels, hydrocarbons and inert gases.



Basis composition	NBR (drinking water type) bonded, reinforced with cellulose fibers. All raw materials are positively assessed with regard to their use in drinking water.
Color	White
Certificates	Elastomer-Guideline, WRAS approval (in preparation), DIN-DVGW W 270 (in preparation)

Sheet size	2000 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

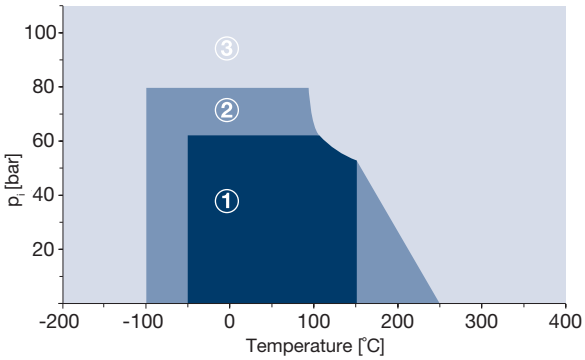
Industry

General Industry / 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	%	10
Recovery	ASTM F 36 J	%	45
Stress relaxation DIN 52913	50 MPa, 16 h/175°C	MPa	35
KLINGER cold/hot compression	thickness decrease at 23°C	%	10
50 MPa	thickness decrease at 200°C	%	15
Tightness	DIN 28090-2	mg/(s x m)	0.01
Thickness increase after fluid immersion	oil IRM 903: 5 h/150°C	%	5
ASTM F 146	fuel B: 5 h/23°C	%	10
Density	DIN 28090-2	g/cm³	1.75

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.

Chemical resistance chart

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

KLINGERSIL® C-4240 — **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**	**C**	**C**

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

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