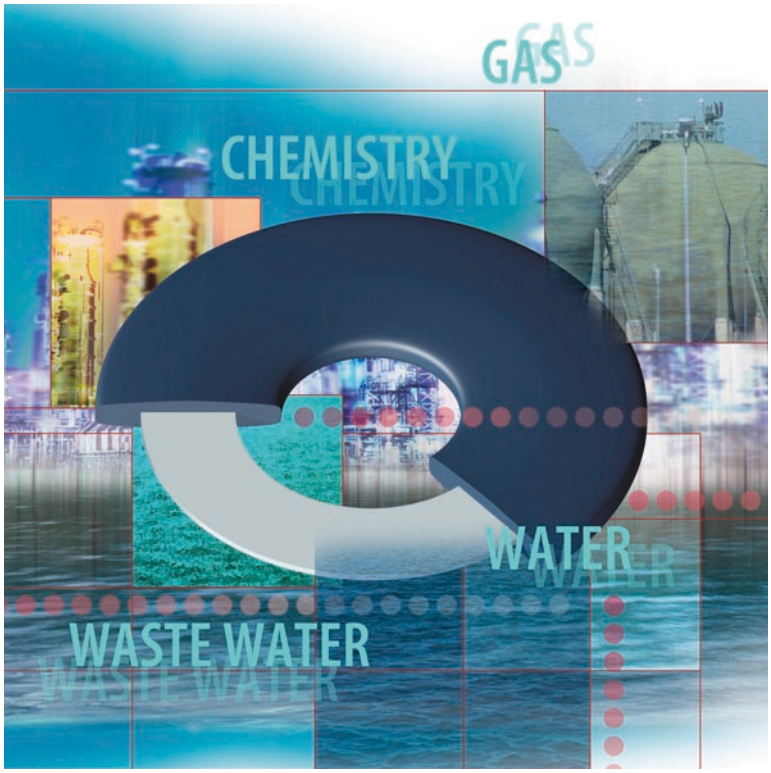
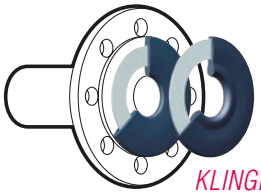
KLINGER®



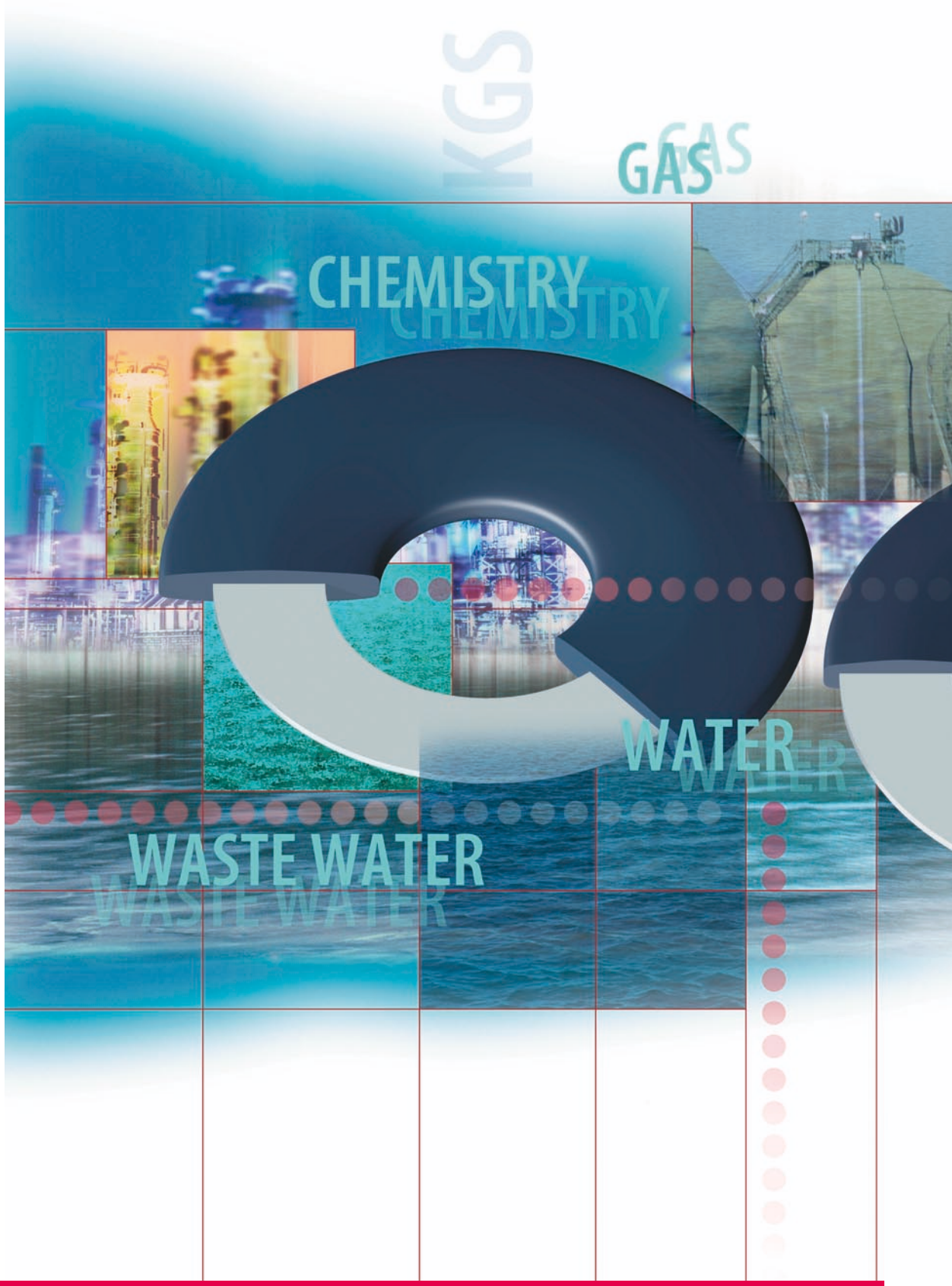

# KLINGER®-KGS Rubber-Metal-Gasket

*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.*



*KLINGER – The worldwide leader in seal technology*

KLINGER®



# KLINGER-KGS
# Rubber-Metal-Gasket

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

## Application fields

***Media***
- *water*
- *gas*
- *waste water*
- *chemicals*

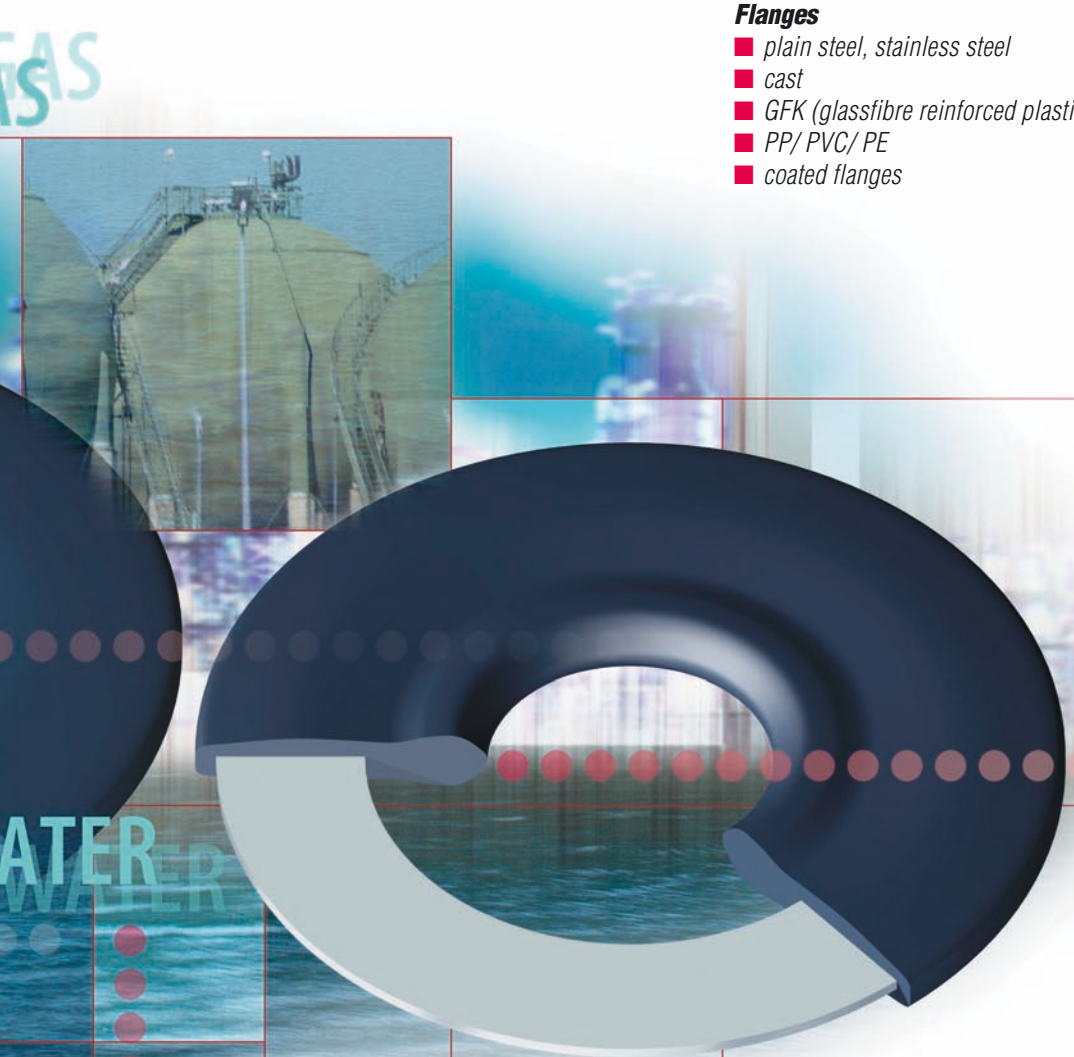
***Flanges***
- *plain steel, stainless steel*
- *cast*
- *GFK (glassfibre reinforced plastic)*
- *PP/ PVC/ PE*
- *coated flanges*

*Safe sealing of water, air, acids, caustic solutions and hydrocarbons with low forces at temperatures up to max. 200°C.*

***Type KGS, Typ KGS/Guss****
- *at piping design for gas and water piping*
- *for slightly damaged and not always correct routed pipelines*

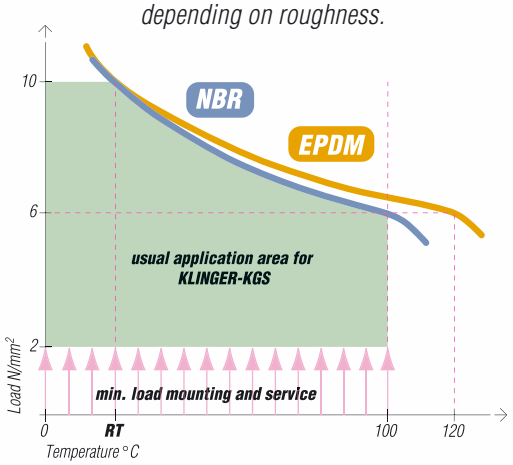
***Type KGS/S***
- *at piping design for gas and water piping*
- *at rubber coated flanges of pipes and apparatus*
- *at enamelled flanges of pipes and apparatus*
- *fat constructions of plastic apparatus (low sealing forces)*

** for cast iron flange dimensions*

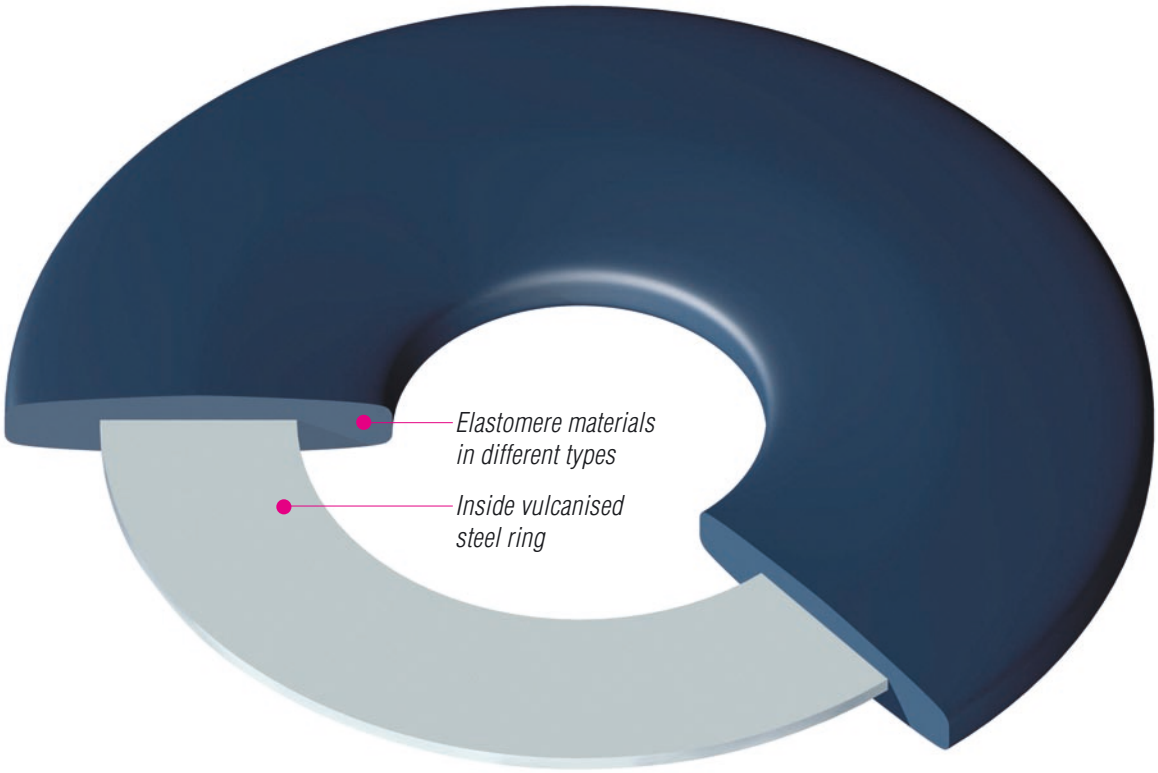



***Characteristic values for NBR-GW and EPDM-KTW***
$k_0 \times K_D = 2\ b\ (N/mm^2)$
$k_1 = 0.5\ (mm)$

*Max. roughness:*
*50 bis 100 µm*
*depending on roughness.*



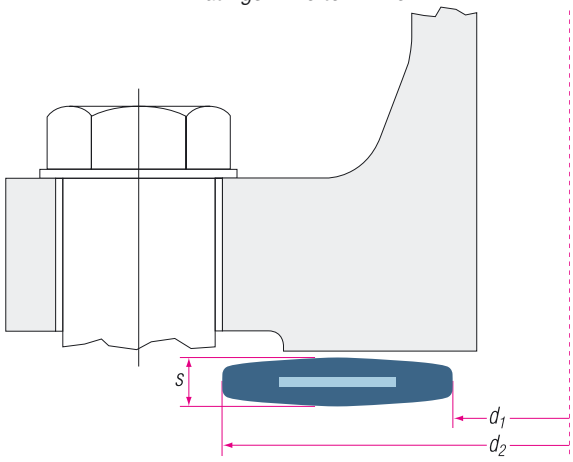
# KLINGER-KGS
# Rubber-Metal-Gasket




## KGS and KGS/Guss*

- Vulcanised rubber gasket, lenticular shape, rounded edges.
- Inside vulcanised steel ring, thereby good absorption of surface pressure.
- Outer diameter self-centering to the inner diameter of the screw holes.
- The gaskets are made of NR = Vulcanisates of natural rubber (SBR), NBR-GW (Nitril rubber), EPDM-KTW (Ethylen-Propylen rubber), CSM/ Hypalon (chlorosulfonated polyethylene) and FKM = Viton (Fluoro elastomere) every with inside vulcanised steel ring.
- The NBR-GW-type is approved by DVGW and recommended according to KTW (potable water application).
- Dimension in DIN EN 1514-1 (replaces DIN 2690 ) for the pressure ratings PN 6 to PN 40.

*Example for order:*
*Rubber-Metal-Gasket KLINGER-KGS made of NBR-GW according to DIN EN 1514-1, Form IBC DN 100, PN 10-16*

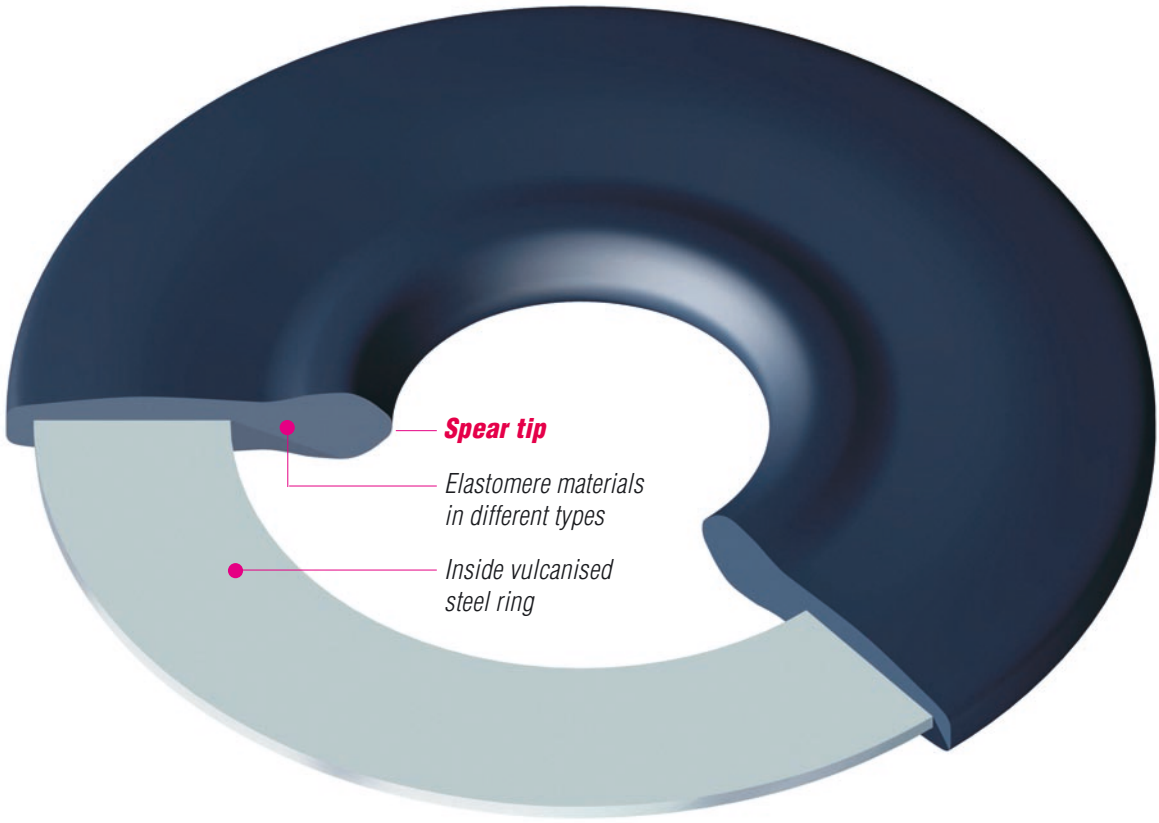



**Sizes at the measurement table**

$s$ = Thickness
$d_1$ = Inner diameter
$d_2$ = Outer diameter

* for cast iron flange dimensions

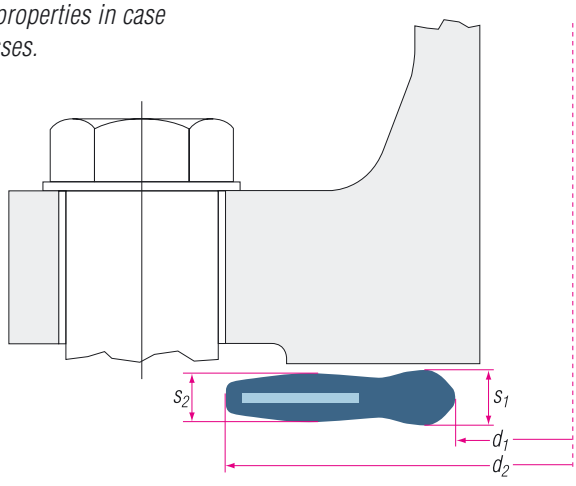
# KLINGER-KGS
# Rubber-Metal-Gasket




## KGS/S (S = Spear tip)

- *Vulcanised rubber gasket, lenticular shape at the gasket body with integrally molded **spear tip** at the inside of the gasket, rounded edges. The new shape with "**spear tip**" offers higher safety against pressurized volumes at the sealing area and corrosion.*
- *Thereby especially suitable for flanges made of thermoplastic material.*
- *Optimal sealing properties in case of flange unevennesses.*
- *Safe sealing already at lowest tightening torques.*
- *The gaskets are made of NR = Vulcanisates of natural rubber (SBR), NBR-GW (Nitril rubber), EPDM-KTW (Ethylen-Propylen rubber), CSM/ Hypalon (chlorosulfonated polyethylene) and FKM = Viton (Fluoro elastomere) every with inside vulcanised steel ring.*
- *The NBR-GW-type is approved by DVGW and recommended according to KTW (potable water application).*
- *Dimension in DIN EN 1514-1 (replaces DIN 2690 ) for the pressure ratings PN 6 to PN 40.*

*Example for order:*
*Rubber-Metal-Gasket KLINGER-KGS made of NBR-GW according to DIN EN 1514-1, Form IBC DN 100, PN 10-16*

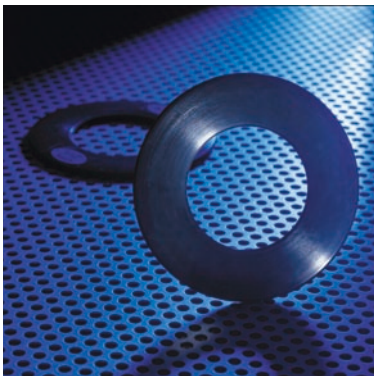
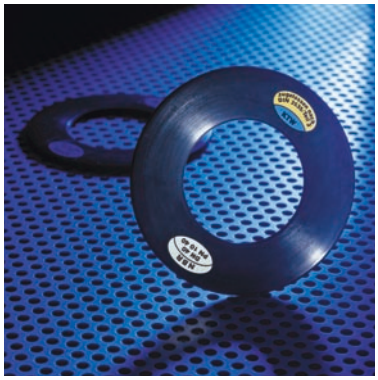



***Sizes at the measurement table***

$s_1$ = *Sealing lip*
$s_2$ = *Sealing body*
$d_1$ = *Inner diameter*
$d_2$ = *Outer diameter*

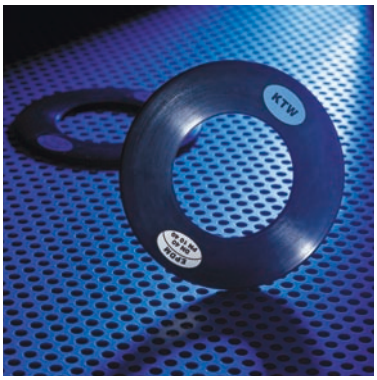
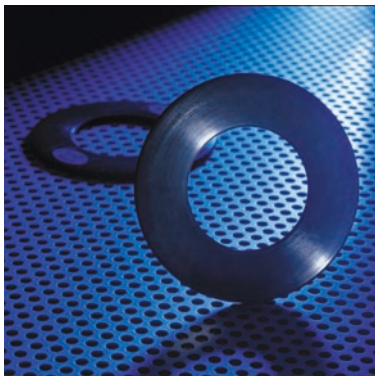
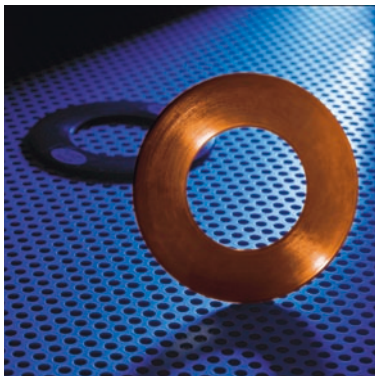
# KLINGER Rubber-Metal-Gasket Type KGS, KGS/Guss*, KGS/S

* for cast iron flange dimensions

| **Material** | NR | NBR-GW |
|---|---|---|
| **Function and durability**<br>*The performance and 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.* |  |  |
| **Application field** | *NR = Natural rubber (SBR) for water, closed loop water arrangements, soluted lyes at max. 50 % conc. and max. 80°C* | *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* |
| **Colour** | *black* | *black* |
| **Hardness** | *DIN 53505, Shore A 60 - 80 ±5* | *DIN 53505, Shore A 70 ±5* |
| **Density** | *DIN 53479, g/cm³ 1,384* | *DIN 53479, g/cm³ 1,196* |
| **Temperature** | *approx +80°C, short-term up to +90°C* | *app. +100°C, short-term up to +130°C* |
| **Certificates** | *Approval of own test facility* | *DVGW-approval incl. KTW-approval* |
| **Chemical resistance** | *Resistant against:*<br>■ *water, seawater, pond water, closed loop water up to 90°C*<br>■ *partly against alkalines, 50% NaOH at 50°C*<br>■ *sufficient resistant against natural lighting, weather and ozone* | *Resistant against:*<br>■ *aliphatic hydrocarbons (mineral oils and greases, diesel fuel, petrol)*<br>■ *many of diluted acids and alkalines at ambient temperature*<br>■ *water and many salt dilutions at ambient temperature*<br>■ *animal and vegetable oils and greases* |
| | *Not resistant against:*<br>■ *fuel, mineral oils, acids and gases* | *Not resistant against:*<br>■ *aromatic and chlorinated hydrocarbons*<br>■ *highly oxidising acids*<br>■ *polar solvents* |
| **Application** | *The application of NR-vulcanisates is possible where natural media have to be sealed. Temperatures higher than 90°C have to be avoided.* | *The NBR type has a good chemical resistance against aliphatic hydrocarbons, mineral oils and greases, diesel fuel and petrol.* |

# KLINGER Rubber-Metal-Gasket Type KGS, KGS/Guss*, KGS/S

* for cast iron flange dimensions

| EPDM-KTW | CSM | FKM/Viton |
|---|---|---|
|  |  |  |
| *Potable water/ waste water. Approved according to KTW D1/D2, 1.3.31 of national health service for potable water* | *CSM / Hypalon (chlorosulfonated polyethylene) the application are in the chemical industry* | *FKM= Viton (Fluoro elastomere) the application are in the chemical industry and production* |
| *black* | *black* | *brown* |
| *DIN 53505, Shore A 70 ±5* | *DIN 53505, Shore A 70 +/-5* | *DIN 53505, Shore A 75 +/-5* |
| *DIN 53479, g/cm³ 1,120* | *DIN 53479, g/cm³ 1,340* | *DIN 53479, g/cm³ 1,880* |
| *app. +100°C, short-term up to +130°C* | *approx. +80°C* | *approx. +200°C* |
| *KTW-approval, EN 681-1, W 270, ACS, WRC, Ö-Norm* | *Approval of own test facility* | *Approval of own test facility* |
| *Resistant against:*<br>■ *water and water dilutions of salts*<br>■ *many of diluted acids and alkalines*<br>■ *polar media as alcohol, ester and ketone*<br>■ *washing agents*<br>■ *hydraulic media based on water-glycol (HFC-fluids)*<br>■ *hydraulic media based on phosphoric esters (HFD-R-fluids)* | *Resistant against:*<br>■ *many acids up to 50°C*<br>■ *good resistant against natural lighting and ozone* | *Resistant against:*<br>■ *acids and alkalines*<br>■ *gases*<br>■ *all kind of water* |
| *Not resistant against:*<br>■ *aliphatic, aromatic and chlorinated hydrocarbons (oils, greases and fuels)*<br>■ *highly oxidising acids* | *Not resistant against:*<br>■ *at temperatures below -15°C and over +80°C* | *Not resistant against:*<br>■ *partial resistance at temperatures of -10°C and lower* |
| *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.* | *The application of CSM-vulcanisates are in the chemical industry, dry-cleaning etc.* | *As there is a good chemical resistance for acids and alkalines, the main application field is in the chemical production and users of chemicals.* |

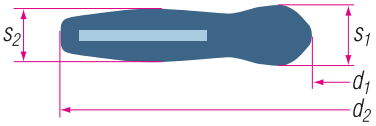
# KLINGER-KGS

## Gaskets acc. to DIN 2690 for raised face flanges acc. to DIN EN 1514-1, Form IBC (Inner Bolt Circle)

**Type KGS and KGS/Guss***


* for cast iron flange dimensions

**Type KGS/S**




**Sizes at the measurement table**

$s$ = Thickness
$s_1$ = Sealing lip
$s_2$ = Sealing body
$d_1$ = Inner diameter
$d_2$ = Outer diameter

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

The gaskets are made of NR = Vulcanisates of natural rubber (SBR), NBR-GW (Nitril rubber), EPDM-KTW (Ethylen-Propylen rubber), CSM/ Hypalon (chlorosulfonated polyethylene) and FKM = Viton (Fluoro elastomere) every with inside vulcanised steel ring.

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

The table on the right is only for your information. Please refer to our actual price list to find those dimensions which can be deliverd or give us your inquiry.

| DN | s Type KGS | s Type KGS/S | $d_1$ DIN 2690 | $d_1$ DIN 1514 | 1 / 2,5 DIN 2690 | 1 / 2,5 DIN 1514 |
|---|---|---|---|---|---|---|
| 4 | – | – | 6 | – | – | – |
| 6 | – | – | 10 | – | 28 | – |
| 8 | – | – | 14 | – | 33 | – |
| 10 | – | – | 18 | 18 | 38 | 39 |
| 15 | 4 | 3 / 4 | 22 | 22 | 43 | 44 |
| 20 | 4 | 3 / 4 | 28 | 27 | 53 | 54 |
| 25 | 4 | 3 / 4 | 35 | 34 | 63 | 64 |
| 32 | 4 | 3 / 4 | 43 | 43 | 75 | 76 |
| 40 | 4 | 3 / 4 | 49 | 49 | 85 | 86 |
| 50 | 4 | 4 / 5 | 61 | 61 | 95 | 96 |
| 60[1] | – | – | – | – | – | 106 |
| 65 | 4 | 4 / 5 | 77 | 77 | 115 | 116 |
| 80 | 4 | 4 / 5 | 90 | 89 | 132 | 132 |
| 100 | 5 | 5 / 6 | 115 | 115 | 152 | 152 |
| 125 | 6 | 5 / 6 | 141 | 141 | 182 | 182 |
| 150 | 6 | 6 / 7 | 169 | 169 | 207 | 207 |
| (175) | – | – | 195 | – | 237 | – |
| 200 | 6 | 6 / 7 | 220 | 220 | 262 | 262 |
| 250 | 6 | 6 / 7 | 274 | 273 | 318 | 317 |
| 300 | 6 | 6 / 7 | 325 | 324 | 373 | 373 |
| 350 | 7 | 7 / 9 | 368 | 356 | 423 | 423 |
| 400 | 7 | 7 / 9 | 420 | 407 | 473 | 473 |
| 450 | 7 | 7 / 9 | 470 | 458 | 528 | 528 |
| 500 | 7 | 7 / 9 | 520 | 508 | 578 | 578 |
| 600 | 7 | 7 / 9 | 620 | 610 | 680 | 679 |
| 700 | 8 | 8 / 10 | 720 | 712 | 785 | 784 |
| 800 | 8 | 8 / 10 | 820 | 813 | 890 | 890 |
| 900 | 8 | 8 / 10 | 920 | 915 | 990 | 990 |
| 1000 | 8 | 8 / 10 | 1020 | 1016 | 1090 | 1090 |
| 1100 | 8 | 8 / 10 | – | 1120 | – | – |
| 1200 | 8 | 8 / 10 | 1220 | 1220 | 1290 | 1290 |
| 1400 | 8 | 8 / 10 | 1420 | 1420 | 1490 | 1490 |
| 1500[1] | – | – | – | 1520 | – | – |
| 1600 | 8 | 8 / 10 | 1620 | 1620 | 1700 | 1700 |
| 1800 | 8 | 8 / 10 | 1820 | 1820 | 1900 | 1900 |
| 2000 | 8 | 8 / 10 | 2020 | 2020 | 2100 | 2100 |
| 2200 | – | – | 2220 | 2220 | 2305 | 2307 |
| 2400 | – | – | 2420 | 2420 | 2505 | 2507 |
| 2600 | – | – | 2620 | 2620 | 2705 | 2707 |
| 2800 | – | – | 2820 | 2820 | 2920 | 2924 |
| 3000 | – | – | 3020 | 3020 | 3120 | 3124 |
| 3200 | – | – | 3220 | 3220 | 3320 | 3324 |
| 3400 | – | – | 3420 | 3420 | 3520 | 3524 |
| 3600 | – | – | 3620 | 3620 | 3730 | 3734 |
| 3800 | – | – | 3820 | 3820 | 3930 | 3931 |
| 4000 | – | – | 4020 | 4020 | 4130 | 4131 |

Dimensions in mm, 1) only for cast iron flanges

# KLINGER-KGS

## Gaskets acc. to DIN 2690 for raised face flanges acc. to DIN EN 1514-1, Form IBC (Inner Bolt Circle)

| $d_2$ for PN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **6 DIN 2690** | **6 DIN 1514** | **10 DIN 2690** | **10 DIN 1514** | **16 DIN 2690** | **16 DIN 1514** | **25 DIN 2690** | **25 DIN 1514** | **40 DIN 2690** | **40 DIN 1514** |
| – | – | – | – | – | – | 30 | – | – | – |
| 28 | – | 38 | – | 38 | – | 38 | – | 38 | – |
| 33 | – | 43 | – | 43 | – | 43 | – | 43 | – |
| 38 | 39 | 45 | 46 | 45 | 46 | 45 | 46 | 45 | 46 |
| 43 | 44 | 50 | 51 | 50 | 51 | 50 | 51 | 50 | 51 |
| 53 | 54 | 60 | 61 | 60 | 61 | 60 | 61 | 60 | 61 |
| 63 | 64 | 70 | 71 | 70 | 71 | 70 | 71 | 70 | 71 |
| 75 | 76 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 |
| 85 | 86 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| 95 | 96 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 |
| – | 106 | – | 117 | – | 117 | – | 117 | – | 117 |
| 115 | 116 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 |
| 132 | 132 | 142 | 142 | 142 | 142 | 142 | 142 | 142 | 142 |
| 152 | 152 | 162 | 162 | 162 | 162 | 168 | 168 | 168 | 168 |
| 182 | 182 | 192 | 192 | 192 | 192 | 195 | 194 | 195 | 194 |
| 207 | 207 | 218 | 218 | 218 | 218 | 225 | 224 | 225 | 224 |
| 237 | – | 248 | – | 248 | – | 255 | – | 267 | – |
| 262 | 262 | 273 | 273 | 273 | 273 | 285 | 284 | 292 | 290 |
| 318 | 317 | 328 | 328 | 330 | 329 | 342 | 340 | 353 | 352 |
| 373 | 373 | 378 | 378 | 385 | 384 | 402 | 400 | 418 | 417 |
| 423 | 423 | 438 | 438 | 445 | 444 | 458 | 457 | 475 | 474 |
| 473 | 473 | 490 | 489 | 497 | 495 | 515 | 514 | 547 | 546 |
| 528 | 528 | 540 | 539 | 557 | 555 | 565 | 564 | 572 | 571 |
| 578 | 578 | 595 | 594 | 618 | 617 | 625 | 624 | 628 | 628 |
| 680 | 679 | 695 | 695 | 735 | 734 | 730 | 731 | 745 | 747 |
| 785 | 784 | 810 | 810 | 805 | 804 | 830 | 833 | 850 | – |
| 890 | 890 | 915 | 917 | 910 | 911 | 940 | 942 | 970 | – |
| 990 | 990 | 1015 | 1017 | 1010 | 1011 | 1040 | 1042 | 1080 | – |
| 1090 | 1090 | 1120 | 1124 | 1125 | 1128 | 1150 | 1154 | 1190 | – |
| – | – | – | 1231 | – | 1228 | – | 1251 | – | – |
| 1305 | 1307 | 1340 | 1341 | 1340 | 1342 | 1360 | 1364 | 1395 | – |
| 1520 | 1524 | 1545 | 1548 | 1540 | 1542 | 1575 | 1578 | 1615 | – |
| – | – | – | 1658 | – | 1654 | – | 1688 | – | – |
| 1720 | 1724 | 1770 | 1772 | 1760 | 1764 | 1795 | 1798 | 1830 | – |
| 1930 | 1931 | 1970 | 1972 | 1960 | 1964 | 2000 | 2000 | – | – |
| 2135 | 2138 | 2180 | 2182 | 2165 | 2168 | 2230 | 2230 | – | – |
| 2345 | 2348 | 2380 | 2384 | 2375 | – | – | – | – | – |
| 2555 | 2558 | 2590 | 2592 | 2585 | – | – | – | – | – |
| 2760 | 2762 | 2790 | 2794 | 2785 | – | – | – | – | – |
| 2970 | 2972 | 3010 | 3014 | – | – | – | – | – | – |
| 3170 | 3172 | 3225 | 3228 | – | – | – | – | – | – |
| 3380 | 3382 | – | – | – | – | – | – | – | – |
| 3590 | 3592 | – | – | – | – | – | – | – | – |
| 3800 | 3804 | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – |

# KLINGER-KGS
# Chemical resistance

| 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 hypochlorit | ▲ | ▲ | ● | ● | ● |
| Calcium sulphate | | ● | ● | | |
| Carbolic acid | ▲ | ▲ | ■ | ▲ | ● |
| Carbon dioxide | ● | ● | ● | ● | ● |
| Carbon disulphide | ▲ | ▲ | ▲ | ▲ | ● |
| Carbon tetrachlorid | ▲ | ▲ | ▲ | ▲ | ● |
| Castor oil | ● | ● | ● | ● | ● |
| Chlorine water | ▲ | ▲ | ■ | ▲ | ● |
| Chlorine, dry | ▲ | ▲ | ■ | ▲ | ● |
| Chlorine, moist | ▲ | ▲ | ■ | ▲ | ● |
| Chloroform | ▲ | ▲ | ▲ | ▲ | ● |
| Chromic acid | ▲ | ▲ | ■ | ■ | ● |

| Medium | NR | NBR-GW | EPDM-KTW | CSM | FKM-Viton |
|---|---|---|---|---|---|
| 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 acetio 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 | ▲ | ▲ | ● | ▲ | ▲ |
| **Isooctane** | ▲ | ● | ▲ | ■ | ● |
| Isopropyl alcohol | ● | ■ | ● | ● | ● |
| **Kerosene** | ▲ | ● | ▲ | ▲ | ● |
| **Lactic acid** | ● | ● | ● | ● | ● |

● Resistant
■ Condit. recommended
▲ Not recommended

*Subject to technical alterations. Status: July 2008*

# KLINGER-KGS
# Chemical resistance

| Medium | NR | NBR-GW | EPDM-KTW | CSM | FKM-Viton |
|---|---|---|---|---|---|
| Lead acetate | ● | ■ | ● | ▲ | ▲ |
| Lead arsenate | | ● | ● | | |
| Linseed oil | ■ | ● | ■ | ■ | ● |
| Lithium melt | ▲ | ▲ | ▲ | ▲ | ▲ |
| **Magnesium sulphate** | ● | ● | ● | ● | ● |
| Malic acid | ▲ | ● | ● | ● | ● |
| MEK butanone | ▲ | ▲ | ● | ■ | ▲ |
| Methane | ▲ | ● | ▲ | ■ | ● |
| Methyl alcohol | ● | ■ | ● | ● | ▲ |
| Methyl chloride | ▲ | ▲ | ▲ | ▲ | ● |
| Methyl cloride | ▲ | ▲ | ▲ | ▲ | ● |
| 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 | ▲ | ▲ | ■ | ▲ | ▲ |
| **Rape seed oil** | ▲ | ● | ■ | ■ | ● |

| Medium | NR | NBR-GW | EPDM-KTW | CSM | FKM-Viton |
|---|---|---|---|---|---|
| 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

*Subject to technical alterations. Status: July 2008*

# KLINGER-KGS
# Mounting instructions

*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. The Flanges***
*Flanges should be parallel, metallically clean and dry, the gasket has to be mounted centrically.*

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

*The outer diameter of the KGS-gasket is adapted to the bolt circle of the flange. Therefore a safe centering is insured by the bolts.*

***3. The mounting of the gasket***
*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. The Bolts***
*During installation the bolts have to be tightened in several steps, equal and crosswise.*

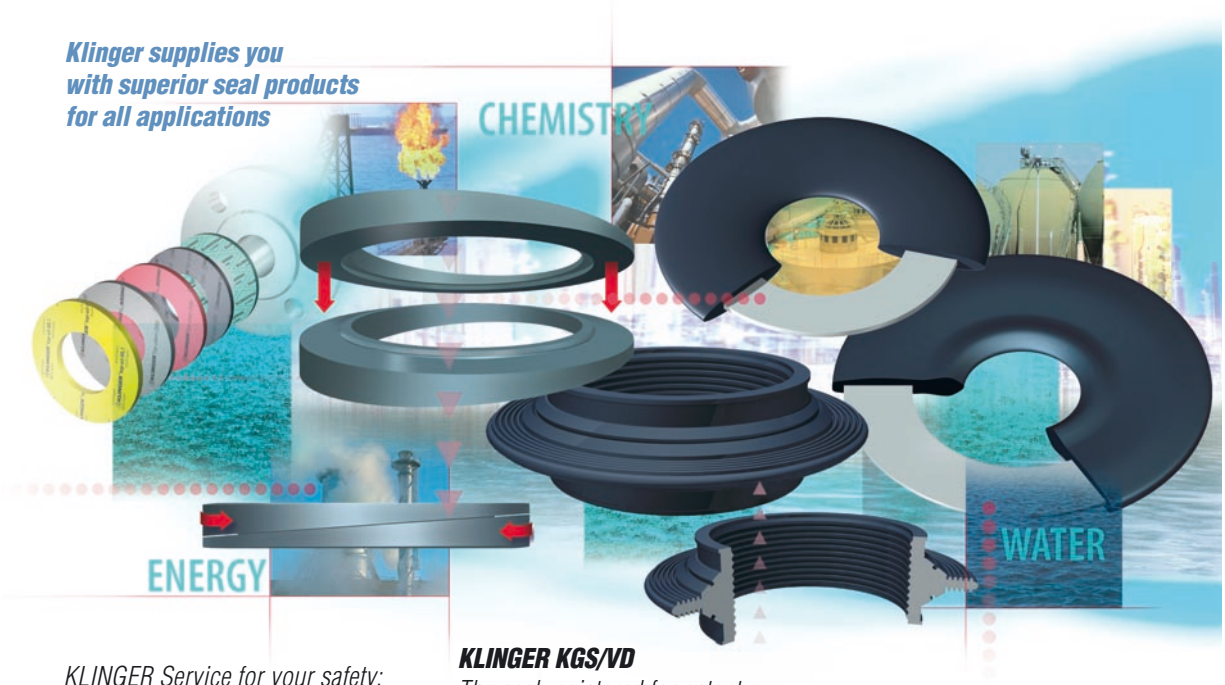
*The screws should be greased if possible.*

***5. Re-tighten***
*"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 supplies you with superior seal products for all applications***




*KLINGER Service for your safety: Application overviews, product documentations, tables for media resistance, safety service by fax, original test material and of course consulting on site and custom developments meeting your special requirements.*

***KLINGER KGS/VD***
*The seal registered for patent approval compensates oblique flange positions up to approx. 8°.*

***KLINGER Wall collars***
*The wall collar protects against humidity penetration in case of infiltration water or ground water.*

***KLINGER-KGS***
***The rubber-steel gaskets***
*Application areas are water, waste water, gas, air, acids, caustic solutions and hydrocarbons with low forces and relatively low temperatures.*

***Certified according to DIN EN ISO 9001:2000***

*Technical changes reserved, July 2008*

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