KLINGER®soft-chem

KLINGER®soft-chem is an expanded PTFE material that has brought gasketing technology to a new level of performance.

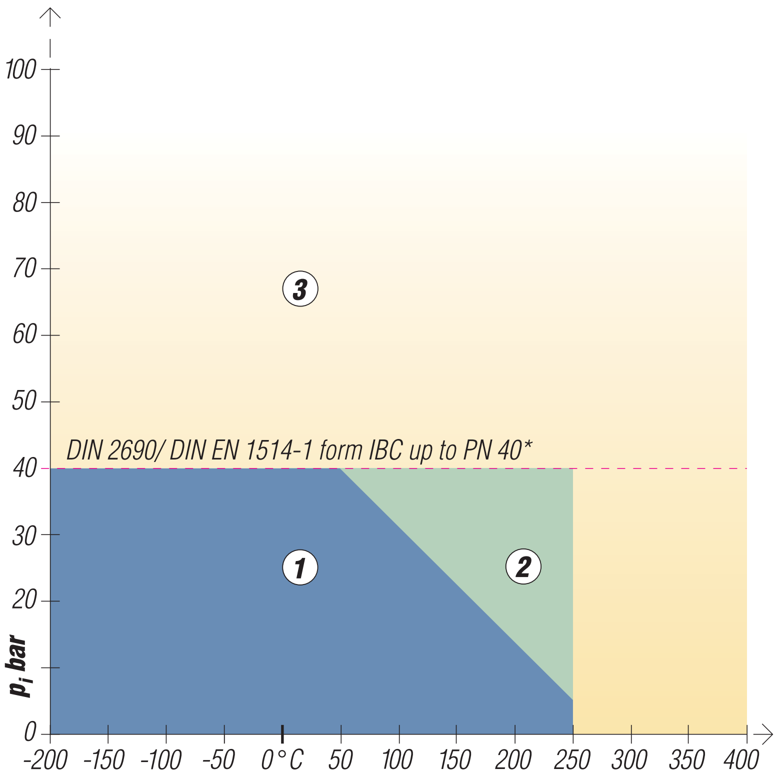
Use following advantages of the sealing material in your application:

- *Highest sealability*
- *Excellent chemical resistance*
- *Lowest gas- and fluid permeation*
- *Prevention of corrosion*
- *Resistant against steam and condensate*
- *High compressibility*
- *Excellent compensation of irregularities of the sealing surface*
- *Superior creep resistance*
- *Overloading is practically impossible*
- *Very easy to process*

Excellent corrosion resistance together with superior creep resistance and sealability create a high-grade gasket material for a wide application field in your plant.

Many of your demands in gasketing can be fulfilled in an economical and safe way by KLINGER®soft-chem. Therefore it is a material suitable as a standard type in your stock.

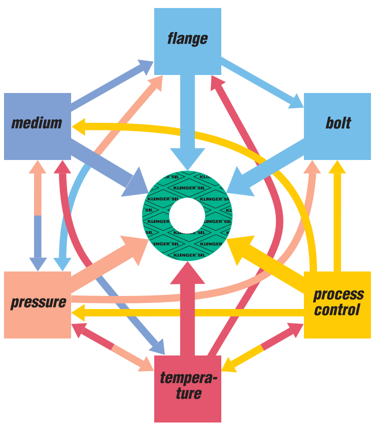
The best choice for economical plant-wide use on services to 260°C and pressures to 200 bar.



**Gaskets according to DIN 2690 are only standardised up to PN 40 and gasket thickness 2 mm.*

The many, varied demands placed on gaskets

A common perception is that the suitability of a gasket for any given application depends upon the maximum temperature and pressure conditions. This is not the case.



Maximum temperature and pressure values alone can not define a material's suitability for an application.

These limits are dependent upon a multiplicity of factors as shown in the diagram below.

It is always advisable to consider these factors when selecting a material for a given application.

Selecting gaskets with pT diagrams

The Klinger pT diagram provides guidelines for determining the suitability of a particular gasket material for a specific application based on the operating temperature and pressure only.

Additional stresses such as fluctuating load may significantly affect the suitability of a gasket in the application and must be considered separately. Always refer to the chemical resistance of the gasket to the fluid.

Areas of Application

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

② In area two, the gasket materials may be suitable but a technical evaluation is recommended.

③ In area three, do not install the gasket without a technical evaluation.

Typical values			
Compressibility ASTM F36 J		%	50-60
Recovery ASTM F36 J	min.	%	13-17
Stress relaxation DIN 52913	30 MPa, 16 h/150°C	MPa	15
Klinger Hot Compression	thickness decrease at 23 °C	%	35
25 MPa	thickness decrease at 150°C	%	30
Tightness according DIN 28090		mg/s x m	0,01
Chemical resistance		pH	0-14
Density		g/cm³	0,9
ASME-Code sealing factors			
	tightness class 0.1 mg/s x m	MPa	y 5
		MPa	m 2

Klinger Hot and Cold Compression Test Method

The Klinger Hot Compression Test was developed by Klinger as a method to test the load bearing capabilities of gasket materials under hot and cold conditions.

In contrast to the BS 7531 and DIN 52913 tests, the Klinger Compression test maintains a constant gasket stress throughout the entire test. This subjects the gasket to more severe conditions.

The thickness decrease is measured at an ambient temperature of 23°C after applying the gasket load. This simulates assembly.

Temperatures up to 300°C are then applied and the additional thickness decrease is measured. This simulates the first start up phase.

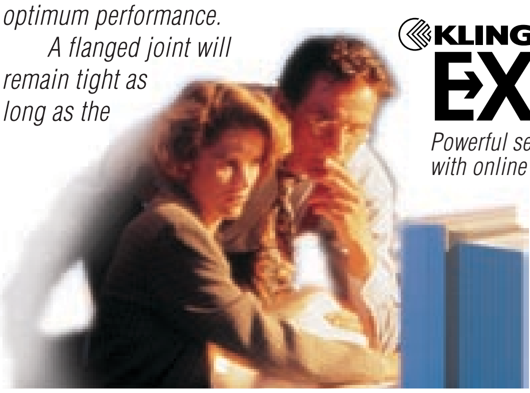
Important points to be observed

With heightened awareness of safety and environmental issues, reducing leaks from flanged assemblies has become a major priority for industry. It is therefore important for companies who use gaskets to choose the correct material for the job and install and maintain it correctly to ensure optimum performance.

A flanged joint will remain tight as long as the surface pressure in service is higher than the minimum surface pressure required to achieve the necessary levels of tightness but is lower than the maximum permissible surface pressure. But increasingly high demands on the tightness requirements for flanged joints (e.g. Tightness class L 0.1 in accordance with DIN 28090) necessitate the application of high loads on the gasket material in order to meet these stringent requirements.

In cyclic loading conditions we recommend a minimum surface stress of 30 MPa and that the gasket should be as thin as is practicable.

For safety reasons never re-use gaskets.



Dimensions of the standard sheets

Size:
1,500 mm x 1,500 mm
Thicknesses:
1.5 mm, 2.0 mm, 3.0 mm
other thicknesses on request.
Tolerances:
thickness ± 10%
length ± 50 mm, width ± 50 mm

Function and durability

The performance and service life of KLINGER gaskets depend in large measure on proper storage and fitting, factors beyond the manufactor's control. We can, however, vouch for the excellent quality of our products.

With this in mind, please also observe our installation instructions.

Tests and approvals

The components of KLINGER®soft-chem are fully compatible with FDA requirements.

Subject to technical alterations.
Status: March 2004

Certified according to DIN EN ISO 9001:2000

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KLINGER®

KLINGER® soft-chem
Chemical resistance

Acetaldehyde	● 260°C	Chloroform	● 260°C	Isopropyl alcohol	● 260°C	Pydraul	● 260°C
Acetamide	● 260°C	Chromic acid	● 260°C	**Kerosene**	● 260°C	Pyridine	● 260°C
Acetic acid	● 260°C	Citric acid	● 260°C	**Lactic acid**	● 260°C	**Rape seed oil**	● 260°C
Acetic acid ester	● 260°C	Chlorotrifluoride	▲ –	Lead acetate	● 260°C	Rubidium melt	▲ –
Acetone	● 260°C	Condensation water	● 260°C	Lead arsenate	● 260°C	**Salicylic acid**	● 260°C
Acetylene	● 260°C	Copper acetate	● 260°C	Linseed oil	● 260°C	Sea water	● 260°C
Adipic acid	● 260°C	Copper sulphate	● 260°C	Lithium melt	▲ –	Silicon oil	● 260°C
Air	● 260°C	Creosote	● 260°C	**Magnesium sulphate**	● 260°C	Skydrol 500	● 260°C
Alum	● 260°C	Cresol	● 260°C	Malic acid	● 260°C	Soap	● 260°C
Aluminium acetate	● 260°C	Crude oil	● 260°C	MEK butanone	● 260°C	Soda	● 260°C
Aluminium chlorate	● 260°C	Cyclohexanol	● 260°C	Methane	● 260°C	Sodium aluminate	● 260°C
Aluminium chloride	● 260°C	**Decahydronaphthalene**	● 260°C	Methyl alcohol	● 260°C	Sodium bicarbonate	● 260°C
Ammonia	● 260°C	Dibenzyl ether	● 260°C	Methyl chloride	● 260°C	Sodium bisulphite	● 260°C
Ammonium carbonate	● 260°C	Dibutyl phthalate	● 260°C	Methylene chloride	● 260°C	Sodium chloride	● 260°C
Ammonium chloride	● 260°C	Diesel oil	● 260°C	Mineral oil no. 1	● 260°C	Sodium cyanide	● 260°C
Ammonium diphosphate	● 260°C	Dimethyl formamide	● 260°C	Mineral oil no. 2	● 260°C	Sodium hydroxide	● 260°C
Ammonium hydroxide	● 260°C	Diphyl	● 260°C	Monochlorethane	● 260°C	Sodium melt	▲ –
Amyl acetate	● 260°C	Dye bath	● 260°C	**Naphtha**	● 260°C	Sodium silicate	● 260°C
Aniline	● 260°C	**Ethane**	● 260°C	Natural gas	● 260°C	Sodium sulphide	● 260°C
Anon cyclohexanone	● 260°C	Ethanol	● 260°C	Nitric acid	● 260°C	Sodium sulphate	● 260°C
Arcton 12	● 260°C	Ethyl acetate	● 260°C	Nitrobenzene	● 260°C	Spinning baths	● 260°C
Arcton 22	● 260°C	Ethyl alcohol	● 260°C	Nitrogen	● 260°C	Spirit	● 260°C
Asphalt	● 260°C	Ethyl chloride	● 260°C	**Octane**	● 260°C	Starch	● 260°C
Aviation fuel	● 260°C	Ethyl ether	● 260°C	Oil	● 260°C	Steam	● 260°C
Barium chloride	● 260°C	Ethylendiamine	● 260°C	Oleanolic acid	● 260°C	Stearic acid	● 260°C
Benzene	● 260°C	Ethylene	● 260°C	Oleic acid	● 260°C	Sugar	● 260°C
Benzoic acid	● 260°C	Ethylene chloride	● 260°C	Oxalic acid	● 260°C	Sulphur dioxide	● 260°C
Blast furnace gas	● 260°C	Ethylene glycol	● 260°C	Oxygen	● 260°C	Sulphuric acid	● 260°C
Bleaching solution	● 260°C	**Fluorine dioxide**	▲ –	**Palminic acid**	● 260°C	Sulphurous acid	● 260°C
Boiler feed water	● 260°C	Fluorine gaseous	▲ –	Pentane	● 260°C	**Table salt**	● 260°C
Borax	● 260°C	Fluorine liquid	▲ –	Perchlorethylene	● 260°C	Tannic acid	● 260°C
Boric acid	● 260°C	Fluorosilicic acid	▲ –	Petroleum	● 260°C	Tannin	● 260°C
Brine	● 260°C	Formaldehyde	● 260°C	Petroleum benzin	● 260°C	Tar	● 260°C
Butane	● 260°C	Formamide	● 260°C	Petroleum ether	● 260°C	Tartaric acid	● 260°C
Butanol	● 260°C	Formic acid	● 260°C	Phenol	● 260°C	Tetrachloroethane	● 260°C
Butanone	● 260°C	Freon 12	● 260°C	Phosphoric acid	● 260°C	Tetrahydronaphthale	● 260°C
Butyl acetate	● 260°C	Freon 22	● 260°C	Phthalic acid	● 260°C	Toluene	● 260°C
Butylamine	● 260°C	**Generator gas**	● 260°C	Polychl. biphenyls.	● 260°C	Town gas	● 260°C
Butyle alcohol	● 260°C	Glacial acetic acid	● 260°C	Potassium acetate	● 260°C	Transformer oil	● 260°C
Butyric acid	● 260°C	Glycerine	● 260°C	Potassium carbonate	● 260°C	Trichloroethylene	● 260°C
Caesium melt	▲ –	**Heating oil**	● 260°C	Potassium chlorate	● 260°C	Triethanolamine	● 260°C
Calcium chloride	● 260°C	Heptane	● 260°C	Potassium chloride	● 260°C	Turpentine	● 260°C
Calcium hydroxide	● 260°C	Hydraulic oil	● 260°C	Potass. chrom.sulph.	● 260°C	**Urea**	● 260°C
Calcium hypochlorite	● 260°C	Hydraulic oil 2	● 260°C	Potassium cyanide	● 260°C	**Vinyl acetate**	● 260°C
Calcium sulphate	● 260°C	Hydraulic oil 3	● 260°C	Potassium dichrom.	● 260°C	**Water**	● 260°C
Carbolic acid	● 260°C	Hydrazine hydrate	● 260°C	Potassium hydroxide	● 260°C	Water flask	● 260°C
Carbon dioxide	● 260°C	Hydrochloric acid	● 260°C	Potassium hypochl.	● 260°C	Water vapour	● 260°C
Carbon disulphide	● 260°C	Hydrofluoric acid	■ 100°C	Potassium iodide	● 260°C	White spirit	● 260°C
Carbon tetrachloride	● 260°C	Hydrofluosilic acid	▲ –	Potassium melt	▲ –	**Xylene**	● 260°C
Castor oil	● 260°C	Hydrogen	● 260°C	Potassium nitrate	● 260°C		
Chlorine water	● 260°C	Hydrogen chloride	● 260°C	Potassium nitrite	● 260°C		
Chlorine, dry	● 260°C	Hydrogen peroxide	● 260°C	Potassium permang.	● 260°C		
Chlorine, moist	● 260°C	**Isooctane**	● 260°C	Propane	● 260°C		

● resistant
(Suitable for the appropriate use as a compressed gasket between flange areas)
■ suitable with sufficient surface stress
▲ do not use without contacting manufacturer

Temperatures are max. values

Certified according to DIN EN ISO 9001:2000

Subject to technical alterations.
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