

KLINGER[®]KGS / KLINGER[®]KGS GII

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





KLINGER[®]KGS / KLINGER[®]KGS G II

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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.

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





KLINGER[®]KGS/KLINGER[®]KGS GII

1 KLINGER[®]KGS GII FKM

1E-6

0 10 Gasket stress MPa

30

20

40

50

Chemistry/chemical plant construction. Easiest and safest installations well as maximum tightness very low or high surface pressures

2 KLINGER[®]KGS/S

For enamelled and 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.

4 KLINGER[®]KGS GII NBR

Especially for gas lines. Excellent suitability for hydrogen H2. Can also be used for waste water.

5 KLINGER[®]KGS GII EPDM

For drinking water and process water. Above ground and buried piping.

6 KLINGER[®]KNS

Compression stop gasket

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



to EN 1591 - for

NBR, EPDM and FKM.



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



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
- 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 according to DIN EN 1514-1 shape IBC DN 100, PN 10-16





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 GII



München, den 30. April 2021 TÜV SÜD Industrie Service GmbH Institut für Kunststoffe

Die Bescheinigung ist gültig bis April 2024.

TUV[®]

Blow-out proof

BESCHEINIGUNG



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
- Europapatent No. 3492784



Ordering example: KLINGER[®]KGS GII 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.

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





KLINGER[®]KGS/NBR/EPDM/FKM

Materials of rubber-metal-gaskets





2000

2020

KLINGER[®]KGS Elastomere / 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,	Dimensions acc. to the Standard in mm	DN	Inside diameter
	on request, or please see	10	18
Shape B - EN 1092 acc. to	our actual price list.	15	22
Shape IBC (Inner Bolt Circle)		20	27
		25	34
		32	43
		40	49
		50	61
		60	72
		65	77
		80	89
		100	115
KLINGER®KGS GII		125	141
		150	169
		200	220
		250	273
		300	324
KLINGER®KGS/S		350	356
		400	407
		450	458
		500	508
		600	610
KLINGER®KGS/TK		700	712
Keinden Kas/ IK		800	813
		900	915
		1000	1016
		1100	1120
		1200	1220
KLINGER®KNS		1400	1420
Compression stop gasket		1500	1520
		1600	1620
		1800	1820



Product range of Rubber-Metal-Gaskets

Outside dia	ameter for PN	40	10	05	40	thickness t (mm)	
1/2,5	6	10	16	25	40	KGS GII	
39	39	46	46	46	46	3	
44	44	51	51	51	51	3	
54	54	61	61	61	61	3	
64	64	71	71	71	71	3	
76	76	82	82	82	82	3	
86	86	92	92	92	92	3	
96	96	107	107	107	107	3	
106	106	117	117	117	117	3	
116	116	127	127	127	127	3	
132	132	142	142	142	142	3	
152	152	162	162	168	168	3	
182	182	192	192	194	194	3	
207	207	218	218	224	224	3	
262	262	273	273	284	290	3	
317	317	328	329	340	352	4	
373	373	378	384	400	417	4	
423	423	438	444	457	474	5	
473	473	489	495	514	546	5	
528	528	539	555	564	571	5	
578	578	594	617	624	628	5	
679	679	695	734	731	747	5	
784	784	810	804	833	-	6	
890	890	917	911	942	-	6	
990	990	1017	1011	1042	-	6	
1090	1090	1124	1128	1154	-	6	
_	_	1231	1228	1251	_	7	
1290	1307	1341	1342	1364	-	7	
1490	1524	1548	1542	1578	_	7	
-	-	1658	1654	1688	-	7	
1700	1724	1772	1764	1798	-	7	
1900	1931	1972	1964	2000	-	7	
2100	2138	2182	2168	2230	_	7	



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			1		
Castor oil	•		•	•	•
Chlorine water	•				•
Chiorine, dry					
Chlorine, moist					•
Unromic 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%		-	-		
Freen 22		-	- T		
Freori 22			-		
Concreter das			•		
Glacial acetic acid		—	- 1		—
Glycerin		-			-
Hentane			—		
Hydraulic oil (mineral-based)					
Hydraulic oil (nhosphat ester)					
Hydrazine hydrate		- T			—
Hydrochloric acid (10%)		- E.	-		
Hydrochloric acid (37%)					—
Hydrofluorid acid	T	- T			
Hydrofluosilic acid	-				
Hydrogen	•		•	•	•
Hydrogen chloride (dry)					
Hydrogen peroxide 3%					
Hydrogen peroxide 90%					
Hydrogen sulfide			•		
Isooctane					•
Isopropyl alcohol	•		•	•	•
Kerosene		•			•
Lactic acid	•	•	•	•	•
Lead acetate	•		•		



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.

Subject to technical changes. Status: 04.2023 Not recommended
Conditionally recommended
Resistant



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 GII 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 G II



KLINGER®KGS/TK





KLINGER®MK



KGS GII NBR

KLINGER®KGS/VD



KGS GII FKM



KLINGER®KNS



Certified according to DIN EN ISO 9001:2015

Subject to technical changes. No responsibility is accepted for the accuracy of this information. Status: 04.2023 KLINGER GmbH Rich.-Klinger-Straße 37 D-65510 ldstein Tel (06126) 4016-0 Fax (06126) 4016-11/-22 e-mail: mail@klinger.de http://www.klinger-elastomere.de



