KLINGER® soft-chem

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

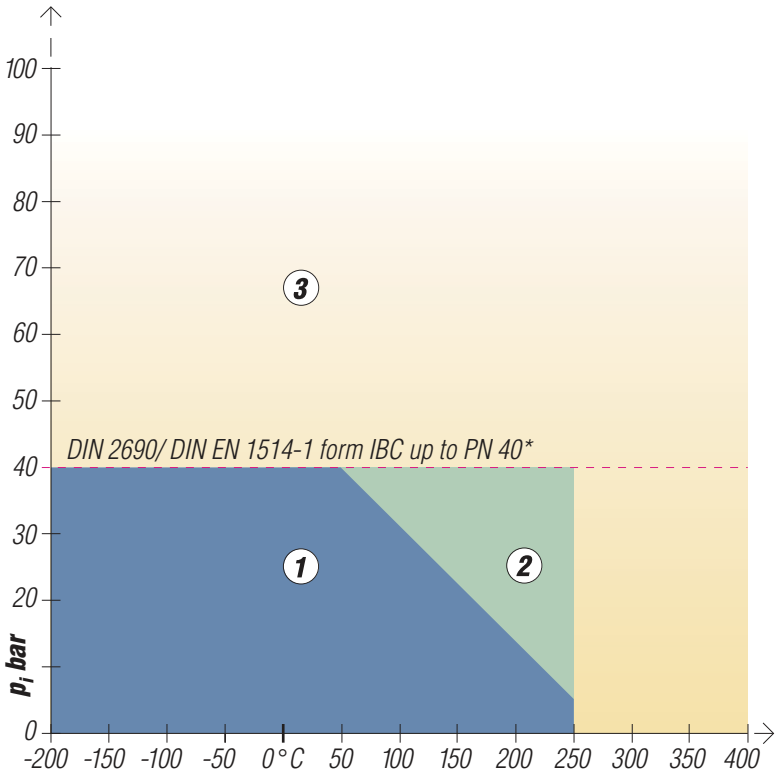
Use following advantages of the sealing material in your application:

- *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.

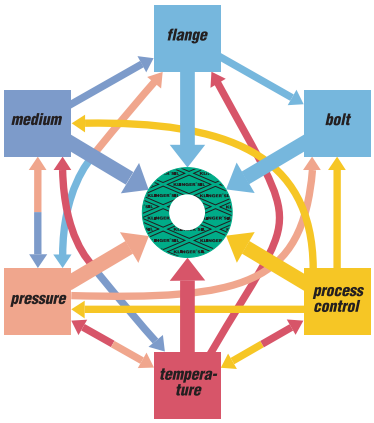
The best choice for economical plant-wide use on services to 260°C and pressures to 200 bar.



*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.

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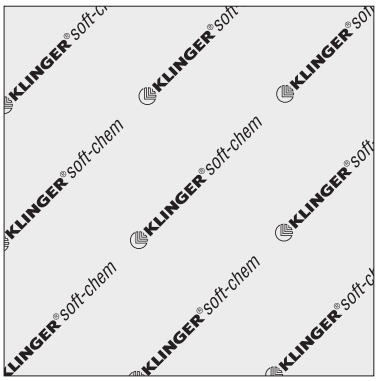

Typical values			
Compressibility ASTM F36 J		%	50-60
Recovery ASTM F36 J	min.	%	13-17
Stress relaxation DIN 52913	30 MPa, 16 h/150°C	MPa	15
Klinger Hot Compression	thickness decrease at 23 °C	%	35
25 MPa	thickness decrease at 150°C	%	30
Tightness according DIN 28090		mg/s x m	0,01
Chemical resistance		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.

KLINGER EXPERT®

Powerful sealing calculation with online help on CD-ROM

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® soft-chem
Chemical resistance

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