KLINGER® KGS

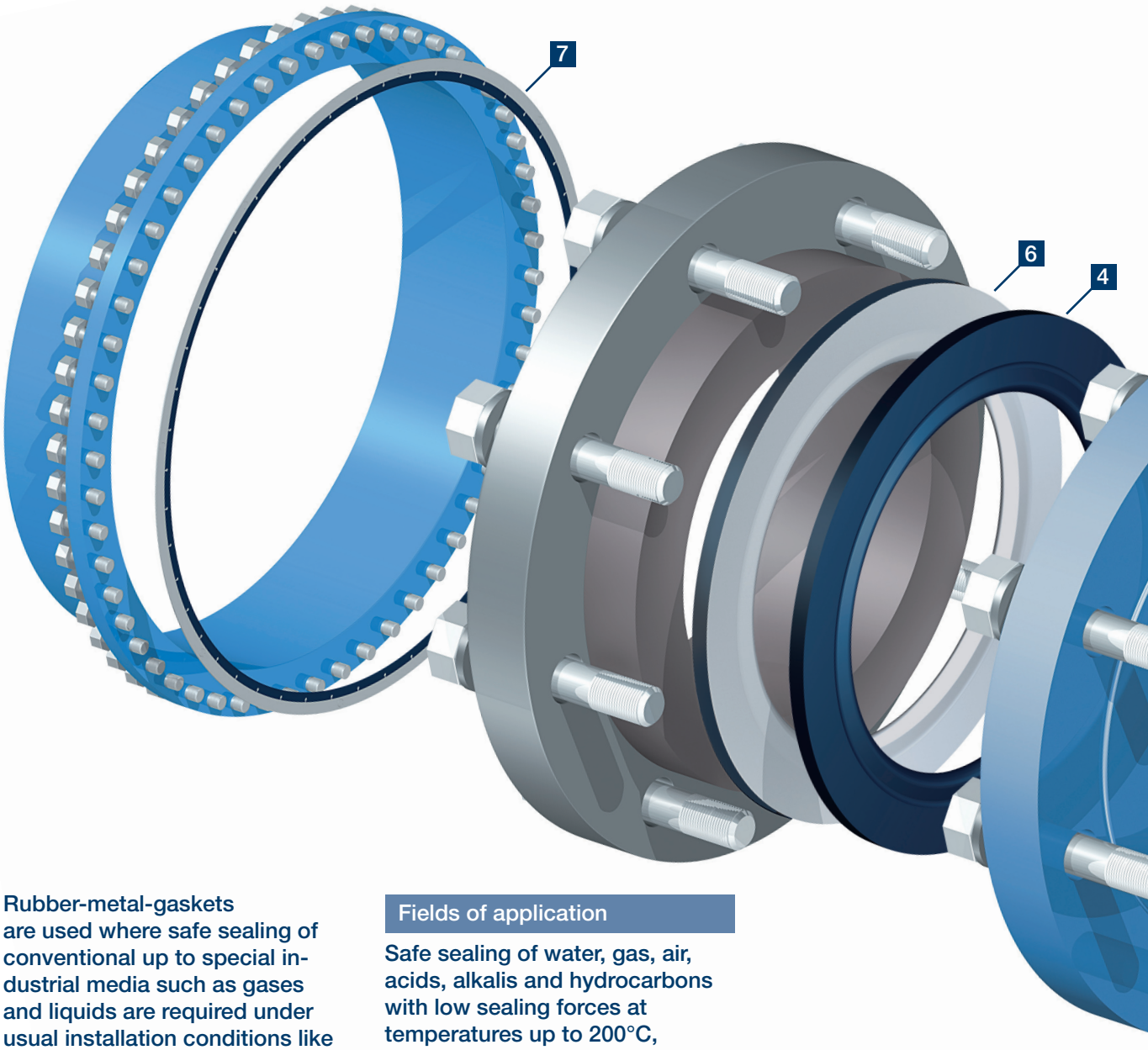
Rubber-Metal-Gaskets – Safe sealing of gases and liquids

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 / KGS GII gaskets are suitable for all flange materials.

KLINGER –
worldwide leader in gaskets

KLINGER® KGS / KLINGER® KGS G II

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/KGS G II 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).

Fields of application

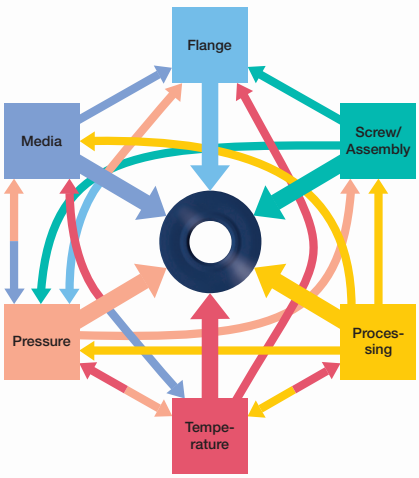
Safe sealing of water, gas, air, acids, alkalis and hydrocarbons with low sealing forces at temperatures up to 200°C, depending on the elastomer type.

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 GII
Above ground and underground Pipelines in the gas and water sector.
Simplest and safest installation as well as maximum tightness at very small or large surface pressures.

2 KLINGER®KGS
Above-ground and underground pipelines in the gas and water area. For slightly damaged and not always correctly routed pipelines.

3 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.

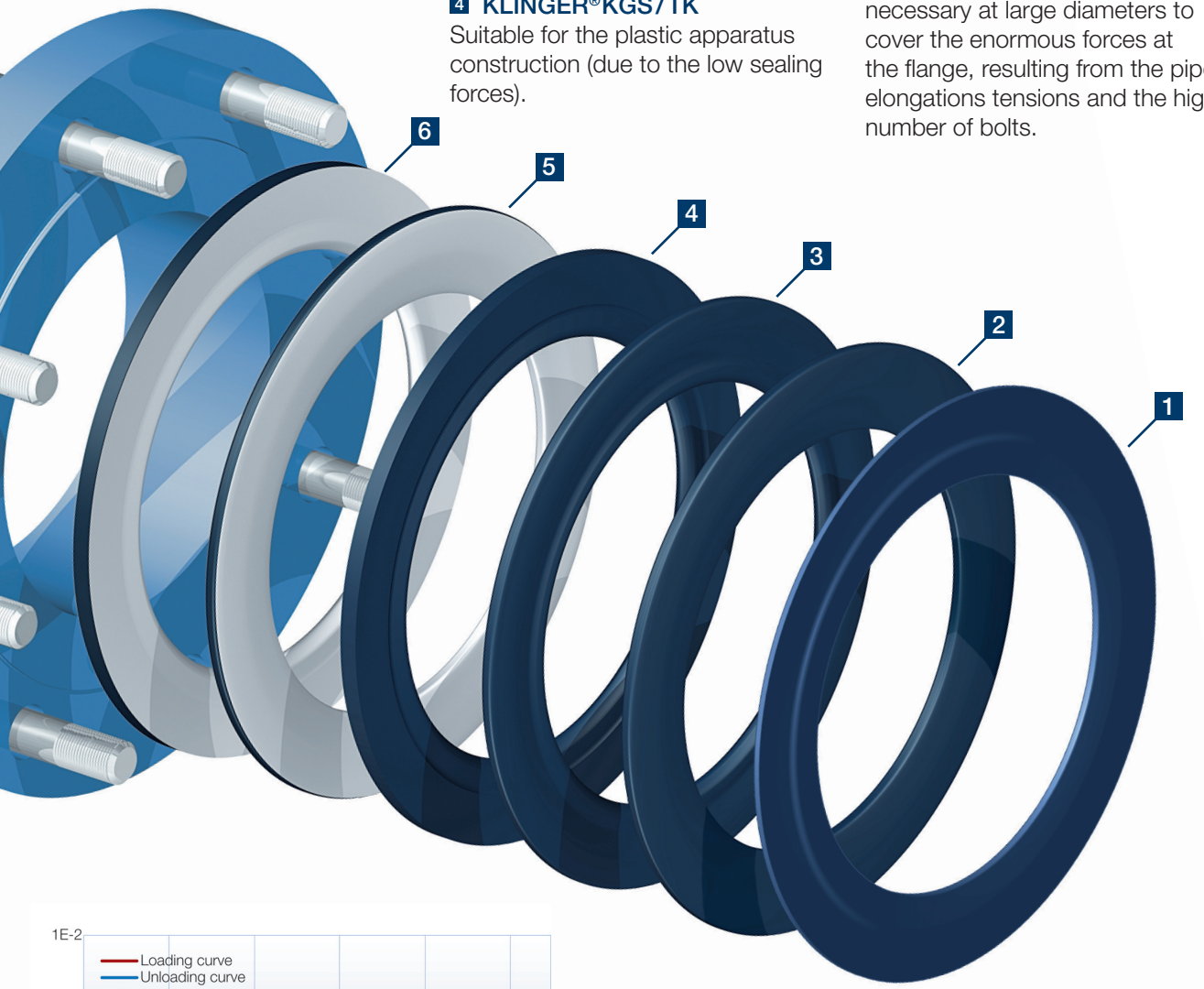
4 KLINGER®KGS/TK
Suitable for the plastic apparatus construction (due to the low sealing forces).

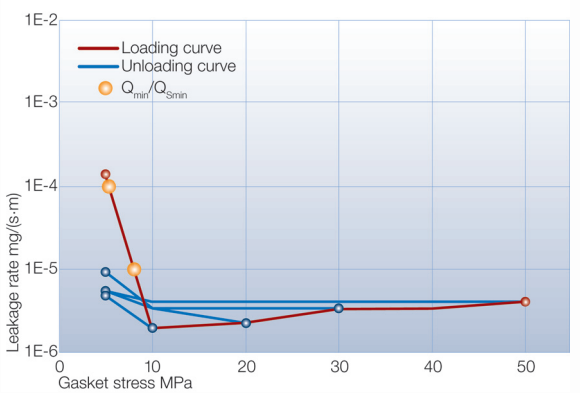
5 KLINGER®KGS-Flon

6 KLINGER®KGS/TK-Flon
Variant for KGS and KGS/TK with PTFE-envelope.
Use in chemistry and the food industry.

7 KLINGER®KNS Kraftnebenschlußdichtung
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.

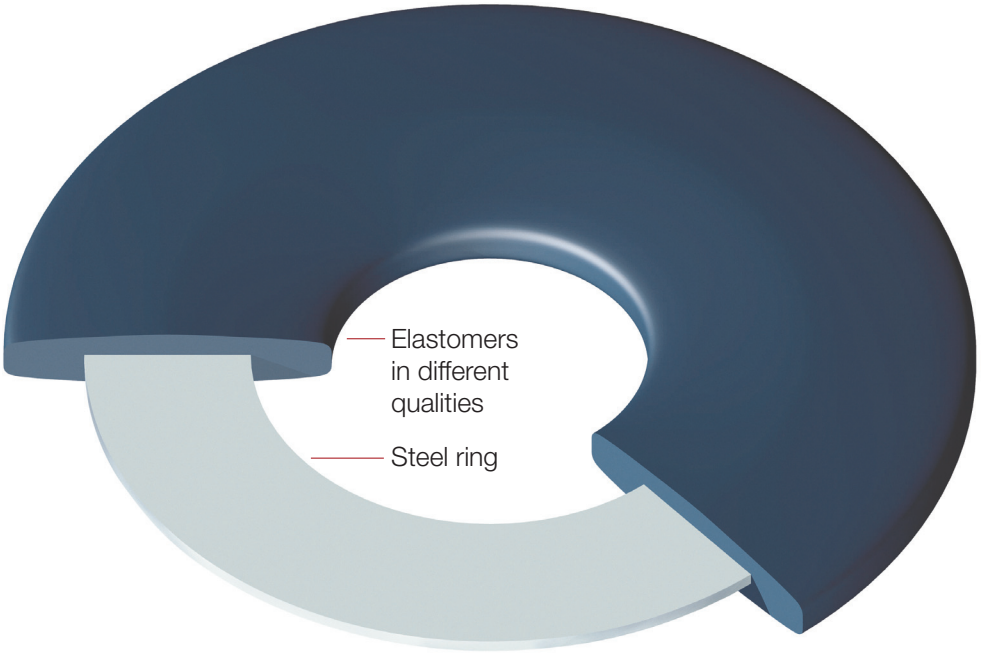




On request, we are glad to provide gasket characteristics according to EN 13555 for flange calculation according to EN 1591- for NBR, EPDM and FKM.

KLINGER® KGS / KLINGER® KGS G II

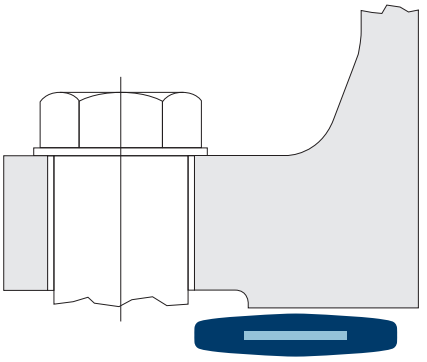
Rubber-Metal-Gaskets according to DIN EN 1514-1, Shape IBC



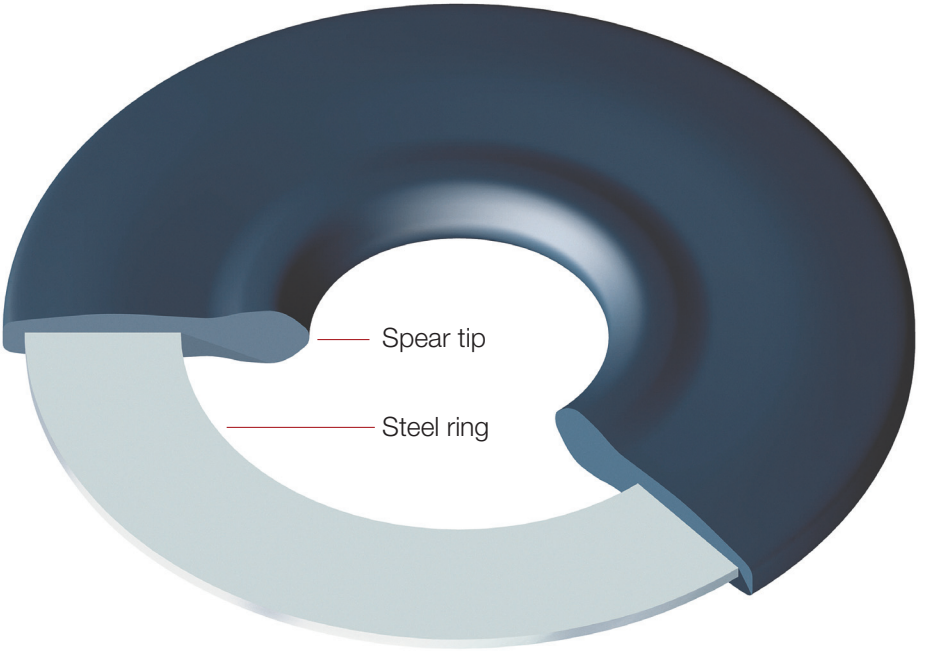
KLINGER® KGS

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



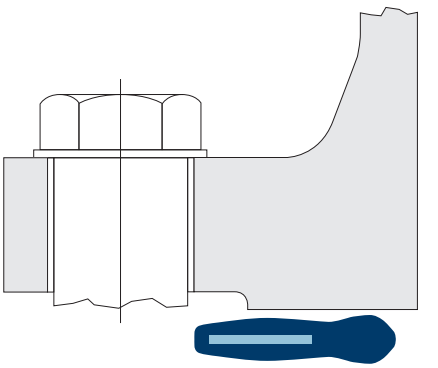
Ordering example:
KLINGER®KGS made of NBR acc. to DIN EN 1514-1, Shape IBC DN 100, PN 10-16



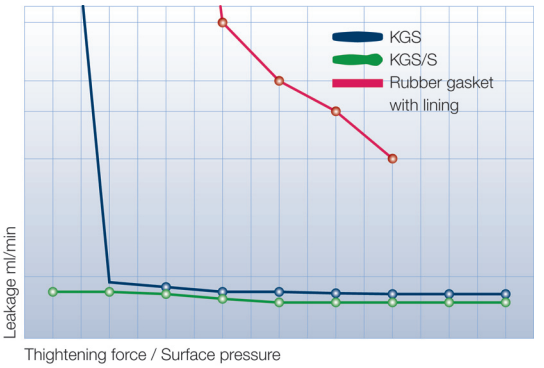
KLINGER®KGS/S

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

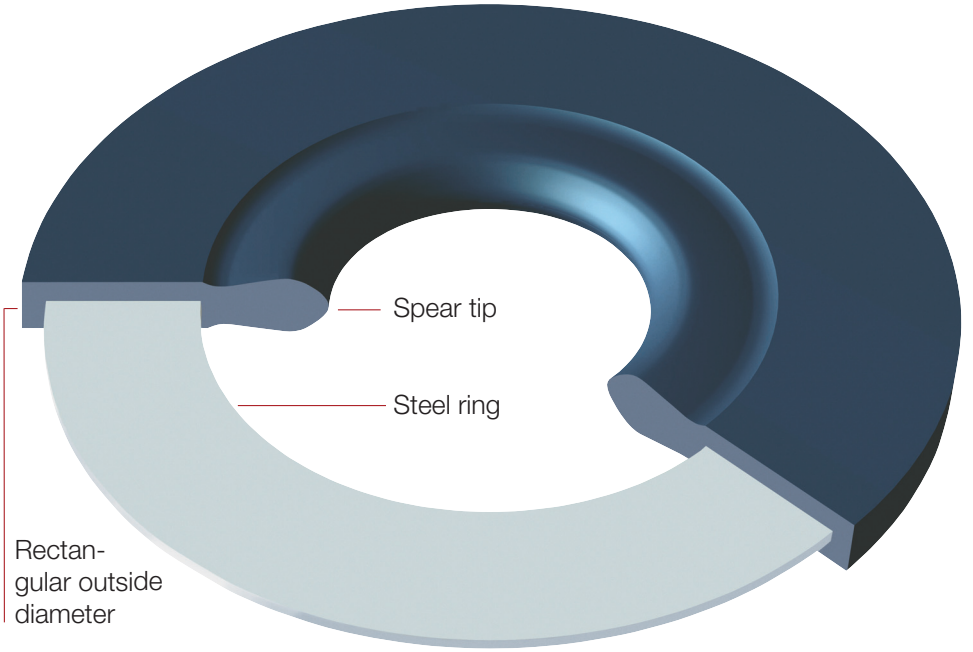


Ordering example:
KLINGER®KGS/S made of NBR acc. to DIN EN 1514-1,
Shape IBC
DN 100, PN 10-16



KLINGER® KGS / KLINGER® KGS G II

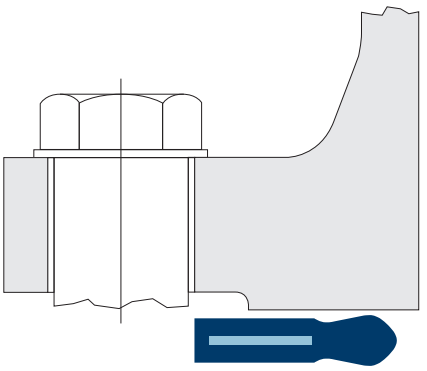
Rubber-Metal-Gaskets according to DIN EN 1514-1, Shape IBC



KLINGER® KGS / TK

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



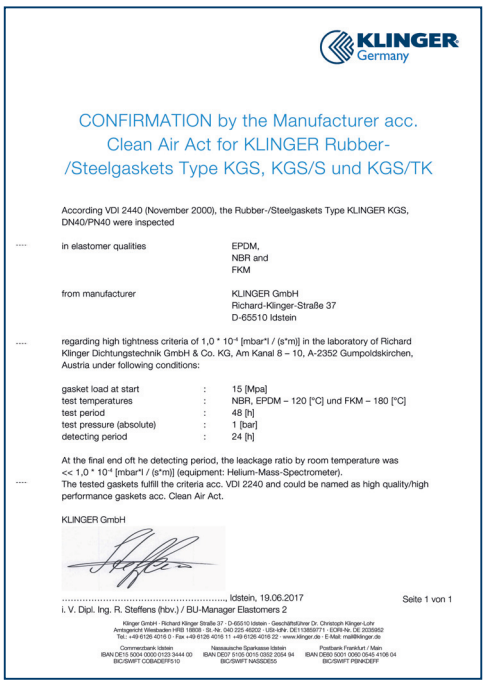
Ordering example:
KLINGER® KGS / TK made of EPDM
DN100 / OD 110 SDR17
105 x 162

CERTIFICATION

Manufacturer confirmed – TÜV-Quality approved

The German institute TÜV SÜD performed tests of the gasket in the size DN 40 PN 40 at a pressure up to 100 bar regarding the leakage, blow-out and ageing behaviour—the gasket passed with flying colours!

KLINGER® KGS



KLINGER Germany

CONFIRMATION by the Manufacturer acc.
Clean Air Act for KLINGER Rubber-
/Steelgaskets Type KGS, KGS/S und KGS/TK

According VDI 2440 (November 2000), the Rubber-/Steelgaskets Type KLINGER KGS, DN40/PN40 were inspected

in elastomer qualities: EPDM, NBR and FKM

from manufacturer: KLINGER GmbH, Richard-Klinger-Straße 37, D-65510 Idstein

regarding high tightness criteria of 1,0 * 10⁻⁴ [mbar*l / (s*m)] in the laboratory of Richard Klinger Dichtungstechnik GmbH & Co. KG, Am Kanal 8 – 10, A-2352 Gumpoldskirchen, Austria under following conditions:

gasket load at start	:	15 [Mpa]
test temperatures	:	NBR, EPDM – 120 [°C] und FKM – 180 [°C]
test period	:	48 [h]
test pressure (absolute)	:	1 [bar]
detecting period	:	24 [h]

At the final end oft he detecting period, the leackage ratio by room temperature was << 1,0 * 10⁻⁴ [mbar*l / (s*m)] (equipment: Helium-Mass-Spectrometer).
The tested gaskets fulfill the criteria acc. VDI 2240 and could be named as high quality/high performance gaskets acc. Clean Air Act.

KLINGER GmbH

Idstein, 19.06.2017 Seite 1 von 1
i. V. Dipl. Ing. R. Steffens (ftdv.) / BU-Manager Elastomers 2

Klinger GmbH · Richard Klinger Straße 37 · D-65510 Idstein · Geschäftsführer Dr. Christoph Klinger-Lohr
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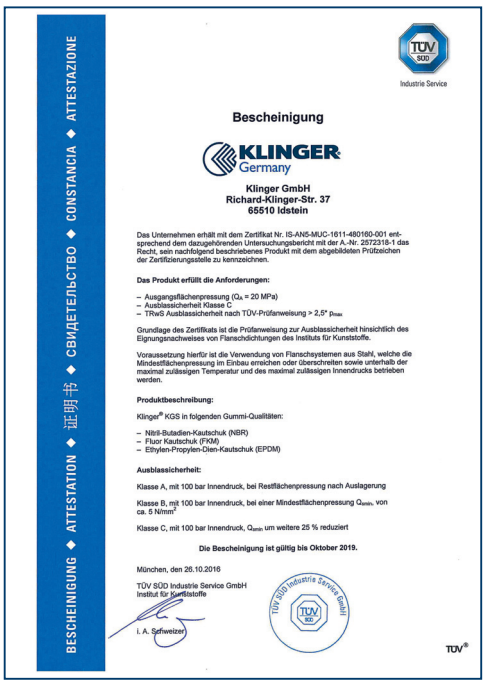
Tel.: +49 6126 4016 0 · Fax +49 6126 4016 11 +49 6126 4016 22 · www.klinger.de · E-Mail: mail@klinger.de

Commerzbank Idstein IBAN DE15 5004 0000 0123 3444 00 BIC/SWIFT COBADEFF510
Nassauische Sparkasse Idstein IBAN DE07 5105 0015 0252 2054 94 BIC/SWIFT NASSDE55
Postbank Frankfurt / Main IBAN DE80 5001 0060 0945 4106 04 BIC/SWIFT PBNKDEFF

TA-Luft (Clean Air Act)



BESCHEINIGUNG ◆ ATTESTATION ◆ 证明书 ◆ СВИДЕТЕЛЬСТВО ◆ CONSTANCIA ◆ ATTESTAZIONE

TÜV SÜD Industrie Service

Bescheinigung

KLINGER Germany

Klinger GmbH
Richard-Klinger-Str. 37
65510 Idstein

Das Unternehmen erhält mit dem Zertifikat Nr. IS-AN5-MUC-1611-480160-001 entsprechend dem dazugehörenden Untersuchungsbericht mit der A.-Nr. 2572318-1 das Recht, sein nachfolgend beschriebenes Produkt mit dem abgebildeten Prüfzeichen der Zertifizierungsstelle zu kennzeichnen.

Das Produkt erfüllt die Anforderungen:

- Ausgangsflächenpressung (Q_A = 20 MPa)
- Ausblassicherheit Klasse C
- TRwS Ausblassicherheit nach TÜV-Prüfanweisung > 2,5* p_{max}

Grundlage des Zertifikats ist die Prüfanweisung zur Ausblassicherheit hinsichtlich des Eignungsnachweises von Flanschdichtungen des Instituts für Kunststoffe.

Voraussetzung hierfür ist die Verwendung von Flanschsystemen aus Stahl, welche die Mindestflächenpressung im Einbau erreichen oder überschreiten sowie unterhalb der maximal zulässigen Temperatur und des maximal zulässigen Innendrucks betrieben werden.

Produktbeschreibung:

Klinger® KGS in folgenden Gummi-Qualitäten:

- Nitril-Butadien-Kautschuk (NBR)
- Fluor Kautschuk (FKM)
- Ethylen-Propylen-Dien-Kautschuk (EPDM)

Ausblassicherheit:

Klasse A, mit 100 bar Innendruck, bei Restflächenpressung nach Auslagerung

Klasse B, mit 100 bar Innendruck, bei einer Mindestflächenpressung Q_{min}, von ca. 5 N/mm²

Klasse C, mit 100 bar Innendruck, Q_{min} um weitere 25 % reduziert

Die Bescheinigung ist gültig bis Oktober 2019.

München, den 26.10.2016

TÜV SÜD Industrie Service GmbH
Institut für Kunststoffe

i. A. Schweizer

TÜV SÜD Industrie Service GmbH

TÜV®

Blow-out proof

KLINGER® KGS GⅡ

BESCHEINIGUNG ◆ ATTESTATION ◆ 证明书 ◆ СВИДЕТЕЛЬСТВО ◆ CONSTANCIA ◆ ATTESTAZIONE

TÜV SÜD Industrie Service

Bescheinigung

KLINGER Germany

Klinger GmbH
Richard-Klinger-Str. 37
65510 Idstein

Bescheinigung Nr. IS-AN5-MUC-1802-480160-002

Das Unternehmen erhält mit dieser Bescheinigung entsprechend dem dazugehörenden Untersuchungsbericht mit der A.-Nr. 2836337-2 das Recht, sein nachfolgend beschriebenes Produkt mit dem abgebildeten Prüfzeichen der Zertifizierungsstelle zu kennzeichnen.

Das Produkt erfüllt die Anforderungen:

- TA-Luft (Leckagenachweis) gemäß VDI 2440, Ausgabe November 2000
- Alterungsverhalten / Auslagerung der Gummiqualitäten auf 1500 Stunden

Das Produkt erfüllt die Anforderungen bezüglich der Gleichwertigkeit gemäß Ziffer 5.2.6.4 der „Technischen Anleitung Luft" (TA-Luft / VDI 2440 gemäß Ziffer 3.3.1.3) hinsichtlich Dichtheit bzw. der Einhaltung der spezifischen Leckagerate nach TA-Luft [λ ≤ 1 x 10⁻⁴ mbar x l/(s x m)] und einer erweiterten Prüfung unter o. g. Betriebsbedingungen.

Zusätzlich beinhaltet die Bescheinigung den Eignungsnachweis unter Alterung als Alternative z. B. zu Weltringdichtungen, Kammprofildichtungen, Spiraldichtungen usw.

Produktbeschreibung:

Klinger® KGS GII in folgender Gummi-Qualität:

- Nitril-Butadien-Kautschuk / NBR

Vulkanisierte Gummidichtung, Speerform in der Schnittdarstellung, gekennzeichnet durch ein aktives Dichtringsegment und anschließendem statischen Reservoir.

Einvulkanisierter und zentrierter Stahlring zur Stabilisierung. Außendurchmesser selbstzentrierend an den Innendurchmesser der Schraubenlöcher (IBC).

Die Bescheinigung ist gültig bis Februar 2021.

München, den 05. Februar 2018

TÜV SÜD Industrie Service GmbH
Institut für Kunststoffe

i. A. Schweizer

TÜV SÜD Industrie Service GmbH

TÜV®

TA-Luft (Clean Air Act)

BESCHEINIGUNG ◆ ATTESTATION ◆ 证明书 ◆ СВИДЕТЕЛЬСТВО ◆ CONSTANCIA ◆ ATTESTAZIONE

TÜV SÜD Industrie Service

Bescheinigung

KLINGER Germany

Klinger GmbH
Richard-Klinger-Str. 37
65510 Idstein

Bescheinigung Nr. IS-AN5-MUC-1802-480160-001

Das Unternehmen erhält mit dem Zertifikat entsprechend dem dazugehörenden Untersuchungsbericht mit der A.-Nr. 2836337-1 das Recht, sein nachfolgend beschriebenes Produkt mit dem abgebildeten Prüfzeichen der Zertifizierungsstelle zu kennzeichnen.

Das Produkt erfüllt die Anforderungen:

- Ausgangsflächenpressung (Q_A = 20 MPa)
- Ausblassicherheit Klasse C
- TRwS Ausblassicherheit nach TÜV-Prüfanweisung > 2,5* p_{max}

Grundlage der Bescheinigung ist die Prüfanweisung zur Ausblassicherheit hinsichtlich des Eignungsnachweises von Flanschdichtungen des Instituts für Kunststoffe.

Voraussetzung hierfür ist die Verwendung von Flanschsystemen aus Stahl, welche die Mindestflächenpressung im Einbau erreichen oder überschreiten sowie unterhalb der maximal zulässigen Temperatur und des maximal zulässigen Innendrucks betrieben werden.

Produktbeschreibung:

Klinger® KGS GII in folgender Gummi-Qualität:

- Nitril-Butadien-Kautschuk / NBR

Ausblassicherheit:

Klasse A, mit 100 bar Innendruck, bei Restflächenpressung nach Auslagerung

Klasse B, mit 100 bar Innendruck, bei einer Mindestflächenpressung Q_{min}, von ca. 5 N/mm²

Klasse C, mit 100 bar Innendruck, Q_{min} um weitere 25 % reduziert

Die Bescheinigung ist gültig bis Februar 2021.

München, den 05. Februar 2018

TÜV SÜD Industrie Service GmbH
Institut für Kunststoffe

i. A. Schweizer

TÜV SÜD Industrie Service GmbH

TÜV®

Blow-out proof

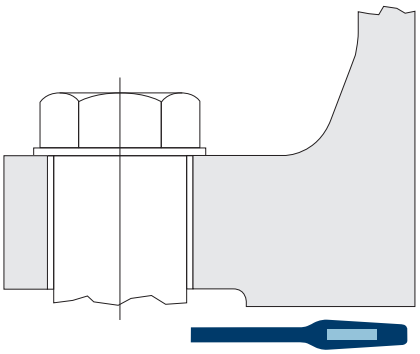
KLINGER® KGS / KLINGER® KGS G Ⅱ

Rubber-Steel-Gaskets—the new generation Ⅱ

KLINGER® KGS G Ⅱ

Vulcanized rubber seal, spear shape in sectional view, characterized by an active sealing ring segment and subsequent static reservoir. Surface treated, vulcanized and centered steel ring for permanent stabilization.

- Stable centering of the steel reinforcement in the sealing ring for a homogeneous force distribution and sealing effect in the flange connection
- High load-bearing capacity of the bond between steel ring and rubber
- Safe sealing possible even at the lowest surface pressures
- Very high static loads such as pipe and bolt forces can be absorbed
- No intrusion into the open pipe diameter (DN)
- No extrusion into the centering area (IBC)
- Highly efficient material usage leads to lower weight (easier handling and lower transport costs)
- Compensation of defects and misalignments of the flange surface possible
- Registered for patent approval



Ordering example:
KLINGER® KGS G Ⅱ made of NBR
according to DIN EN 1514-1
Form IBC
DN 100, PN 10-16

The advantages of the new generation II

“The better is the enemy of the good” said Voltaire. This is the case with the improvement of the well-known KLINGER®KGS rubber-steel gasket.

By optimising several parts of this sealing concept the performance range could be dramatically extended.

The familiar high quality rubber types used by KLINGER® along with the high-strength rubber-metal bond, the optimised cross-sectional profile and the particular ratio of rubber and steel along the flange result in a rubber-steel gasket which can absorb significantly higher flange forces than previously known.

In a first for a rubber-steel gasket an exact centering of the steel ring was achieved during the molding process of the gasket.

Therefore the leverage forces are spread homogeneously during flange mounting and the force application is symmetric. The quality factor of the assembly process is clearly higher than for traditional rubber-steel gaskets (see diagram below).

The geometry is chosen so that already at lowest gasket loads safe sealing occurs. On the other hand the gasket can absorb extremely high static loads due to short compensation movements of the rubber. This means that the flange connection will become significantly safer at higher bolt and pipe forces.

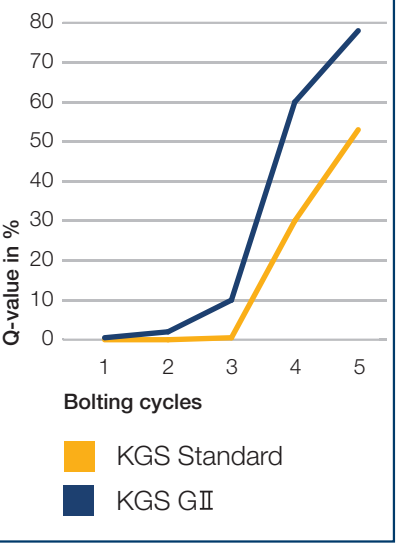
Special reservoir areas have the effect that even at the highest possible compression no intrusion of the rubber into the internal tube diameter or extrusion into the outer centering area will occur.

FACTOR OF MOUNTING QUALITY Q:

To evaluate the characteristics of the new development KGS GII regarding assembly, the behaviour of gasket assembly in comparison to the standard version KGS has been checked by using the test stand FM20 of the company GAIST.

To obtain a quick evaluation of the assembly quality with the test stand the Q-factor is used. It is the product of bolt force target divided by the effective bolt force, difference of the minimum and maximum forces of the individual bolts and the standard deviation to bolt force target.

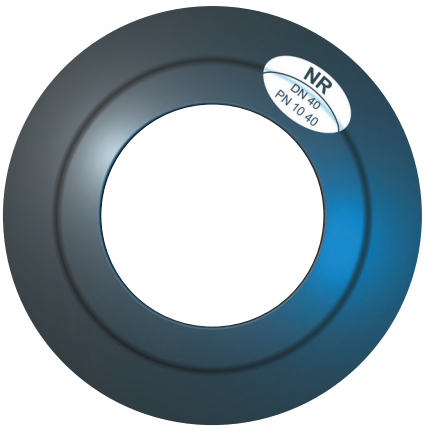
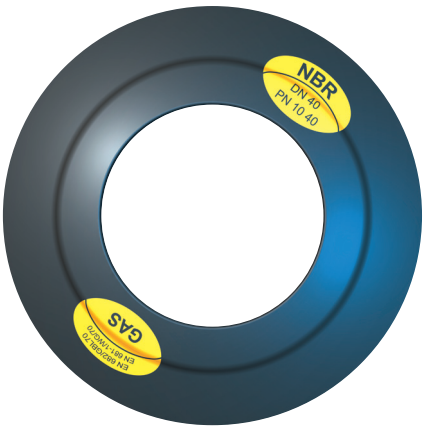
Comparison Q-Factor:



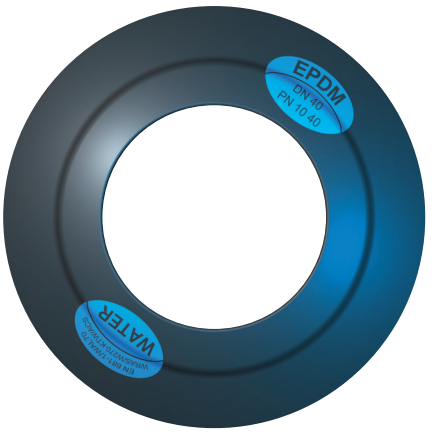
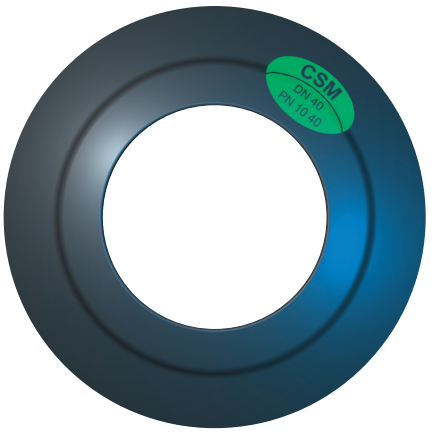
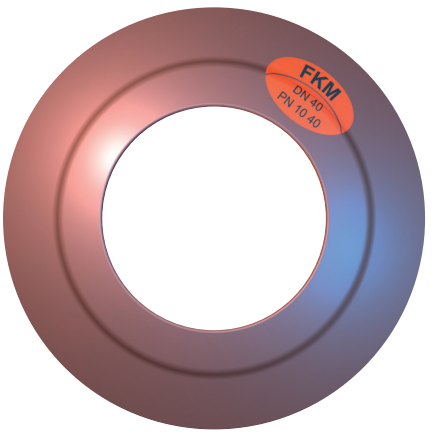
>> The quality gain after five bolting cycles can be clearly recognised in the diagram

KLINGER® KGS / KLINGER® KGS G II

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

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 / KLINGER® KGS G II

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)

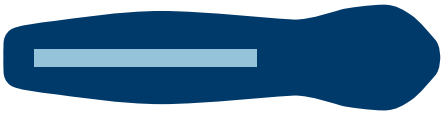
Dimensions acc. to the Standard in mm

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

KLINGER® KGS G II

KLINGER® KGS

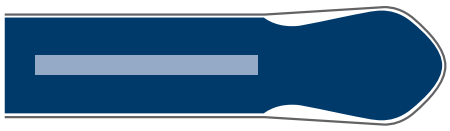
KLINGER® KGS / S



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

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	–	–	–	–	–	–

KLINGER® KGS / KLINGER® KGS G II

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	●	■	●	▲	▲

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.

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	▲	▲	▲	▲	●

Subject to technical changes.
Status: May 2015

▲ Not recommended
■ Conditionally recommended
● Resistant

KLINGER® KGS / KLINGER® KGS G II

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 / KGS G II 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, 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.

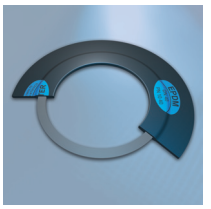
6. Multiple use
For reasons of safety, the multiple use of gaskets is generally not recommended.

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

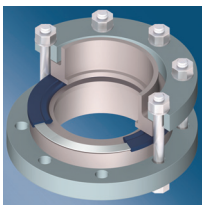
KLINGER offers you excellent sealing products for all fields of applications

KLINGER®KGS

KLINGER®KGS G II

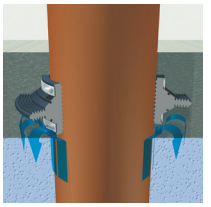


KLINGER®KGS/TK

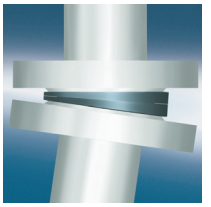


KLINGER®KGS-Flon

KLINGER®MK



KLINGER®KGS/VD



KLINGER®KNS

Certified according to DIN EN ISO 9001:2008

Subject to technical changes.
No responsibility is accepted for the accuracy of this information.
Status: May 2018

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