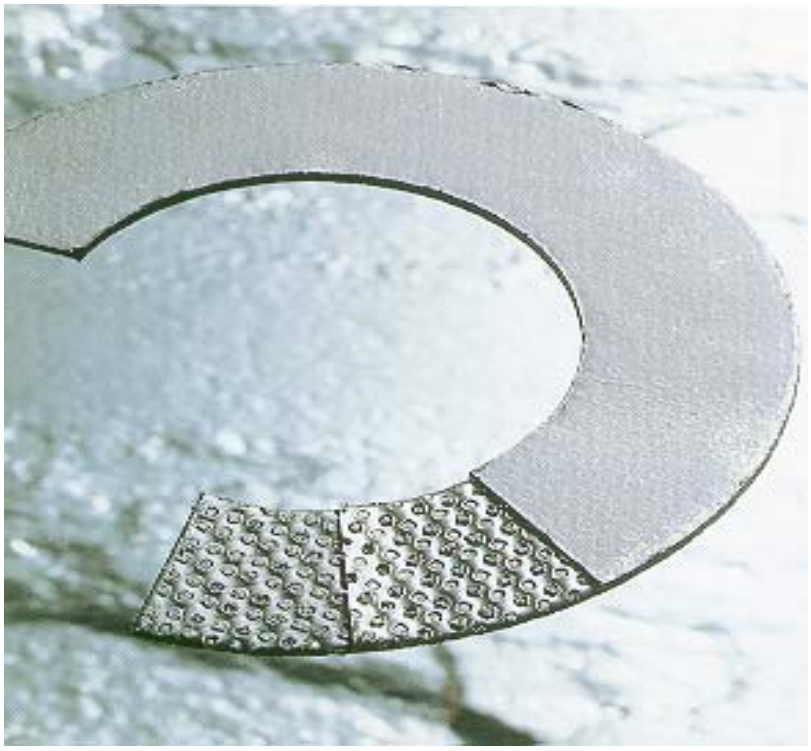
KLINGER®



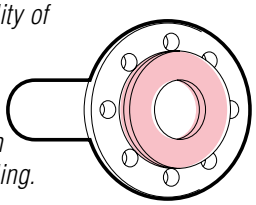
KLINGER Graphite Laminate PSM

Also available with KLINGERantistick (AS)

KLINGERgraphite PSM Certified Fire Safe!

AGA Certified to AS4623-2008 Class III-Pressure 2MPa

Forget about all unpleasant properties which you know from laminated graphite. Our quality of KLINGERgraphite -laminate PSM, SLS and PDM offer high strength and optimal handling.



KLINGERgraphite-laminate PSM

AGA Certified to AS 4623-2008 Class III -Pressure2MPa

Technical data		
Density of graphite layer	g/cm³	1,0 +- 5%
Max. perm. surface load at 450 °C	MPa	300
Compressibility ASTM F 36 A	%	28 – 42
Recovery ASTM F 36 A	%	13 – 19
Stress relaxation DIN 52913:		
50 MPa, 16 h/300 °C	MPa	min. 48
KLINGER cold hot compression:		
Surface load 50 MPa		
Thickness decrease at 23 °C	%	30
Thickness decrease at 300 °C	%	1.5
Tightness according to DIN 3535 part 6	ml/min.	0.6
Chloride content of graphite layer	ppm	max. 40
Thickness	mm	1.0
Size of sheets	mm	1,000/1,000
	mm	1,500/1,500
Thickneses: 0.8/ 1.0/ 1.5/ 2.0/ 3.0 mm		
KLINGERantistick (A/S) on request		

Suitable for temperatures up to approx. 450 °C.
In an inert atmosphere (no admission of oxygen) even suitable for higher temperatures.

Fields of application:
Particularly suitable under high chemical and thermal loads.

KLINGERgraphite-laminate PSM keeps its physical properties in the entire field of application.(Resistance table see back.)

Suitable for media used in the food industry. In accordance with Landesgewerbeamt von Baden-Württemberg and the requirements of the German Food Act.

The function and durability of the Klinger gaskets depends largely on the installation conditions which we as manufacturers cannot influence. We therefore only guarantee a perfect condition of our material.

Material structure:

A KLINGERgraphite foil is rolled on a 0.10 mm thick tanged stainless steel sheet (1.4401*) without adhesive.

Order example:
1 sheet
KLINGERgraphite-laminate PSM
1500 or 1,000 x 1,000 x 1.5 mm.

Other delivery options
Rings and other finished gaskets are also available in any size and corresponding sheet thicknesses.

Tests and approvals:
DIN-DVGW approval no. NG-5124AT0417.

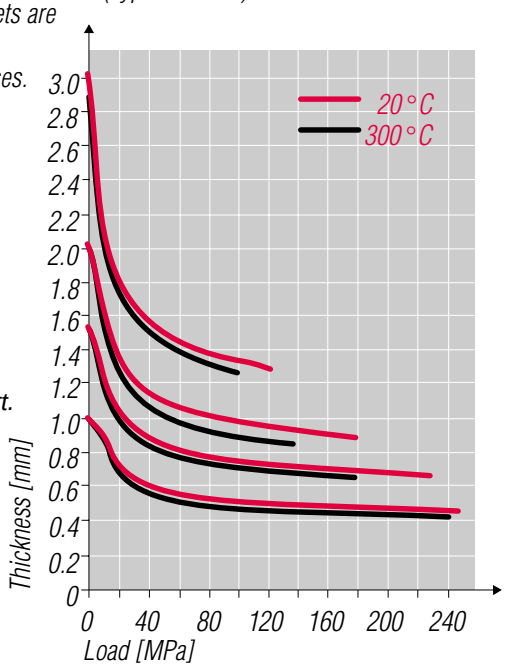
BAM approval in accordance with UVV 28, oxygen (VBG 62) tested up to 130 bar and 200 °C, also for use with liquid oxyen, WRc approval.
Fire SafeAPI6FB, AGA Cert.

Anti-stick finish:

The KLINGERgraphite-laminate PSM is available with KLINGERantistick. (A/S) A finish which keeps its stability even at high temperatures and causes no organic contaminations of the pure graphite.

0.8 mm, 1.5 mm, 2mm, and 3 mm thick sheets are also available.

Load diagram for KLINGERgraphite-laminate PSM with tanged stainless steel sheet reinforcement, thickness 0.1 mm, initial density 1.0 g/cm³, several initial thickneses.
(Typical values).



* In case of supply shortfall also 1.4404 may be delivered.

Chemical Resistance table for all KLINGERgraphite products

Medium	Concentration [%]	Temperature up to °C
Acetic acid	●	N.I.
Acetic acid anhydride	●	N.I.
Acetone	●	N.I.
Air	●	450
Alum	●	N.I.
Aluminium chloride	●	N.I.
Amino acid	●	N.I.
Ammonia	●	N.I.
Ammonium hydroxide	●	N.I.
Ammonium sulfate	●	N.I.
Amyl acetate	●	N.I.
Amyl alcohol	●	N.I.
Aniline	●	N.I.
Aqua regia	■	N.I.
Arsenic acid	●	N.I.
Benzenesulfonic acid	< 60	N.I.
Benzol and derivates	●	N.I.
Bitumen	●	N.I.
Boric acid	●	N.I.
Bromine	■	N.I.
Bromine water	●	N.I.
Butane	●	N.I.
Butanone	●	N.I.
Butyl acetate	●	N.I.
Butyl alcohol	●	N.I.
Calcium chlorate	< 10	60
Calcium chloride	< 15	N.I.
Calcium hydroxide	●	N.I.
Calcium hypochlorite	●	N.I.
Carbon tetrachloride	●	N.I.
Carbonic acid	●	N.I.
Cellosolve	●	N.I.
Chlorine (dry)	●	N.I.
Chlorine dioxide	■	N.I.
Chlorine water	●	25
Chloroacetic acid	●	25
Chloroform	●	N.I.
Chromic acid	< 10	25
Citric acid	●	N.I.
Condensate	●	N.I.
Copper sulfate	●	N.I.
Cyclohexane	●	N.I.

Medium	Concentration [%]	Temperature up to °C
Diethanolamine	●	N.I.
Ethyl alcohol	●	N.I.
Ethyl chloride	●	N.I.
Ethyl dichloride	●	N.I.
Ethylamine	●	N.I.
Ethylene chlorohydrine	< 10	N.I.
Fatty acids	●	N.I.
Fluorine	●	N.I.
Formic acids	●	N.I.
Frigen (Freon)	●	N.I.
Hydrazine	●	N.I.
Hydro sulfide	●	N.I.
Hydrobromic acid	●	N.I.
Hydrocarbones	●	N.I.
Hydrochloric acid	●	N.I.
Hydrofluoric acid	●	140
Iodine	●	N.I.
Iron chlorides	●	N.I.
Iron sulfates	●	N.I.
Isopropanole	●	N.I.
Isopropyl acetates	●	N.I.
Isopropyl ether	●	N.I.
Kerosene	●	N.I.
Lactic acid	●	N.I.
M.E.K. (2-butanone)	●	N.I.
Manganese sulfates	●	N.I.
Mercaptoethylene	< 50	N.I.
Methanol	●	N.I.
Methylen chloride	●	N.I.
Methylpentanone peroxide	●	N.I.
Mineral oil	●	N.I.
Monochlorbenzene	●	N.I.
Nickel chloride	●	N.I.
Nickel sulfate	●	N.I.
Nitrating acid	■	N.I.
Nitric acid		85
Oils	●	N.I.
Oleum	■	N.I.
Oleic acid	●	N.I.
Oxalic acid	●	N.I.
Oxygen	●	200
Oxygen liquid	●	N.I.

Medium	Concentration [%]	Temperature up to °C
Paraldehyde	●	N.I.
Perchlorethylene	●	N.I.
Petrol (Fuel)	●	N.I.
Petroleumether	●	N.I.
Petroleum/-products	●	N.I.
Phosphoric acid	< 50	N.I.
Phosphorus trichloride	●	N.I.
Potassium chlorate (melt)	■	N.I.
Potassium nitrate (melt)	■	N.I.
Propane	●	N.I.
Sodium carbonate	●	N.I.
Sodium chloride	●	N.I.
Sodium hydroxide	< 75	N.I.
Sodium hypochloride	< 20	30
Sodium peroxide	■	N.I.
Steam	●	N.I.
Stearic acid	●	N.I.
Sulfur dioxide	●	N.I.
Sulfur trioxide	■	N.I.
Sulfuric acid	< 70	20
Sulfurous acid	●	N.I.
Synthetic resins	●	N.I.
Tartaric acid	●	N.I.
Terpentine	●	N.I.
Trichlor ethylene	●	N.I.
Vinyl chloride	●	N.I.
Water	●	N.I.
Zinc chloride	●	N.I.

● = suitable for any concentration

■ = unsuitable

N.I. = no influence

Subject to technical alterations. 4.99

Properties

Please note the resistance table in the margin

The given concentrations and temperatures might be exceeded if the medium is not, or is only in restricted contact with the graphite. This case arises when edged and spiral wound gaskets are used.

KLINGERgraphite is not resistant to mixtures of nitric acid and other stronger acids (e.g. nitrating acid, aqua regia etc.), chromium VI and permanganate solutions as well as melts af alkali or alkaline earth metals.The given recommendations serve only as a guide to the use of KLINGERgraphite.

We cannot give a guarantee as function and durability depend on a variety of factors which we as manufacturers cannot influence. If there are particular conditions of admission these have to be observed.

For information on other media or operating conditions we are at your disposal.

Properties of flexible KLINGERgraphite

– No flowing under pressure and temperature loads

– temperature-resistant from -200 °C to +450 °C (in inert atmosphere even higher)

– reliable sealing of gases and liquids

– excellent micro-sealing

– chemically resistant to nearly all medias

– excellent resistance to temperature fluctuations

– high flat heat conductivity

– no health hazard

– unlimited shelf live

– no combination with glass and ceramics

Subject to technical alterations.
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