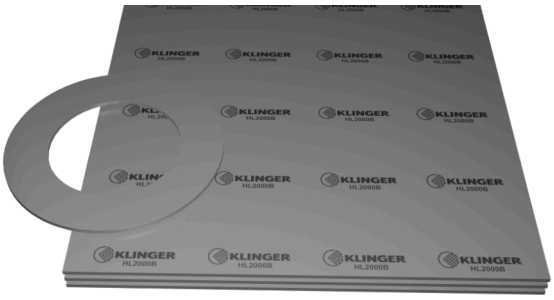
Graphite Laminate HL

Klinger® Graphite Laminate HL - laminated flexible graphite foil

graphite sealing material made of laminated graphite foils with no insert. The material is highly compactable and compressible which allows it to seal well at low surface pressures. The absence of a metallic insert gives excellent chemical resistance and allows the material to be used with sensitive flanges like enamel, glass or plastic. The amount of adhesive is less than 1% of the amount of the graphite which does not affect chemical and thermal properties of the laminate.



Basic composition Foil made of expanded natural graphite, with anti-stick coating upon request

Colour grey

Certificates

Sheet size 1000 x 1000 mm, 1500 x 1500 mm

Thickness 1.5 mm, 2.0 mm, 3.0 mm

Tolerances

Thickness	± 5 %
Length	± 5 mm
Width	± 5 mm

Industries

General industry | Chemical | Oil&Gas | Energy | Pulp&Paper | Marine

Technical data - Typical values for a thickness of 2.0 mm and “B” Quality graphite. Other graphite qualities are available upon request, see the Klinger “Graphite Product Manual” for more details.

Density of the graphite layer	DIN 28090-2	g/cm³	1.0
Purity of graphite	DIN 51903	%	≥ 99.0
Oxidation rate	DIN 28090-2	%/h	≤ 4
Chloride content of graphite layer	EN 15408	ppm	≤ 40
Fluoride content of graphite layer	EN 15408	ppm	≤ 50
Sulphur content of graphite layer	EN 15408	ppm	≤ 750
Compressibility	ASTM F36A	%	40 - 50
Recovery	ASTM F36A	%	8 - 15
Maximum gasket stress Q_{Smax} at RT	EN 13555	MPa	80
Maximum gasket stress Q_{Smax} at 300°C	EN 13555	MPa	60
Minimum required gasket stress in assembly $Q_{min(0.1)}$ at RT and 40 bar	EN 13555	MPa	21
Cold compressibility	DIN 28090-2	%	40 - 50
Cold recovery	DIN 28090-2	%	3 - 5
Hot creep	DIN 28090-2	%	0.5 - 2
Hot recovery	DIN 28090-2	%	2 - 4

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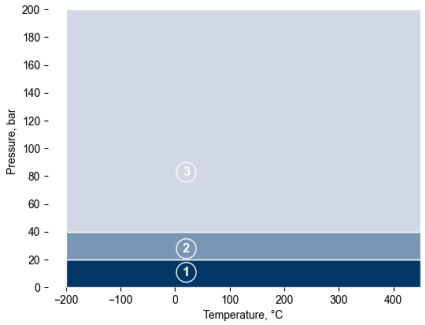
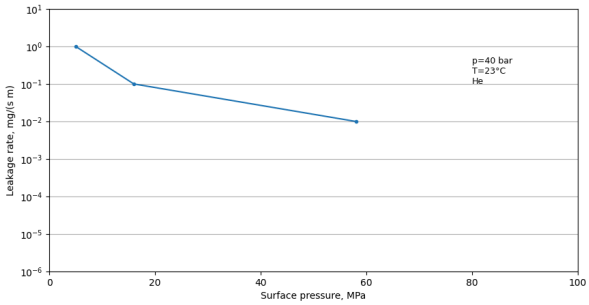
P-T diagram



The area of the P-T diagram
In area one, the gasket material is normally suitable subject to chemical compatibility.
In area two, the gasket material may be suitable but a technical evaluation is recommended.
In area three, do not install the gasket without a technical evaluation.
Always confirm the chemical resistance of the gasket to the media.

Tightness performance



The tightness performance of graphite
The graph shows the required stress at assembly to seal a certain tightness class.
The determination of the graph is based on the EN13555 test procedure which applies 40 bar 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:

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	B	B

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.

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