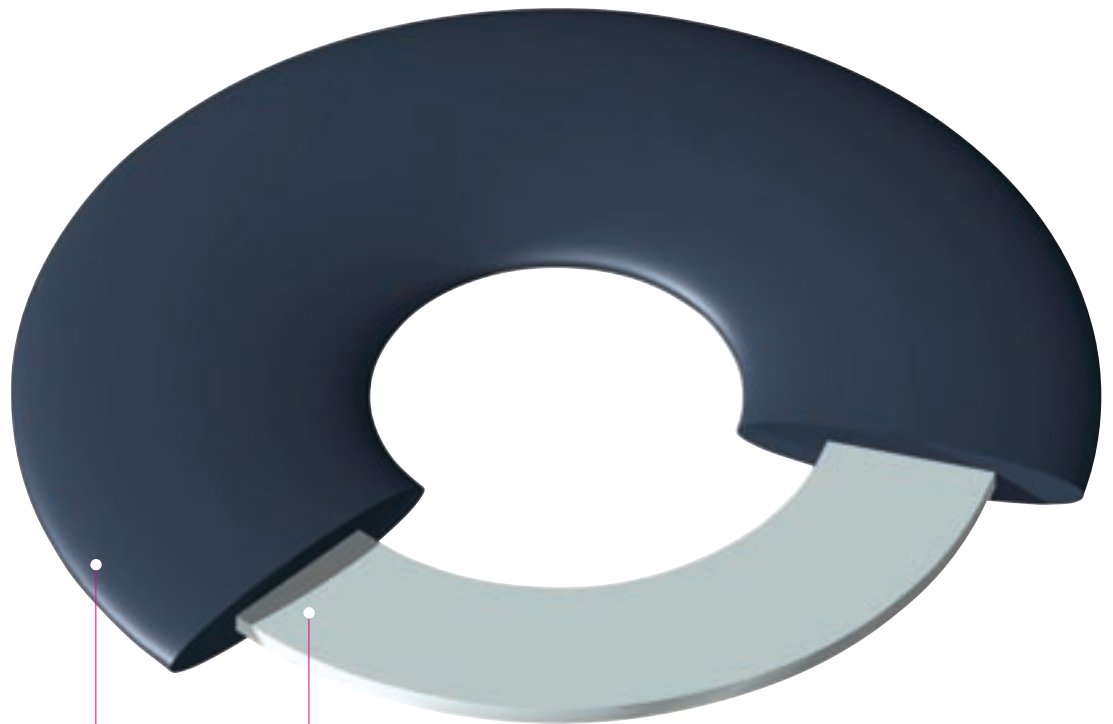


KLINGER-KGS Rubber-Metal- Gasket

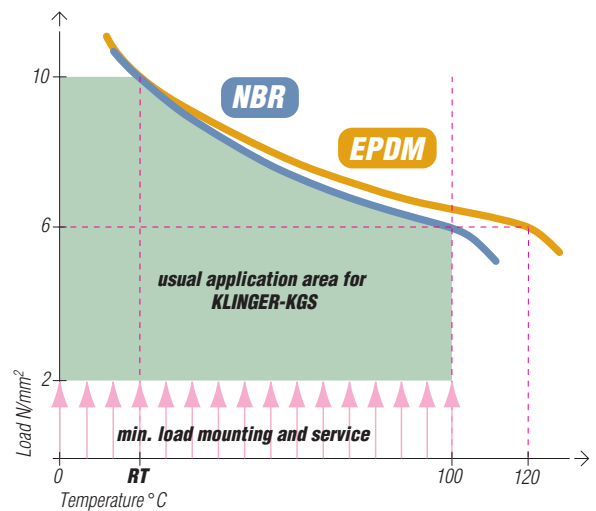
Where safe sealing of water, air, acids, alkalines and hydrocarbons is required at low forces and low temperatures, KLINGER-KGS is an interesting solution.

Suitable for flanges made of plain steel, stainless steel, glassfibre reinforced plastic, PP, PVC, PE and for coated flanges.



Elastomere materials in different types and for various applications

Inside vulcanised steel ring



KLINGER-KGS
Rubber-Metal-Gasket
acc. to DIN EN 1514-1,
Form IBC
 replaces DIN 2690

Application fields

- at piping design for gas and water piping
- at rubber coated flanges of pipes and apparatus
- at enamelled flanges of pipes and apparatus
- at constructions of plastic apparatus (low sealing forces)

Characteristic values:

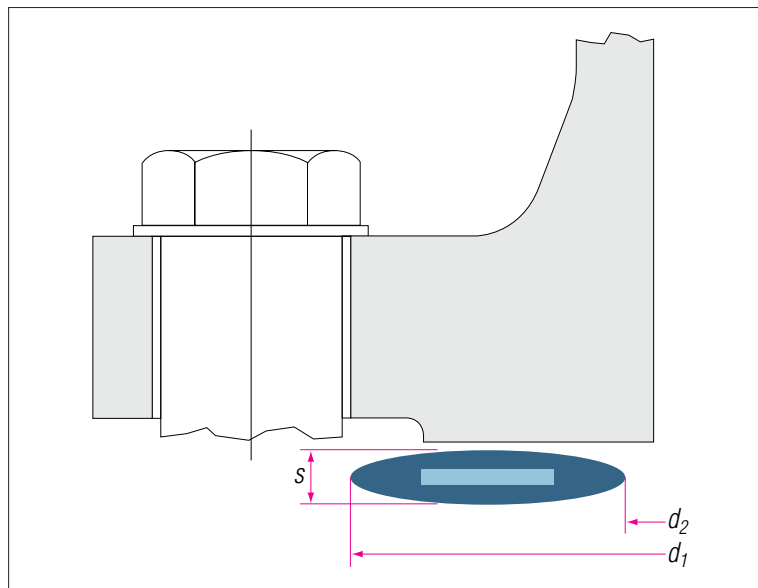
NBR-GW $k_0 \times K_D = 2 b$ (N/mm²)
 EPDM-KTW $k_1 = 0.5$ (mm)

Max. roughness:
 50 to 100 μ m
 depending on roughness.

KLINGER-KGS

Rubber-Metal-Gasket

acc. to DIN EN 1514-1, Form IBC



The gaskets are made of elastomere butadien-rubber in different types - with inside vulcanised steel ring.

The NBR-GW-type is approved by DVGW and recommended according to KTW (potable water application).

Example for order:
 Rubber-Metal-Gasket KLINGER-KGS
 made of NBR-GW according to
 DIN EN 1514-1, Form IBC
 DN 500, PN 10

Sizes at the measurement table:

d_1 = Inner diameter

d_2 = Outer diameter

s = Thickness

Vulcanised rubber gasket, cross section in lens form, rounded edges.

Inside vulcanised steel ring, therefore good reception of the bolt force.

Outer diameter of the KGS fits to the inner bolt circuit for self centering.

Dimension in DIN EN 1514-1 (replaces DIN 2690) for the pressure ratings PN 6 to PN 40.

Dimensions in mm.

DN	s	d_1	d_2					PN
			6	10	16	25	40	
15	4	22	–	51	51	51	51	
20	4	27	–	61	61	61	61	
25	4	34	–	71	71	71	71	
32	4	43	76	82	82	82	82	
40	4	49	–	92	92	92	92	
50	4	61	96	107	107	107	107	
65	4	77	116	127	127	127	127	
80	4	89	–	142	142	142	142	
100	5	115	152	162	162	168	168	
125	5	141	182	192	192	194	194	
150	5	169	207	218	218	224	224	
200	6	220	262	273	273	284	290	
250	6	273	317	328	329	340	352	
300	6	324	373	378	384	400	417	
350	7	356	423	438	444	457	474	
400	7	407	473	489	495	514	546	
450	7	458	–	539	–	–	–	
500	7	508	578	594	617	624	–	
600	7	610	679	695	734	731	747	
700	8	712	784	810	804	833	–	
800	8	813	890	917	911	942	–	
900	8	915	990	1017	1011	1042	–	
1000	8	1016	1090	1124	1128	1154	–	
1100	8	1120	–	–	1228	1254	–	
1200	8	1220	1307	1341	1342	1364	–	
1400	8	1420	1524	1548	1542	1578	–	
1600	8	1620	1724	1772	1764	1798	–	
1800	8	1820	1931	1972	1964	2000	–	
2000	8	2020	2138	2182	2168	2230	–	

Subject to technical alterations.
 Status: February 2003

Material:

NR = Natural rubber (SMR)

Application field:

Water, closed loop water arrangements, soluted lyes at max. 50 % conc. and max. 80°C

Colour:

black

Hardness:

DIN 53505, Shore A 60-80 +/-5

Density:

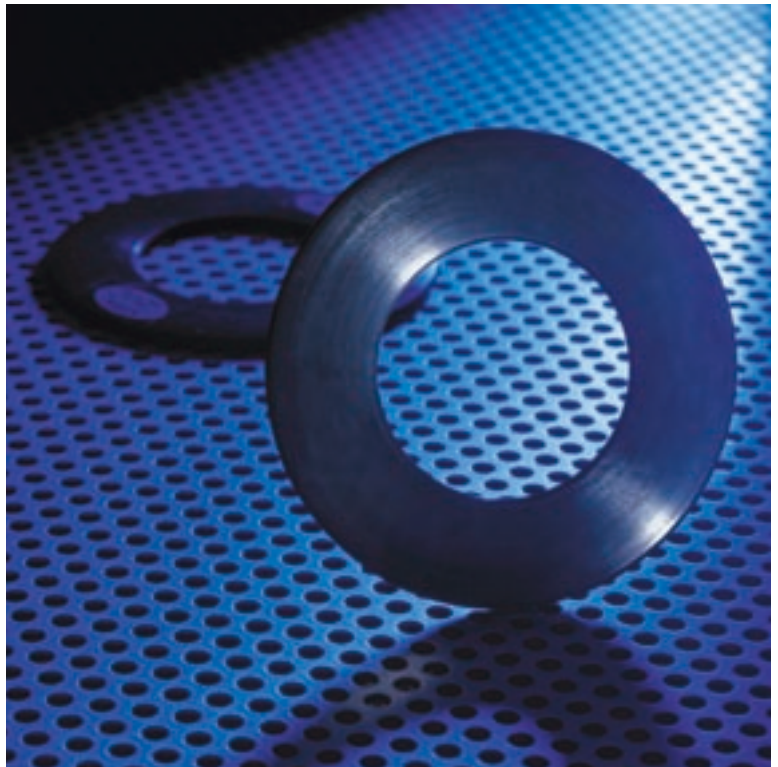
DIN 53479, g/cm³ 1.384

Temperature:

approx. +80°C,
short-term up to +90°C

Certificates:

Approval of own test facility

**Chemical resistance**

Vulcanisates of natural rubber (NR) are resistant against:

- water, seawater, pond water, closed loop water up to 90°C
- partly against alkalines, 50% NaOH at 50°C
- sufficient resistant against natural lighting, weather and ozone

Vulcanisates of natural rubber (NR) are not resistant against:

- fuel, mineral oils, acids and gases

Application field

The application of NR-vulcanisates is possible where natural media have to be sealed. Temperatures higher than 90°C have to be avoided.

Function and durability

The performance and life of KLINGER gaskets depend in large measure on proper storage and fitting, factors beyond the manufacturer's control.

We can, however, vouch for the excellent quality of our products.

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

Material:

NBR-GW

Application field:

Gas and potable water.

Approved according to pr EN682

(DIN E 3535T3)

approved according to KTW D1/D2,

1.3.31 of national health service

for potable water

Colour:

black

Hardness:

DIN 53505, Shore A 70 +/-5

Density:

DIN 53479, g/cm³ 1.196

Temperature:

approx. +100°C,

short-term up to +130°C

Certificates:

DIN/DVGW -approval-no.

NG-5113 AO 0853.

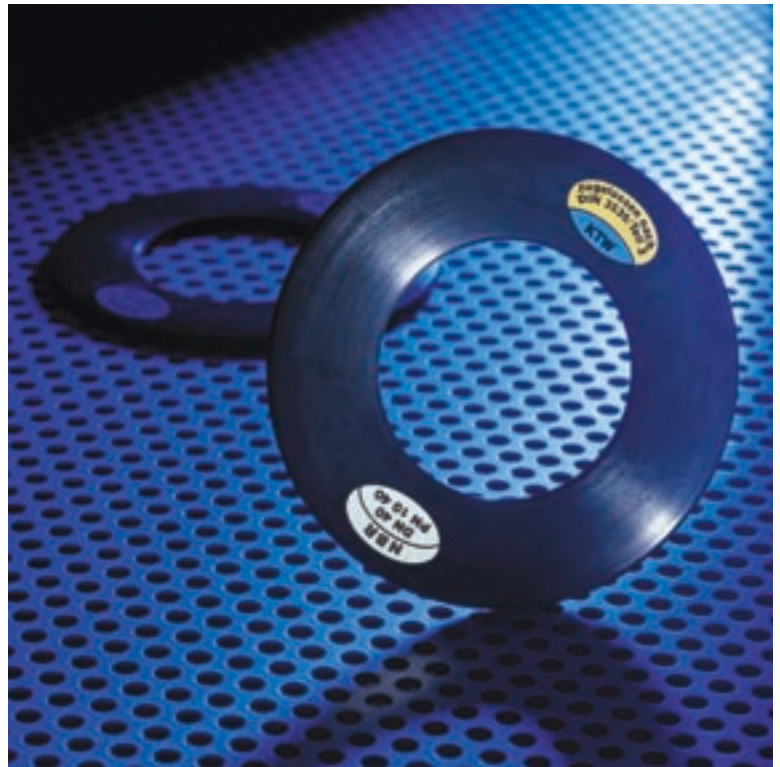
KTW-approval (potable water application)



Deutsche Vereinigung
des Gas- und
Wasserfaches e.V.



Hygiene-Institut
des Ruhrgebiets

**Chemical resistance**

NBR-rubber is resisting against:

- aliphatic hydrocarbons (mineral oils and greases, diesel fuel, petrol)
- many of diluted acids and alkalines at ambient temperature
- water and many salt dilutions at ambient temperature
- animal and vegetable oils and greases

NBR-rubber is not resisting against:

- aromatic and chlorinated hydrocarbons
- highly oxidising acids
- polar solvents

Application field

The NBR type have a good chemical resistance against aliphatic hydrocarbons, mineral oils and greases, diesel fuel and petrol.

Function and durability

The performance and life of KLINGER gaskets depend in large measure on proper storage and fitting, factors beyond the manufacturer's control.

We can, however, vouch for the excellent quality of our products.

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

Material:

EPDM-KTW

Application field:

Potable water/ waste water.
Approved according to KTW D1/D2,
1.3.31 of national health service
for potable water

Colour:

black

Hardness:

DIN 53505, Shore A 70 +/-5

Density:

DIN 53479, g/cm³ 1.120

Temperature:

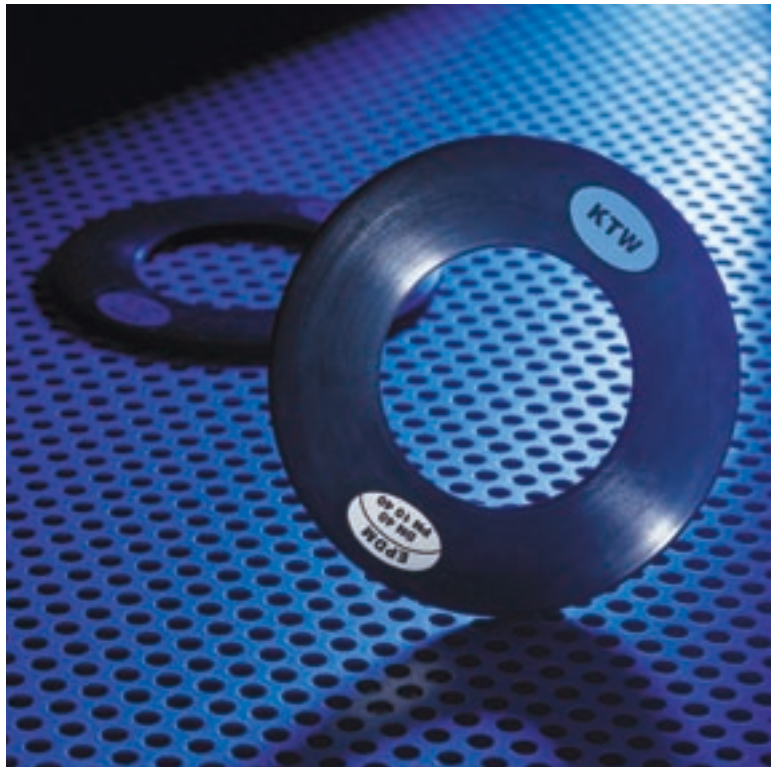
approx. +100°C,
short-term up to +130°C

Certificates:

KTW-approval
(potable water application)



Hygiene-Institut
des Ruhrgebiets

**Chemical resistance**

EPDM-rubber is resisting against:

- water and water dilutions of salts
- many of diluted acids and alkalines
- polar media as alcohol, ester and ketone
- washing agents
- hydraulic media based on water-glycol (HFC-fluids)
- hydraulic media based on phosphoric esters (HFD-R-fluids)

EPDM-rubber is not resisting against:

- aliphatic, aromatic and chlorinated hydrocarbons (oils, greases and fuels)
- highly oxidising acids

Application field

Additionally to the applications acc. to the chemical resistance, the EPDM type is well suitable for applications which require good ozone-, ageing- and weathering resistance.

Function and durability

The performance and life of KLINGER gaskets depend in large measure on proper storage and fitting, factors beyond the manufacturer's control.

We can, however, vouch for the excellent quality of our products.

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

Material:

CSM
Hypalon (chlorosulfonated
polyethylene)

Application field:

in the chemical industry

Colour:

black

Hardness:

DIN 53505, Shore A 70 +/-5

Density:

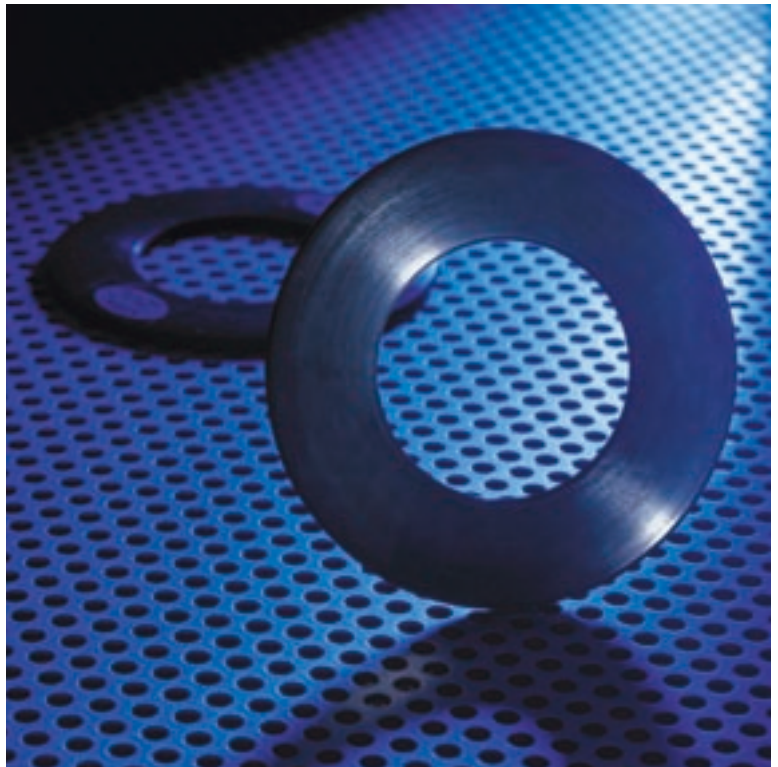
DIN 53479, g/cm³ 1.340

Temperature:

approx. +80°C

Certificates:

Approval of own test facility

**Chemical resistance**

Vulcanisates of CSM are resistant
against:

- many acids up to 50°C
- natural lighting and ozone

Vulcanisates of CSM are not
resistant against:

- temperatures below -15°C
and over +80°C

Application field

The application of CSM-vulcanisates
are in the chemical industry,
dry-cleaning etc.

Function and durability

The performance and life of KLINGER
gaskets depend in large measure on
proper storage and fitting, factors
beyond the manufacturer's control.

We can, however, vouch for the
excellent quality of our products.

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

Material:

FKM = Viton
(Fluoro elastomere)

Application field:

Chemical industry and production

Colour:

black/grey

Hardness:

DIN 53505, Shore A 75 +/-5

Density:

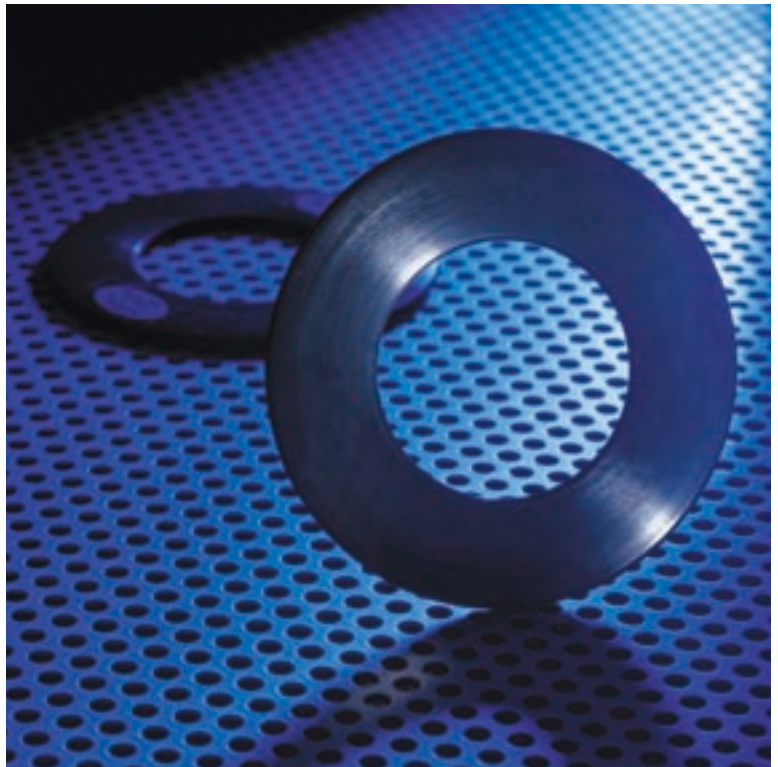
DIN 53479, g/cm³ 1.880

Temperature:

approx. +200°C

Certificates:

Approval of own test facility

**Chemical resistance**

Vulcanisates of FKM-Viton are resistant against:

- acids and alkalines
- gases
- all kind of water

Vulcanisates of FKM-Viton are not resistant against:

- partial resistance at temperatures of -10°C and lower

Application field

As there is a good chemical resistance for acids and alkalines, the main application field is in the chemical production and users of chemicals.

Function and durability

The performance and life of KLINGER gaskets depend in large measure on proper storage and fitting, factors beyond the manufacturer's control.

We can, however, vouch for the excellent quality of our products.

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

Medium	NR	NBR-GW	EPDM-KTW	CSM	FKM-Viton
Acetaldehyde	●	▲	●	■	▲
Acetamide	▲	●	●	■	■
Acetic acid	■	▲	●	▲	▲
Acetic acid ester	▲	▲	●	●	▲
Acetone	●	▲	●	■	▲
Acetylene	●	●	●	●	●
Adipic acid	●	●	●	●	●
Air	▲	▲	●	■	●
Alum	●	●	●	■	●
Aluminium acetate	●	●	●	■	▲
Aluminium chlorate	—	●	—	—	—
Aluminium chloride	●	●	●	●	●
Ammonia	■	■	●	●	▲
Ammonium carbonate	●	■	●	●	■
Ammonium chloride	●	●	●	●	■
Ammonium diphosphate	—	●	●	—	—
Ammonium hydroxide	■	■	●	●	■
Amyl acetate	■	▲	●	▲	▲
Aniline	■	▲	●	▲	●
Anon cyclohexanone	▲	▲	■	▲	▲
Arcton 12	■	●	■	■	●
Arcton 22	●	▲	●	●	▲
Asphalt	▲	▲	▲	▲	●
Aviation fuel	▲	●	▲	▲	●
Barium chloride	●	●	●	●	●
Benzene	▲	▲	▲	▲	●
Benzoic acid	●	●	●	●	●
Blast furnace gas	▲	▲	▲	▲	■
Bleaching solution	▲	▲	●	●	●
Boiler feed water	▲	■	●	▲	■
Borax	●	●	●	●	●
Boric acid	●	●	●	●	●
Brine	—	●	●	●	●
Butane	▲	●	▲	■	●
Butanol	●	■	●	●	●
Butanone	▲	▲	●	■	▲
Butyl acetate	▲	▲	●	▲	▲
Butylamine	▲	●	▲	▲	▲
Butyle alcohol	●	■	●	●	●
Butyric acid	▲	▲	●	▲	■
Caesium melt	▲	▲	▲	▲	▲
Calcium chloride	●	●	●	●	●
Calcium hydroxide	●	●	●	●	●
Calcium hydroxide	▲	●	●	▲	●
Calcium hypochlorit	▲	▲	●	●	●
Calcium sulphate	—	●	●	—	—
Carbolic acid	▲	▲	■	▲	●
Carbon dioxide	●	●	●	●	●
Carbon disulphide	▲	▲	▲	▲	●
Carbon tetrachlorid	▲	▲	▲	▲	●
Castor oil	●	●	●	●	●
Chlorine water	▲	▲	■	▲	●
Chlorine, dry	▲	▲	■	▲	●
Chlorine, moist	▲	▲	■	▲	●
Chloroform	▲	▲	▲	▲	●

Medium	NR	NBR-GW	EPDM-KTW	CSM	FKM-Viton
Chromic acid	▲	▲	■	■	●
Citric acid	●	●	●	●	●
Clorotrifluoride	▲	▲	▲	▲	▲
Condensation water	▲	●	●	▲	■
Copper acetate	■	■	●	■	▲
Copper sulphate	●	●	●	●	●
Creosote	▲	▲	■	■	●
Cresol	▲	▲	▲	▲	●
Crude oil	▲	●	▲	■	●
Cyclohexanol	▲	●	▲	■	●
Decahydronaphthalen	▲	■	▲	▲	●
Dibenzyl ether	▲	▲	■	▲	●
Dibutyl phthalate	▲	▲	●	▲	■
Diesel oil	▲	●	▲	▲	●
Dimethyl formamide	▲	▲	●	▲	▲
Diphyl	▲	▲	▲	▲	●
Ethane	▲	●	▲	■	●
Ethanol	●	■	●	●	●
Ethyl acetate	▲	▲	●	▲	▲
Ethyl alcohol	●	■	●	▲	●
Ethyl chloride	▲	■	■	▲	●
Ethyl ether	▲	▲	▲	▲	▲
Ethylendiamine	●	●	●	■	▲
Ethylene	▲	●	▲	▲	▲
Ethylene chloride	▲	▲	▲	▲	●
Ethylene glycol	●	●	●	●	●
Fluorine dioxide	—	▲	▲	—	—
Fluorine gaseous	—	▲	▲	—	—
Fluorine liquid	▲	▲	▲	▲	■
Fluorosilicic acid	▲	▲	▲	▲	■
Formaldehyde	●	●	●	●	■
Formamide	●	▲	●	●	■
Formic acid 10%	■	▲	●	●	▲
Freon 12	■	●	■	●	■
Freon 22	■	▲	●	●	▲
Generator gas	—	●	▲	—	●
Glacial acetic acid	■	▲	●	▲	▲
Glycerin	●	●	●	●	●
Heating oil	▲	●	▲	▲	●
Heptane	▲	●	▲	▲	●
Hydraulic oil (mineral)	▲	●	▲	▲	●
Hydraulic oil (phosphat ester)	▲	▲	●	▲	●
Hydrazine hydrate	▲	■	●	■	▲
Hydrochloric acid (10%)	■	■	●	●	●
Hydrochloric acid (37%)	▲	▲	●	▲	▲
Hydrofluorid acid	▲	▲	●	●	●
Hydrofluosilic acid	●	●	●	●	●
Hydrogen	●	●	●	●	●
Hydrogen chloride (dry)	■	▲	●	●	●
Hydrogen peroxide 3%	■	■	●	●	●
Hydrogen peroxide 90%	▲	▲	▲	▲	●
Hydrogen sulfide	▲	▲	●	▲	▲
Isocetane	▲	●	▲	■	●
Isopropyl alcohol	●	■	●	●	●
Kerosene	▲	●	▲	▲	●

● Resistant
 ■ Condit. recommended
 ▲ Not recommended
 — No data

Medium	NR	NBR-GW	EPDM-KTW	CSM	FKM-Viton
Lactic acid	●	●	●	●	●
Lead acetate	●	■	●	▲	▲
Lead arsenate	—	●	●	—	—
Linseed oil	■	●	■	■	●
Lithium melt	▲	▲	▲	▲	▲
Magnesium sulphate	●	●	●	●	●
Malic acid	▲	●	●	●	●
MEK butanone	▲	▲	●	■	▲
Methane	▲	●	▲	■	●
Methyl alcohol	●	■	●	●	▲
Methyl chloride	▲	▲	▲	▲	●
Methyl chloride	▲	▲	▲	▲	●
Methylene chloride	▲	▲	▲	▲	■
Mineral oil	▲	●	▲	■	●
Monochlorethane	▲	▲	▲	▲	●
Naphtha	▲	▲	▲	▲	■
Natural gas	▲	●	▲	■	●
Nitric acid	▲	▲	▲	▲	●
Nitrobenzene	▲	▲	■	▲	●
Nitrogen	●	●	●	●	●
Octane (n)	▲	■	▲	▲	●
Oil	■	●	▲	■	●
Oleanolic Acid	▲	▲	▲	■	●
Oleic acid	▲	■	▲	▲	●
Oxalic acid	■	■	●	■	●
Oxygen, gaseous, cold	▲	■	●	■	●
Palmitic acid	■	●	■	■	●
Patable water	●	●	●	●	●
Pentane	▲	●	▲	■	●
Perchlorethylene	▲	▲	▲	▲	●
Petroleum	▲	●	▲	▲	●
Petroleum benzin	▲	■	▲	■	●
Petroleum ether	▲	●	▲	▲	●
Phenol	▲	▲	■	▲	●
Phosphoric acid	▲	▲	■	▲	●
Polychl.biphenyls.	▲	▲	▲	▲	●
Potass.chrom.sulph.	—	■	●	—	●
Potassium acetate	●	■	●	▲	▲
Potassium carbonate	●	●	●	●	●
Potassium chlorate	■	▲	●	●	●
Potassium chloride	●	●	●	●	●
Potassium cyanide	▲	■	●	●	●
Potassium cyanide	●	●	●	●	●
Potassium dichrom.	■	■	●	●	●
Potassium hydroxide	■	■	●	●	▲
Potassium hypochl.	—	▲	■	—	—
Potassium iodide	●	●	●	●	●
Potassium melt	▲	▲	▲	▲	▲
Potassium nitrate	▲	●	●	●	■
Potassium nitrite	●	●	●	●	●
Potassium permang.	▲	▲	●	●	●
Propane	▲	●	▲	■	●
Pydraul C	▲	▲	▲	▲	●
Pydraul E	▲	▲	■	▲	●
Pyridine	▲	▲	■	▲	▲

Medium	NR	NBR-GW	EPDM-KTW	CSM	FKM-Viton
Rape seed oil	▲	●	■	■	●
Rubidium melt	▲	▲	▲	▲	▲
Salicylic acid	●	●	●	●	●
Sea water	●	●	●	●	■
Silicon oil	●	●	●	●	●
Skydrol 500, 7000	▲	▲	●	▲	■
Soap, solution	■	●	●	●	●
Soda	●	●	●	●	●
Sodium aluminate	—	▲	■	—	—
Sodium bicarbonate	●	●	●	●	●
Sodium bisulphite	■	●	●	●	●
Sodium chloride	●	●	●	●	●
Sodium cyanide	●	●	●	●	●
Sodium hydroxide	■	■	●	●	▲
Sodium melt	▲	▲	▲	▲	▲
Sodium silicate	●	●	●	●	●
Sodium sulfide	■	●	●	●	●
Sodium sulphate	●	●	●	●	●
Spirit	●	■	●	●	●
Starch	●	●	●	●	●
Steam (max. 150 °C)	▲	▲	●	▲	▲
Stearic acid 100°C	▲	▲	▲	■	●
Sugar	●	●	●	●	●
Sulphur dioxide	▲	▲	●	▲	●
Sulphuric acid	▲	▲	▲	▲	●
Sulphurous acid	■	■	●	●	●
Table salt	●	●	●	●	●
Tannic acid	●	●	●	●	●
Tannin	●	●	●	■	●
Tar	▲	▲	▲	▲	●
Tartaric acid	●	●	●	●	●
Tetrachloroethane	▲	▲	▲	▲	■
Tetrahydronaphthale	▲	▲	▲	▲	●
Toluene	▲	▲	▲	▲	●
Town gas (benzene free)	▲	●	▲	■	●
Transformer oil	▲	●	▲	▲	●
Trichloroethylene	▲	▲	▲	▲	●
Triethanolamine	■	▲	■	■	▲
Turpentine	▲	■	▲	▲	●
Urea	●	●	●	●	●
Vinyl acetate	▲	▲	▲	▲	▲
Water 100°C	▲	■	●	▲	■
Water flask	●	●	●	●	●
Water vapour (max. 150°C)	▲	▲	●	▲	▲
White spirit	▲	■	▲	▲	●
Xylene	▲	▲	▲	▲	●

● Resistant
 ■ Condit. recommended
 ▲ Not recommended
 — No data

On principle following mounting instructions for KLINGER-KGS material have to be taken in account.

1. Selection of the gasket

The suitable type of gasket material can be selected according the KLINGER information – first of all the chemical resistance.

2. Flanges should be parallel, metallicly clean and dry, the gasket has to be mounted centrally.

Please pay attention to the correct inner- and outer diameter, never the gaskets should tower into the throughhole!

3. The mounting of the gasket should be performed without any grease- or oil-containing separating media.

On no account oil or grease containing products may be used, as they have an negative influence on the safety of the complete flange connection.

4. During installation the bolts have to be tightened in several steps, equal and crosswise.

The screws should be greased if possible.

5. "Re-tighten" is usually not necessary if a.m. references will be followed.

6. "Multi-use" of a gasket.

To use a gasket more than one time can not be recommended.

If there is an demand on advice please contact a KLINGER company or an representative



 **KLINGER**
EXPERT®

points the way to the right gasket for the job

*Subject to technical alterations.
Status: February 2003*

***Certified according to
DIN EN ISO 9000:2000***

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