KLINGER® top-sil ML1

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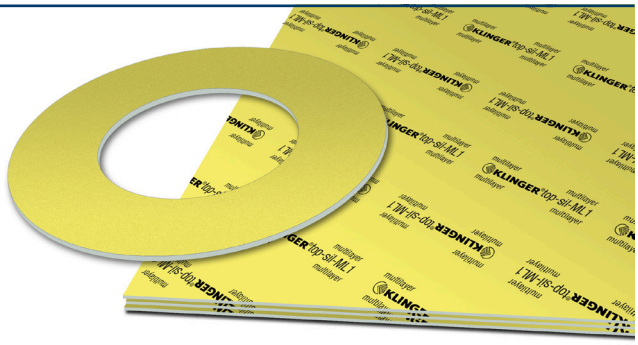
KLINGER® top-sil ML1 - unique multi-layer material concept - a milestone for fiber-reinforced gaskets.

This gasket material makes use of the effects achieved by combining synthetic fibers and different elastomers into a special multi-layer sealing matrix. The result: An extended service life and improved flexibility at higher temperatures. Highly versatile, it can be utilized for a wide range of media and applications, including oils, water, steam, gases, salt solutions, fuels, alcohols, moderate organic and inorganic acids, hydrocarbons, lubricants and refrigerants.



Basis composition	Synthetic fibers and elastomers, bonded in a multi-layer structure.
Color	Yellow
Certificates	BAM-tested, DIN-DVGW, DNV GL approval, TA-Luft (Clean air), Fire-safe acc. to DIN EN ISO 10497

Sheet size	2000 x 1500 mm
Thickness	0.8 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

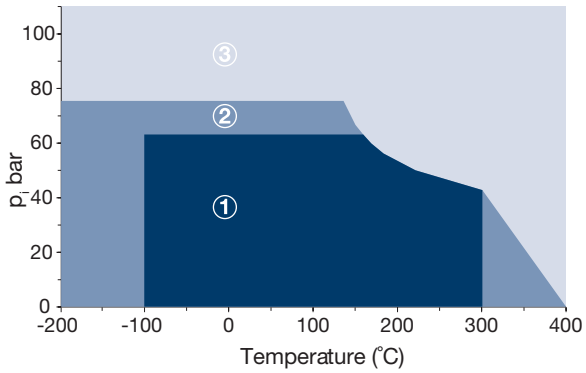
Industry

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	%	50
Stress relaxation DIN 52913	50 MPa, 16 h/175°C	MPa	34
	50 MPa, 16 h/300°C	MPa	28
Stress relaxation BS 7531	40 MPa, 16 h/300°C	MPa	29
KLINGER cold/hot compression	thickness decrease at 23°C	%	8
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)	3.51E-06
Thickness increase after fluid	oil IRM 903: 5 h/150°C	%	4
immersion ASTM F 146	fuel B: 5 h/23°C	%	8
Density		g/cm³	1.7
Average surface resistance	ρO	Ω	9.3x10E12
Average specific volume resistance	ρD	Ω cm	3.8x10E12
Average dielectric strength	Ed	kV/mm	18.8
Average power factor	50 Hz	tan δ	0.048
Average dielectric coefficient	50 Hz	εr	7.3
Thermal conductivity	λ	W/mK	0.36
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 15
			m 2.2

P-T diagram - thickness 2.0 mm



The area of the P-T diagram

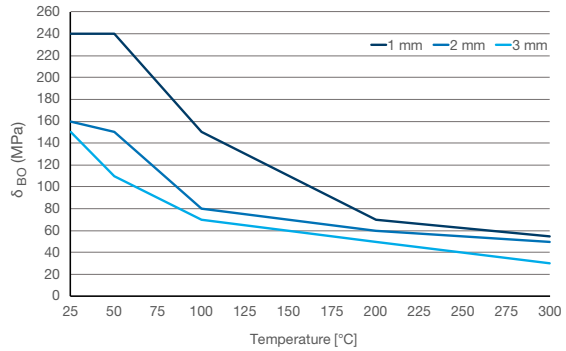
① In area one, the gasket material is normally suitable subject to chemical compatibility.

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.

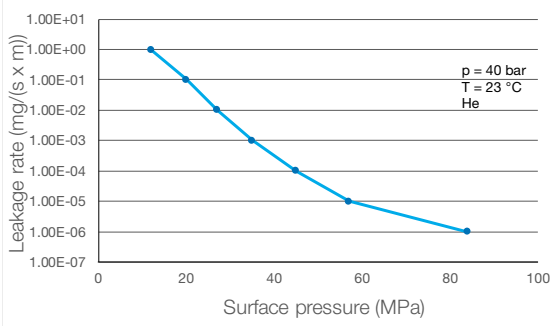
Sigma BO



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-sil ML1 — **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 contact us

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