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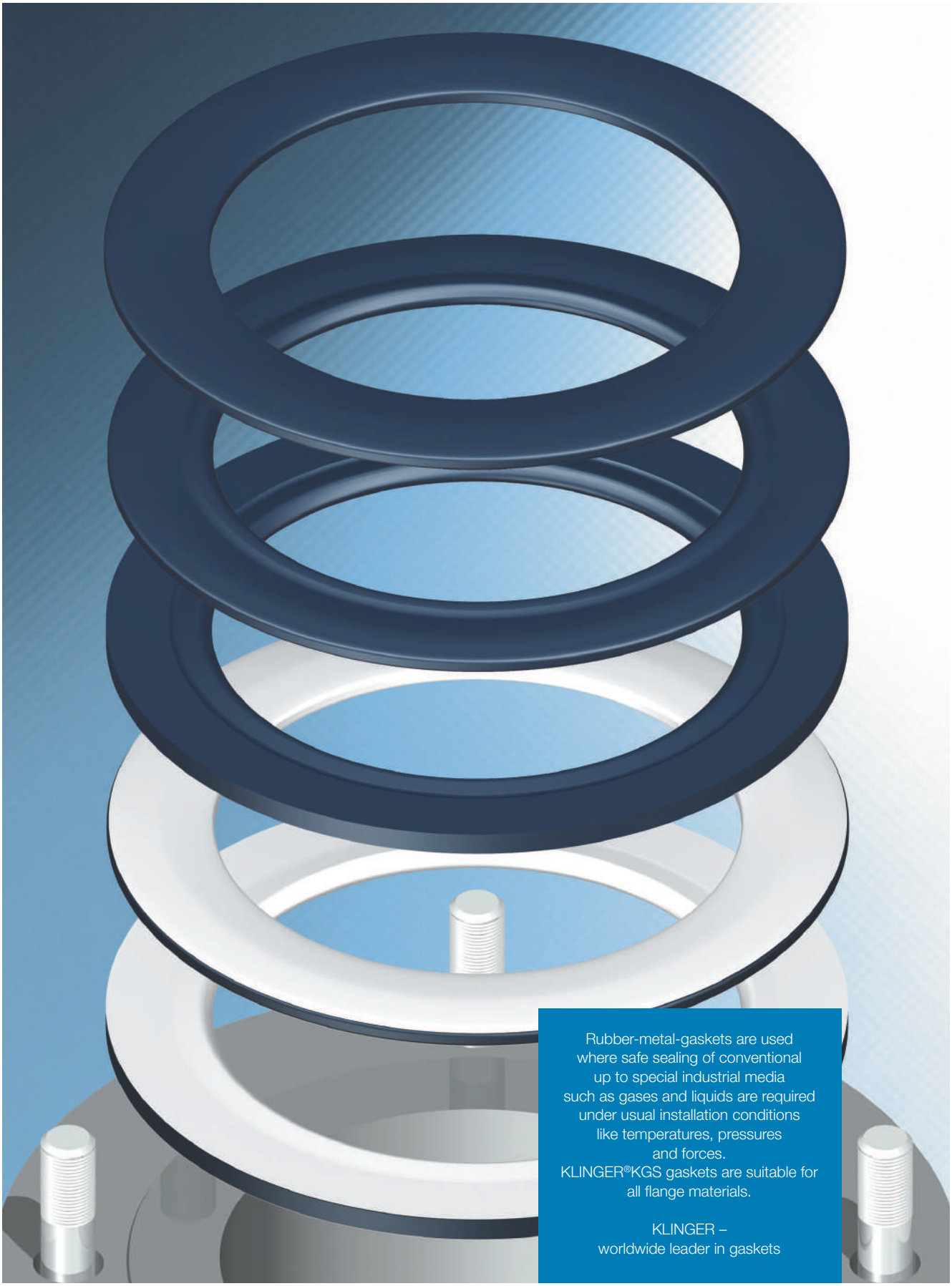
KLINGER® KGS

Rubber-Metal-Gaskets – Safe sealing of gases and liquids



Rubber-metal-gaskets are used where safe sealing of conventional up to special industrial media such as gases and liquids are required under usual installation conditions like temperatures, pressures and forces.
KLINGER®KGS gaskets are suitable for all flange materials.

KLINGER –
worldwide leader in gaskets

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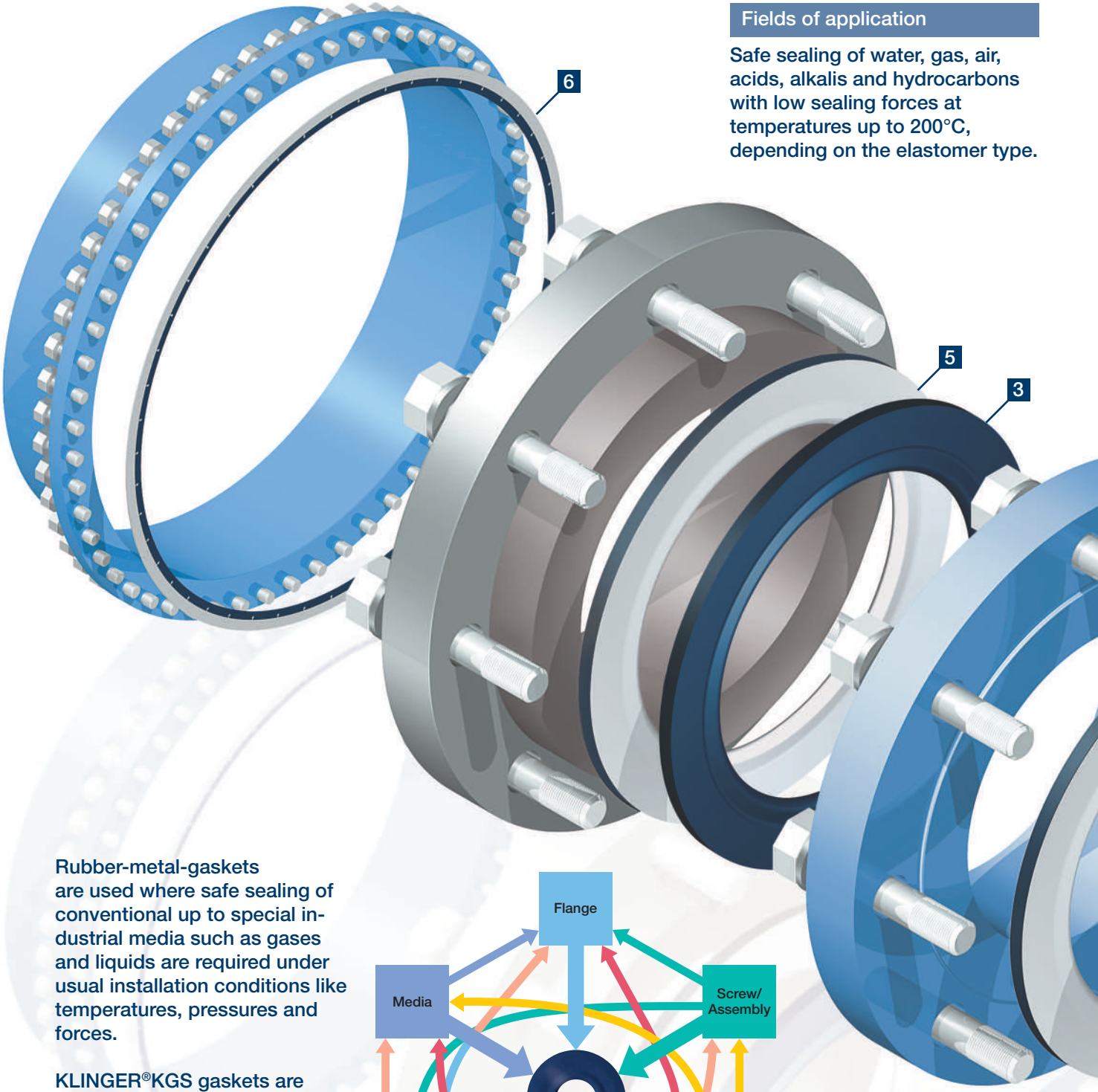
Rubber-Metal-Gaskets – Safe sealing of gases and liquids

Fields of application

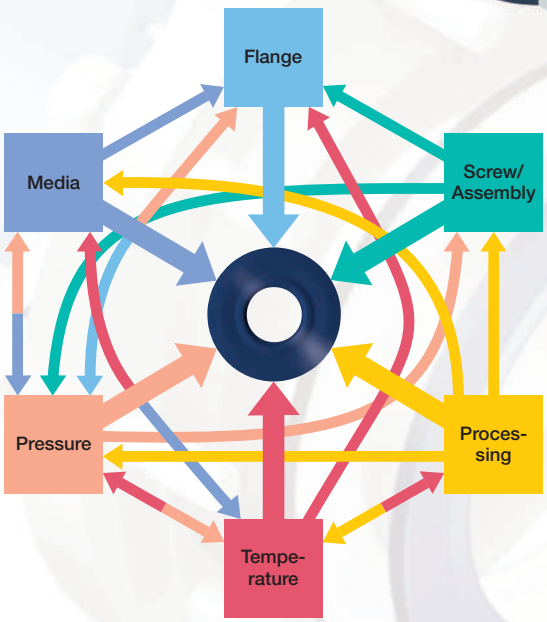
Safe sealing of water, gas, air, acids, alkalis and hydrocarbons with low sealing forces at temperatures up to 200°C, depending on the elastomer type.



Rubber-metal-gaskets are used where safe sealing of conventional up to special industrial media such as gases and liquids are required under usual installation conditions like temperatures, pressures and forces.

KLINGER®KGS gaskets are suitable for all flange materials.

A flange connection has to be always treated as a coherent system, because the sealing functions is determined by the interaction of individual elements including flanges, gaskets and screws (clamping elements - VDI 2290).



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Rubber-Metal-Gaskets – Safe sealing of gases and liquids

With the following media

- Water
- Gas
- Waste water
- Chemicals

With the following flanges made of

- Steel/stainless steel
- Cast iron
- GRP
- PP/ PVC/ PE

1 KLINGER®KGS

Above-ground and underground pipelines in the gas and water area.

For slightly damaged and not always correctly routed pipelines.

2 KLINGER®KGS/S

For enamelled flanges of pipes and apparatus.

For rubber-coated flanges of pipes and apparatus.

Pipeline construction in the gas and water area.

3 KLINGER®KGS/TK

Suitable for the plastic apparatus construction (due to the low sealing forces).

4 KLINGER®KGS-Flon
5 KLINGER®KGS/TK-Flon

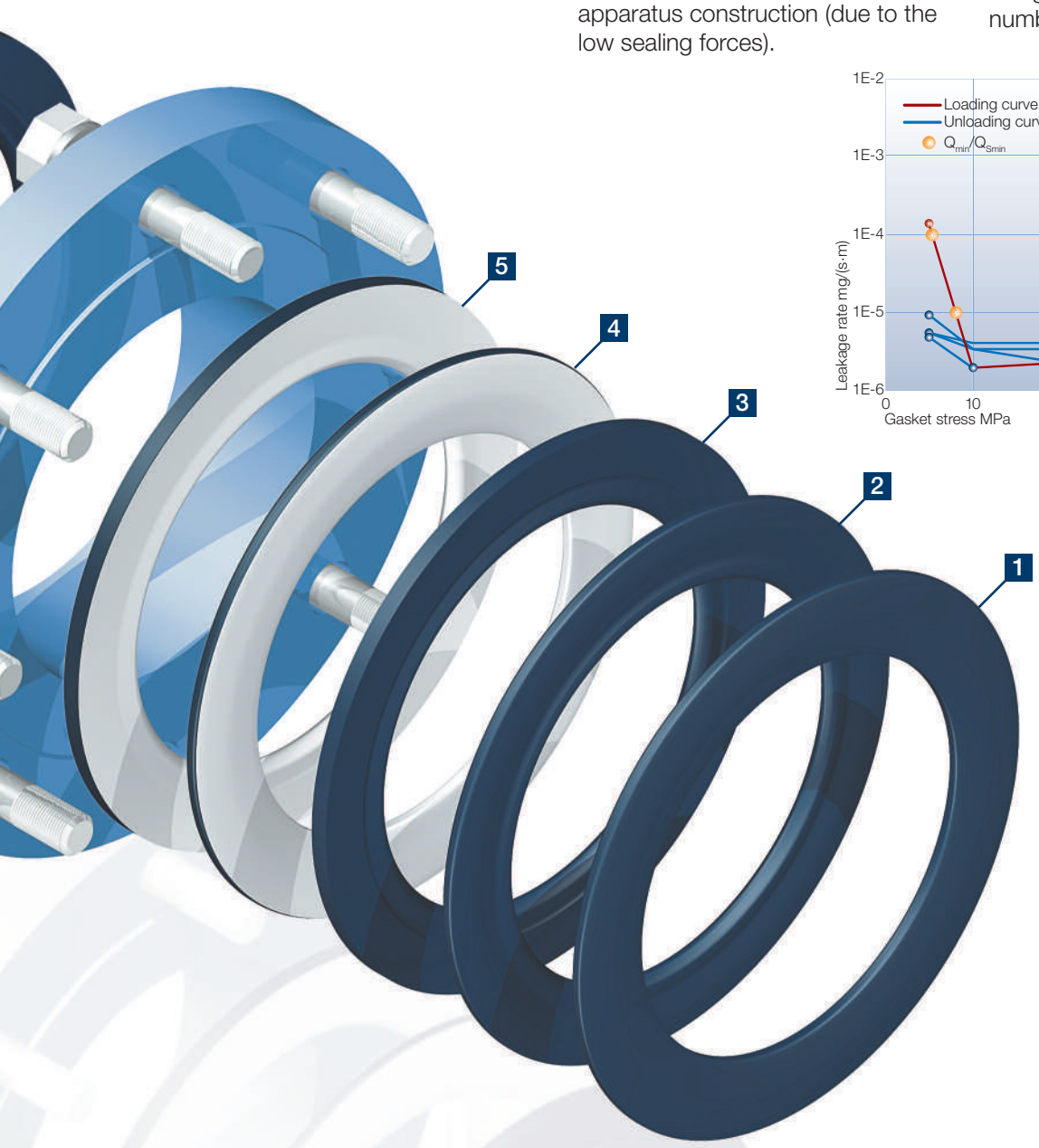
Variant for KGS and KGS/TK with PTFE-envelope.

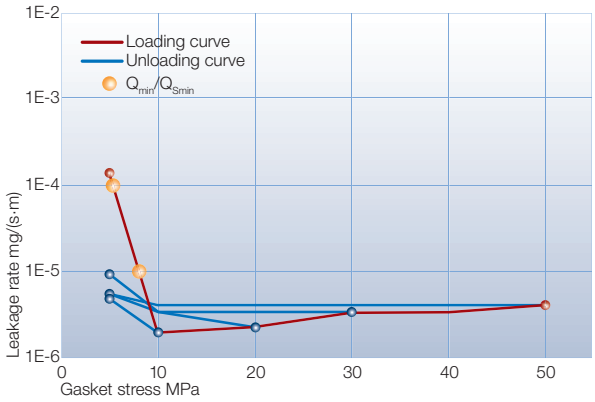
Use in chemistry and the food industry.

6 KLINGER®KNS compression stop

For the pipeline and apparatus construction in the gas and water area.

A gasket with a compression stop is necessary at large diameters to cover the enormous forces at the flange, resulting from the pipe elongations tensions and the high number of bolts.

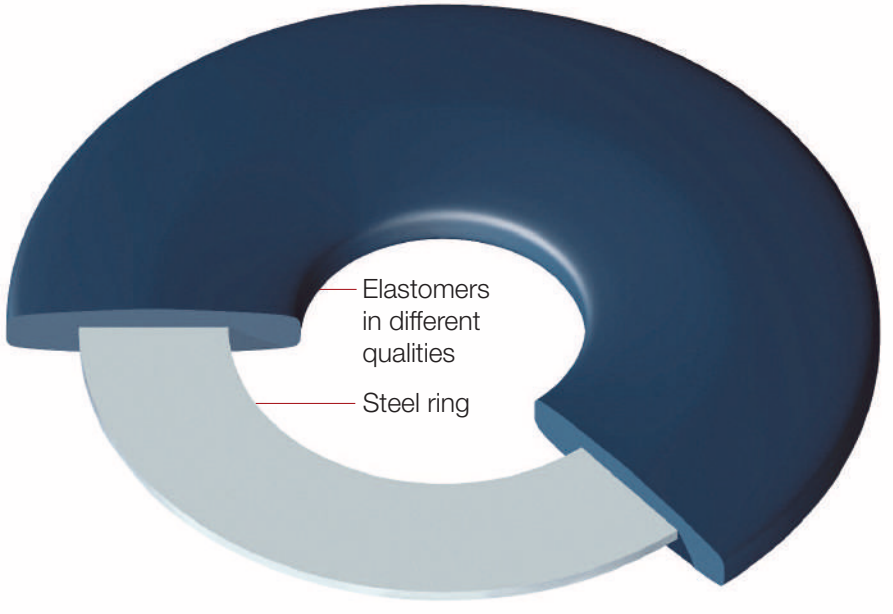


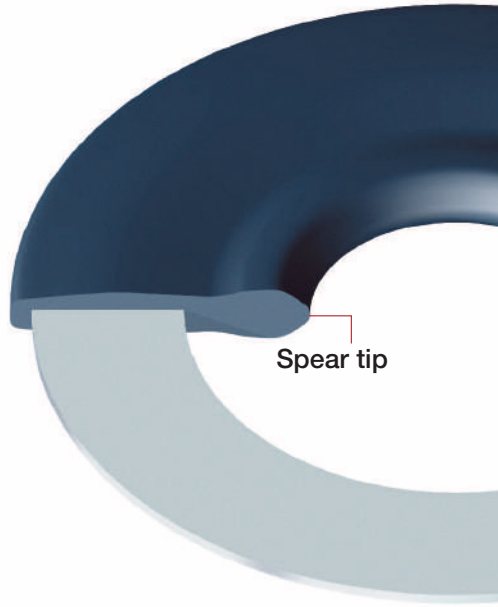


On request, we are glad to provide gasket characteristics according to EN 13555 for flange calculation according to EN 1591- for NBR, EPDM and FKM.

KLINGER® KGS

Rubber-Metal-Gaskets according to DIN EN 1514-1, Shape IBC

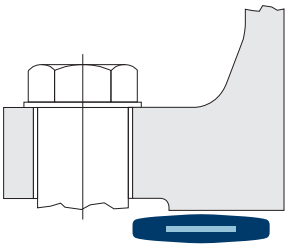




KLINGER®KGS

Rubber gasket, lenticular shape, rounded edges.
Steel ring, chemically treated, no possibility to separate the elastomers from the steel core.
Suitable for flanges made of metal.

- Self-centering with the same flange DN and PN
- appropriate tightening torques
- self-limiting compression surface
- rigid gasket, easy to install
- soft surface in order to seal slightly damaged flange surfaces
- blow-off proof
- Materials of KLINGER®KGS: NR, NBR, EPDM, CSM, FKM
- Dimensions according to EN 1514-1 depending on DN: PN 6 to PN 40 DN 15 up to DN 2000
- For approvals see material table



Ordering example:
KLINGER®KGS made of NBR acc. to DIN EN 1514-1, Shape IBC DN 100, PN 10-16

KLINGER®KGS/S

Rubber gasket,
Lenticular shape at the sealing body, with integrally molded spear tip at the inside diameter of the gasket, rounded edges.
The spear tip provides higher safety at lowest contact pressures..
Suitable for installation between flanges made of metal and plastic.

- Self-centering with the same flange DN and PN
- Minimum tightening torques and smaller than KGS (see diagram on the right)
- Materials of KLINGER®KGS/S: NBR, EPDM, FKM, EPDM fire resistant
- Dimensions according to EN 1514-1 depending on DN: PN 10 to PN 40 DN 15 up to DN 1000
- For approvals see material table

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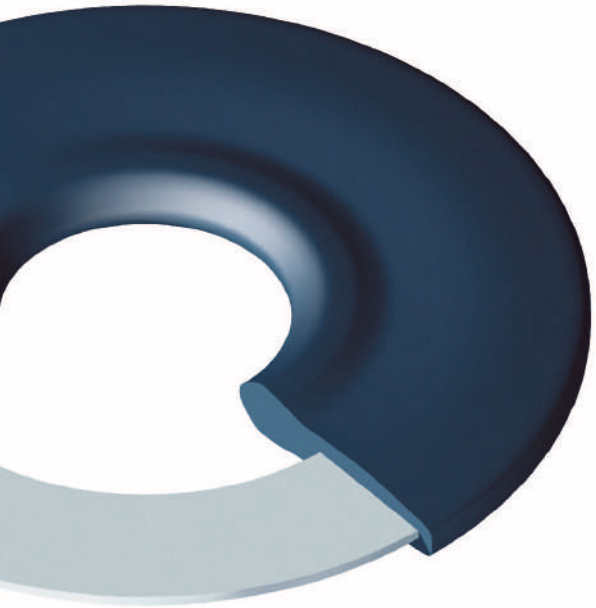
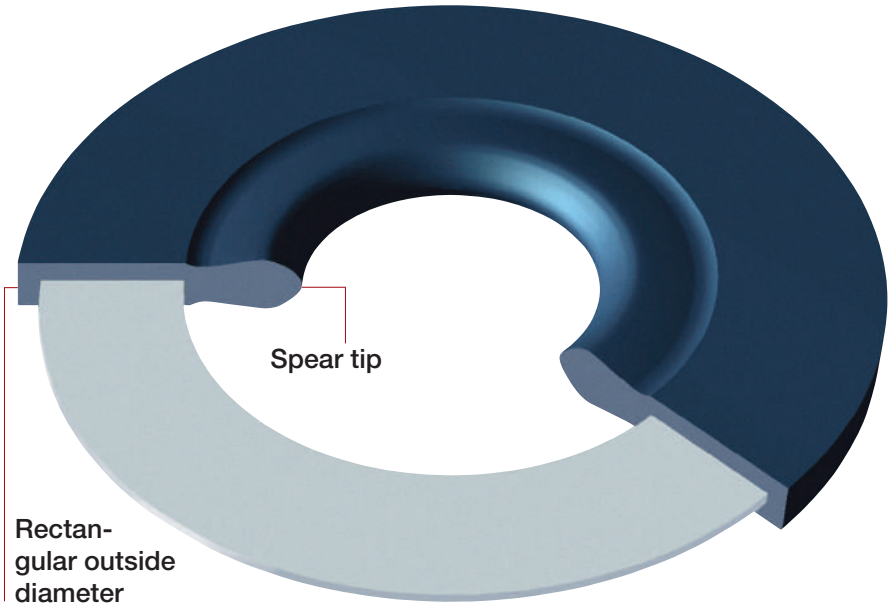
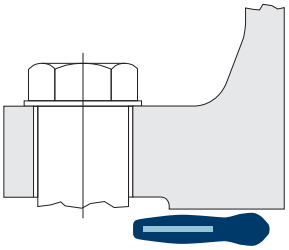
KLINGER® KGS

Rubber-Metal-Gaskets according to DIN EN 1514-1, Shape IBC





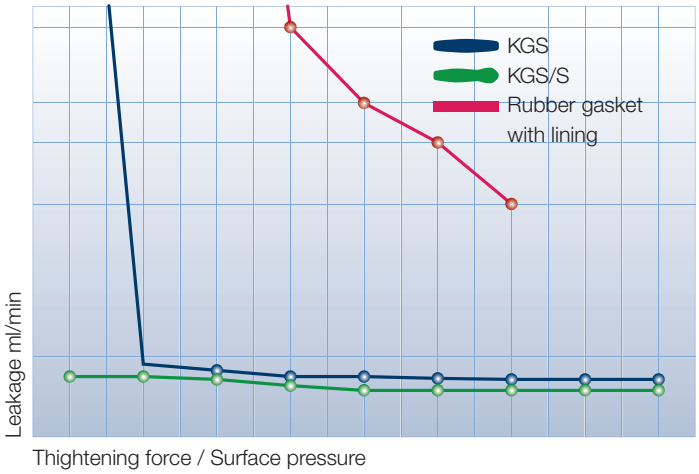
KLINGER® KGS/TK

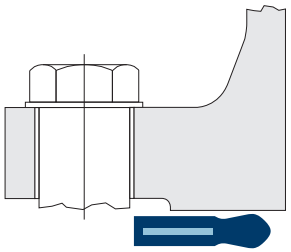


Ordering example:
KLINGER®KGS/S made of NBR
acc. to DIN EN 1514-1,
Shape IBC
DN 100, PN 10-16

**Rubber gasket,
flat shape at the sealing body,
with integrally molded spear tip
at the inside diameter of the
gasket, rectangular outside
diameter.
The spear tip provides
higher safety at lowest contact
pressures.**

- suitable for flanges made of plastics such as PE, PP, GRP, PVC
- Self-centering with the same flange DN and SDR
- Reduced dead space
- Tight, also at low tightening torques
- Materials of KLINGER®KGS/TK: NBR, EPDM, FKM
- Dimensions according to the valid European standards for plastic tubes made of PE, PP, PVC, PVDF and GRP (mainly SDR 11,17 and 33)
- For approvals see material table





Ordering example:
KLINGER®KGS/TK made of EPDM
DN100 / OD 110 SDR17
105 x 162

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KLINGER® KGS

Materials of rubber-metal-gaskets

Materials	NR	NBR
		
Field of application	Water Circuit water Diluted alkalis up to max. 50% and max. 80°C	Gas Media containing hydrocarbon Waste water Water
Colour	Black	Black
Temperature	approx. +80°C, short-term up to +90°C	from -15°C to +100°C
Certificates	EN 681 -1 WC Class 70	DVGW Certificate acc. to EN 682 GBL EN 681-1 WG Class 70 EN 682 GBL Class 70 TA-Luft (German Clean Air Act)
Applications	NR vulcanized materials can be used where noncritical media have to be sealed. Higher temperatures than 90°C have to be avoided.	Applications of NBR vulcanized materials result from the listed characteristics, such as resistance against aliphatic carbohydrates, mineral oils, greases fuels.

DVGW product

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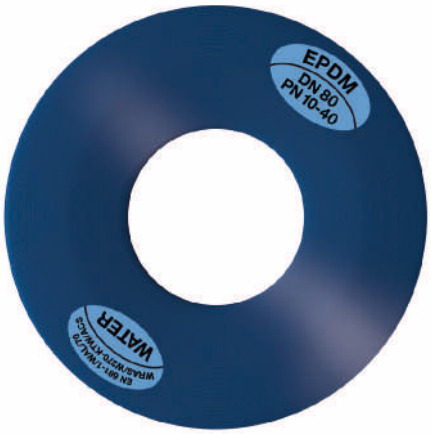
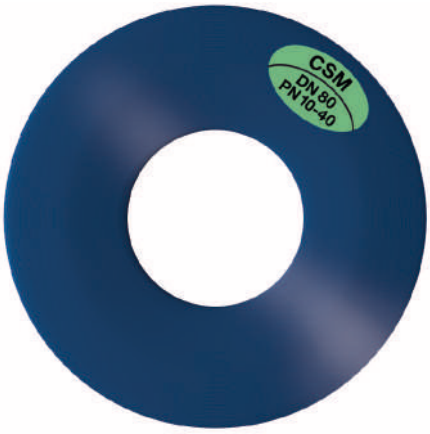
Materials of rubber-metal-gaskets

EPDM	CSM	FKM
		
Drinking water Waste water Process water, on consultation	Application in case of alkalis and acids in the chemical industry	Application in case of higher temperatures (Viton is the brand name of DuPont® for FKM) in the chemical industry
Black	Black	Brown
from -40°C to +110°C, short-term up to +130°C	from -10°C to +80°C	from -20°C to +200°C
EN 681 -1 WAL/WCL Class 70 Elastomer Guideline (new KTW) DVGW W270 ACS, WRAS (BS6920) FDA Certificate TA-Luft (German Clean Air Act)	TA-Luft (German Clean Air Act)	TA-Luft (German Clean Air Act)
Applications of EPDM vulcanized materials mainly result from the good resistance to chemicals. Furthermore, the EPDM quality has a good resistance against ozone and aging.	Applications of CSM vulcanized materials can be found in the chemical industry, in chemical cleaning etc.	Due to the good resistance against acids and alkalis, the main use is in the area of chemistry and their users.

Function and durability

The function of KLINGER Gaskets mainly depends on the storage and installation conditions on which, we as a supplier, do not have any influence.
That is why we only ensure perfect condition of the material.

Please also observe our installation instructions on this.
In case there are special approval regulations, they have to be observed.

As for other media or application conditions, we would be glad to provide you with further information.

KLINGER® KGS

Product range of Rubber-Metal-Gaskets

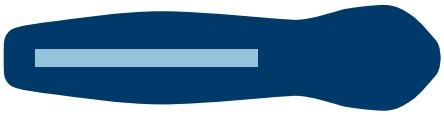
Gaskets for flanges with a smooth sealing surface,
Shape A - EN 1092,
and with sealing strip,
Shape B - EN 1092 acc. to DIN EN 1514-1,
Shape IBC (Inner Bolt Circle)

Dimensions acc. to the Standard in mm

Available dimensions on request, or please see our actual price list.

KLINGER®KGS

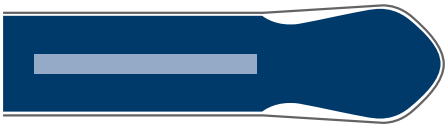
KLINGER®KGS/S



KLINGER®KGS/TK

KLINGER®KGS-Flon

KLINGER®KGS/TK-Flon



KLINGER®KNS
Compression stop gasket

DN	Inside diameter
10	18
15	22
20	27
25	34
32	43
40	49
50	61
60	72
65	77
80	89
100	115
125	141
150	169
200	220
250	273
300	324
350	356
400	407
450	458
500	508
600	610
700	712
800	813
900	915
1000	1016
1100	1120
1200	1220
1400	1420
1500	1520
1600	1620
1800	1820
2000	2020
2200	2220
2400	2420
2600	2620
2800	2820
3000	3020
3200	3220
3400	3420
3600	3620
3800	3820
4000	4020

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Product range of Rubber-Metal-Gaskets

Outside diameter for PN						
1 / 2.5	6	10	16	25	40	63
39	39	46	46	46	46	56
44	44	51	51	51	51	61
54	54	61	61	61	61	72
64	64	71	71	71	71	82
76	76	82	82	82	82	88
86	86	92	92	92	92	103
96	96	107	107	107	107	113
106	106	117	117	117	117	123
116	116	127	127	127	127	138
132	132	142	142	142	142	148
152	152	162	162	168	168	174
182	182	192	192	194	194	210
207	207	218	218	224	224	247
262	262	273	273	284	290	309
317	317	328	329	340	352	364
373	373	378	384	400	417	424
423	423	438	444	457	474	486
473	473	489	495	514	546	543
528	528	539	555	564	571	–
578	578	594	617	624	628	–
679	679	695	734	731	747	–
784	784	810	804	833	–	–
890	890	917	911	942	–	–
990	990	1017	1011	1042	–	–
1090	1090	1124	1128	1154	–	–
–	–	1231	1228	1251	–	–
1290	1307	1341	1342	1364	–	–
1490	1524	1548	1542	1578	–	–
–	–	1658	1654	1688	–	–
1700	1724	1772	1764	1798	–	–
1900	1931	1972	1964	2000	–	–
2100	2138	2182	2168	2230	–	–
2307	2348	2384	–	–	–	–
2507	2558	2592	–	–	–	–
2707	2762	2794	–	–	–	–
2924	2972	3014	–	–	–	–
3124	3172	3228	–	–	–	–
3324	3382	–	–	–	–	–
3524	3592	–	–	–	–	–
3734	3804	–	–	–	–	–
3931	–	–	–	–	–	–
4131	–	–	–	–	–	–

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Media resistance of rubber-metal-gaskets

Medium	NR	NBR	EPDM	CSM	FKM
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 hypochlorit	▲	▲	●	●	●
Calcium sulphate		●	●		
Carbolic acid	▲	▲	■	▲	●
Carbon dioxide	●	●	●	●	●
Carbon disulphide	▲	▲	▲	▲	●
Carbon tetrachlorid	▲	▲	▲	▲	●
Castor oil	●	●	●	●	●
Chlorine water	▲	▲	■	▲	●
Chlorine, dry	▲	▲	■	▲	●
Chlorine, moist	▲	▲	■	▲	●
Chloroform	▲	▲	▲	▲	●
Chromic acid	▲	▲	■	■	●
Citric acid	●	●	●	●	●

Medium	NR	NBR	EPDM	CSM	FKM
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 (dry)	▲	▲	▲	▲	■
Fluorosilicic acid	▲	▲	▲	▲	■
Formaldehyde	●	●	●	●	■
Formamide	●	▲	●	●	■
Formic acid 10%	■	▲	●	●	▲
Freon 12	■	●	■	●	■
Freon 22	■	▲	●	●	▲
Fuel oil (crude oil basis)	▲	●	▲	▲	●
Generator gas		●	▲		●
Glacial acetio acid	■	▲	●	▲	▲
Glycerin	●	●	●	●	●
Heating oil	▲	●	▲	▲	●
Heptane	▲	●	▲	▲	●
Hydraulic oil (mineral-based)	▲	●	▲	▲	●
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	▲	▲	●	▲	▲
Isooctane	▲	●	▲	■	●
Isopropyl alcohol	●	■	●	●	●
Kerosene	▲	●	▲	▲	●
Lactic acid	●	●	●	●	●
Lead acetate	●	■	●	▲	▲

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Media resistance of rubber-metal-gaskets

Medium	NR	NBR	EPDM	CSM	FKM
Lead arsenate	▲	●	●	▲	■
Linseed oil	■	●	■	■	●
Lithium melt	▲	▲	▲	▲	▲
Magnesium sulphate	●	●	●	●	●
Malic acid	▲	●	●	●	●
MEK butanone	▲	▲	●	■	▲
Methane	▲	●	▲	■	●
Methyl alcohol	●	■	●	●	▲
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	▲	■	▲	■	●
Petrol ether	▲	●	▲	▲	●
Phenol	▲	▲	■	▲	●
Phosphoric acid	▲	▲	■	▲	●
Polychl.biphenyls.	▲	▲	▲	▲	●
Potassium chromium sulphate		■	●		●
Potassium acetate	●	■	●	▲	▲
Potassium carbonate	●	●	●	●	●
Potassium chlorate	■	▲	●	●	●
Potassium chloride	●	●	●	●	●
Potassium cyanide	▲	■	●	●	●
Potassium dichrom.	■	■	●	●	●
Potassium hydroxide	■	■	●	●	▲
Potassium hypochlorite		▲	■		
Potassium iodide	●	●	●	●	●
Potassium melt	▲	▲	▲	▲	▲
Potassium nitrate	▲	●	●	●	■
Potassium nitrite	●	●	●	●	●
Potassium permanganate	▲	▲	●	●	●
Propane	▲	●	▲	■	●
Pydraul C	▲	▲	▲	▲	●
Pydraul E	▲	▲	■	▲	●
Pyridine	▲	▲	■	▲	▲
Rape seed oil	▲	●	■	■	●
Rubidium melt	▲	▲	▲	▲	▲
Salicylic acid	●	●	●	●	●
Sea water	●	●	●	●	■
Silicon oil	●	●	●	●	●

Medium	NR	NBR	EPDM	CSM	FKM
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	▲	▲	▲	▲	●

It is not possible to select the right sealing material by just using this media resistance table! Please use the KLINGER documentation for making a safe decision.

▲ Not recommended
■ Conditionally recommended
● Resistant

Subject to technical changes.
Status: May 2015

KLINGER Portugal

KLINGER® KGS

Installation instructions for rubber-metal-gaskets

The following instructions have to be observed so that a reliable sealing connection can be ensured.

1. Gasket selection

The suitable material quality can be selected from the KLINGER® information sheet - above all, from the resistance chart.

2. Flanges

Flanges should be parallel, metallic, clean and dry, the gasket has to be mounted centrically.
Please ensure the correct gasket dimensions.
The gasket should never tower into the throughhole (media flow)!

The outer diameter of the KLINGER®KGS gasket is adapted to the bolt circle of the flange. Therefore safe centering at the screws is ensured.

3. Installation

The installation of the gaskets should be carried out without using any grease or oil containing separating/sealing agents or similar.

In no case, oil or grease containing products may be used, because they have a negative influence on the safety of the whole flange connection..

4. Screws

When installing the screws, they have to be tightened evenly in two to three steps crosswise.

The screws should be lubricated. Pay attention to the tightening torques.

5. Retightening

“Retightening" is not required if these instructions are followed.

6. Multiple use

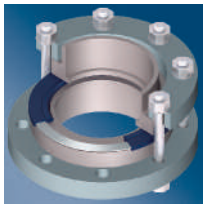
For reasons of safety, the multiple use of gaskets is generally not recommended.

On request, please make use of advice of the KLINGER GmbH!

KLINGER offers you excellent sealing products for all fields of application

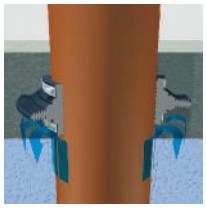
KLINGER®KGS

KLINGER®KGS/TK

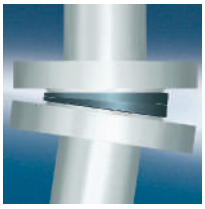


KLINGER®KGS-Flon

KLINGER®KGS/MK



KLINGER®KGS/VD



KLINGER®KNS

Certified according to DIN EN ISO 9001:2008

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No responsibility is accepted for the accuracy of this information.
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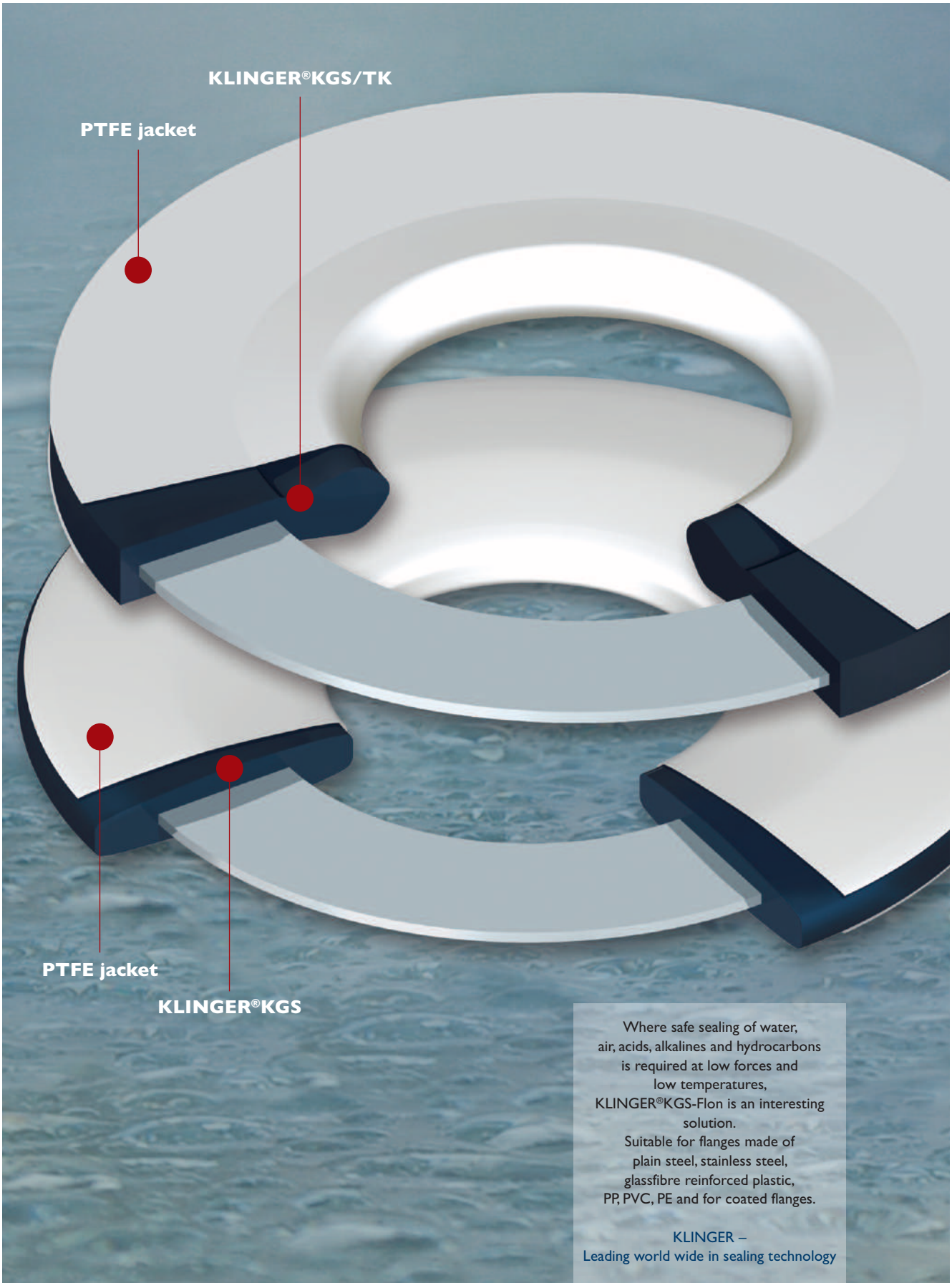
KLINGER® KGS-Flon

Rubber-Metal-Gasket with PTFE jacket



Where safe sealing of water, air, acids, alkalines and hydrocarbons is required at low forces and low temperatures, KLINGER®KGS-Flon is an interesting solution.
Suitable for flanges made of plain steel, stainless steel, glassfibre reinforced plastic, PP, PVC, PE and for coated flanges.

KLINGER –
Leading world wide in sealing technology

KLINGER® KGS-Flon

Rubber-Metal-Gasket with PTFE jacket

All additional data please see in the main KLINGER®KGS-leaflet with Technical Data. There you will find the sizes according to EN 1514-1 as well as the chemical resistance table of the various elastomers.

The available sizes you can find in your actual price list or please contact us.

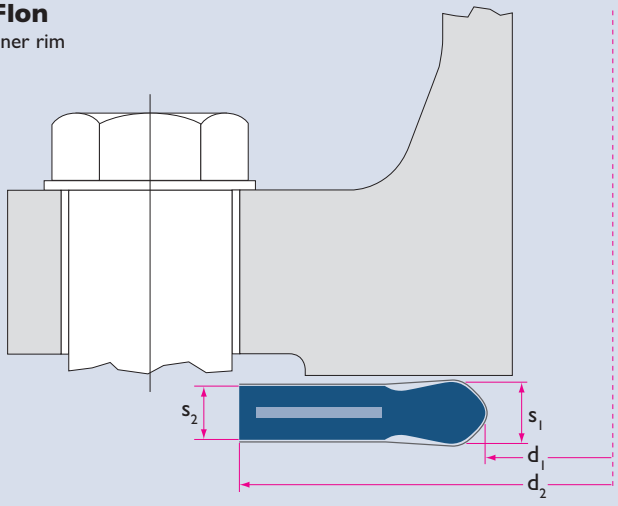
Example for order
for KLINGER®KGS-Flon
Form IBC
DN 100, PN 10-16
or
for KLINGER®KGS/TK-Flon
DN 100, 105 x 162

Gasket material	**EPDM** ethylene-propylene-rubber developed in accordance with the main European drinking water requirements. Very good properties of resistance against ozon and ageing.
Material for the jacket	**Virginal PTFE up to DN 900 modified PTFE from DN 1000**
Description of KGS and KGS/TK gaskets	KGS: Rubber gasket with metal core, lens-form rounded at the edges, suitable for good reception of the surface loads. KGS/TK: Rubber gasket with metal core, lens-form with molded spear tip at the inner rim, square at the edges.
Application field	Safe sealing of pipe systems where aggresive fluids are flowing. Specially suitable for coated flanges and plastic flanges in PE, PP, PVC and GRP. PTFE is quite against all fluid resistant.
Certificates and agreements	Virginal PTFE tested acc. to 21 CFR 177.1550 FDA, test BAM with oxygen, the gasket fulfils the requirements of the German TA-Luft.
Dimensions	KGS: DN 15 up to DN 2000 acc. to EN 1514-1. KGS/TK: DN 16 up to DN 400 SDR 11 and 17.

PTFE jacket made by KUDERNAK INDUSTRIEDICHTUNGEN

Sizes KGS/TK-Flon

s_1 = gasket thickness inner rim
s_2 = gasket thickness
d_1 = inner diameter
d_2 = outer diameter
Jacket thickness 0.5 mm



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February 2015

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