

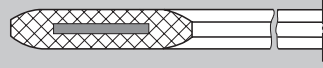
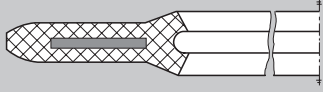
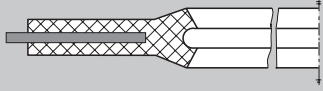
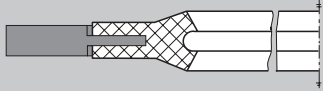
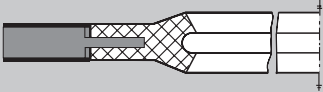
## Rubber-steel gaskets

Rubber-steel gaskets have amassed a wide range of applications in sealing technology. Wherever the secure sealing of media with an exceptionally low leak rate, as well as low bolt loads at relatively low temperatures is required, rubber-steel gaskets provide the optimal solution.

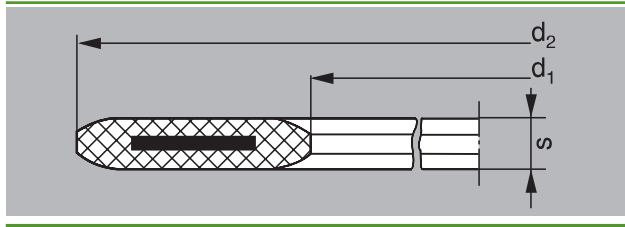
The steel support ring prevents a blow out of the gasket and increases stability, allowing the rubber-steel gasket to be handled easily, even in difficult fitting conditions.

The rubber sealing material ensures a secure seal is created, even in uneven locations, as it has an excellent ability to adapt to sealing surfaces. In conforming to the maximum allowable installation surface pressure, rubber-steel gaskets fulfil the requirements of the TA Luft having regard to clause 3.3.1.4 of the VDI Guidelines 2440.

### Gasket profiles

Profile	Cross-section
WG	
WG2	
WS	
WL	
WL-HT	

## Rubber-steel gaskets



### Rubber-steel gaskets Profile WG

Main load gasket

The rubber-steel gasket Profile WG consists of a steel ring (1.0330) which is surrounded on all sides by rubber. The steel ring is therefore protected from corrosion and media. Vulcanisation guarantees a high level of adhesive strength between the rubber and the steel ring.

Conforms to DIN 2690 (PN 6 to PN 40)

Ordering example:

Profile WG, NBR quality, DN 300, PN 10, DIN 2690

#### For DIN/EN flanges

DN	d <sub>1</sub>	d <sub>2</sub>					s
		PN6	PN10	PN16	PN25	PN40	
15	22	-	50	50	50	50	3
20	28	-	60	60	60	60	3
25	35	-	70	70	70	70	3
32	43	-	82	82	82	82	3
40	49	-	92	92	92	92	3
50	61	-	107	107	107	107	4
65	77	-	127	127	127	127	4
80	90	-	142	142	142	142	4
100	115	-	162	162	168	168	5
125	141	-	192	192	-	-	5
150	169	-	218	218	225	225	5
175	195	-	248	248	-	-	5
200	220	-	273	273	285	-	6
250	274	-	328	330	342	-	6
300	325	-	378	385	402	-	6
350	368	423	438	445	458	-	7
400	420	473	490	497	515	-	7
450	470	-	540	-	-	-	7
500	520	578	595	618	-	-	7
600	620	-	695	735	-	-	7
700	720	785	810	-	-	-	8
800	820	890	915	910	-	-	8
900	920	-	1015	1010	-	-	8
1000	1020	-	1120	1125	-	-	8
1200	1220	-	1340	1340	-	-	8
1400	1420	-	1545	-	-	-	8
1600	1620	-	1770	-	-	-	8
1800	1820	-	1970	-	-	-	8

Dimensions in mm

Features:

- high level of security against slippage or blow out provided by the steel reinforcement
- simple, secure and cost-effective installation due to its stability, compared to non-reinforced rubber gaskets
- exceptionally low leakage rate due to the homogeneous rubber casing, making it particularly suitable for pipeline systems carrying media harmful to the environment
- low demand on the flange surface due to the soft, flexible sealing surface, seals can even be created with slightly damaged flanges

Typical field of application:

- Gas and water supply
- chemical industries where aggressive and environmentally-harmful media are used
- flue gas cleaning systems and power plant cooling circuits
- wastewater systems
- pipeline construction with vacuum-operated pipelines
- pipeline systems with all-rubber flange sealing surfaces
- with enamel pipelines and apparatus flanges.

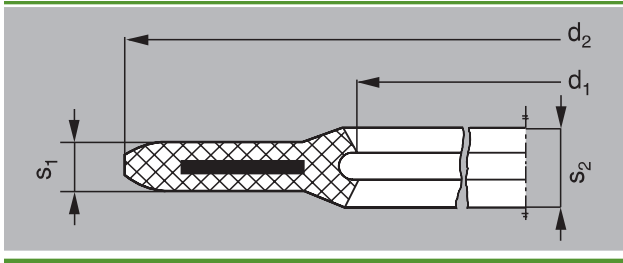
#### For ANSI/ASME B16.5 flanges\*

NPS	d <sub>1</sub>	d <sub>2</sub>		s
		class 150	class 300	
1/2	18	46	-	3
3/4	27	54	-	3
1	33	64	70	3
1 1/4	42	73	-	3
1 1/2	48	83	-	3
2	60	102	108	4
2 1/2	73	121	-	4
3	89	134	-	4
3 1/2	102	159	-	4
4	115	172	-	4
5	141	194	-	5
6	168	220	-	5
8	219	277	-	6
10	273	337	-	6
12	324	407	-	6
14	356	448	-	7
16	406	512	-	7
18	457	547	-	7
20	508	604	-	7
22	560	658	-	7
24	610	715	-	7

\* currently only available in NBR 50219.0

Dimensions in mm

## Rubber-steel gaskets



### Rubber-steel gaskets Profile WG2

Main load gasket

The rubber-steel gasket Profile WG2 has two stable sealing lips on its internal sealing diameter and the same design as rubber-steel gasket Profile WG on its external diameter.

Conforms to DIN 2690 (PN 10 to PN 40)

Ordering example:

Profile WG2, NBR quality, DN 300, PN 10, DIN 2690

### For DIN/EN flanges

DN	$d_1$	$d_2$				$s_1$	$s_2$
		PN 10	PN 16	PN 25	PN 40		
25	35	70	70	70	70	4	6
32	43	82	82	82	82	4	6
40	49	92	92	92	92	4	6
50	61	107	107	107	107	4	6
65	77	127	127	127	127	4	6
80	90	142	142	142	142	4	6
100	115	162	162	168	168	5	7,5
125	141	192	192	-	-	5	7,5
150	169	218	218	225	225	5	7,5
175	195	248	248	-	-	5	7,5
200	220	273	273	285	292	6	9
250	274	328	330	342	353	6	9
300	325	378	385	402	418	6	9
350	368	438	445	-	-	7	11
400	420	490	-	-	-	7	11
450	470	540	-	-	-	7	11
500	520	595	-	-	-	7	11
600	620	695	735	-	-	7	11
700	720	810	-	-	-	8	12

Other sizes available on request

Dimensions in mm

Features:

- Leak-proof even at the lowest tightening torques, making the rubber-steel gasket Profile WG2 particularly suitable for plastic flange connections where there no high forces can be exerted.
- Highly leak-proof due to the self-sealing effect of the sealing lips under internal pressure; the internal pressure forces the sealing lips apart and contributes to the creation of the seal
- There is no pressing or flowing of the flexible sealing lips towards the rubber-steel gaskets when used in solid profile, as occurs with O or V-rings.
- optimum smoothing of any bumps on the flange by the flexible sealing lips, particularly when a contiguous seal cannot always be guaranteed, as with GRP flanges.

Typical field of application:

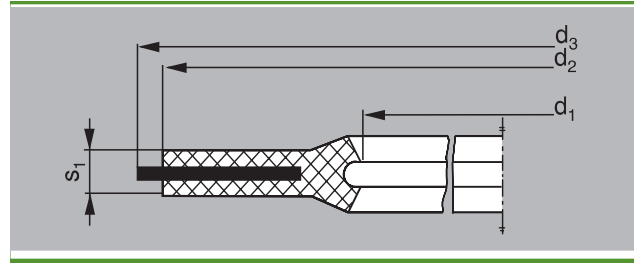
- Plastic and GRP flange connections
- Sealing vacuum-operated pipeline systems in chemical industry
- Gas and water supply
- For sealing highly-flexible flanges

# Rubber-steel gaskets

## Rubber-steel gaskets Profile WS

Main load gasket

The rubber-steel gasket Profile WS consists of a central support ring and a rubber sealing ring with integrally moulded sealing lips. The central support ring is available in galvanised and chromated St 37, stainless steel or plastic.



### Works standard 182 for DIN/EN flanges (PN 10 PN 25)

Ordering example:

Profile WS, NBR/1.4541, DN 300, PN 10, Works standard 182

#### For DIN/EN flanges

DN	$d_3$		PN 10	PN 16	PN 25	$s_1$
	$d_1$	$d_2$				
10	18	45	45	45	45	4
15	22	50	50	50	50	4
20	28	60	60	60	60	4
25	35	70	70	70	70	4
32	43	82	82	82	82	4
40	49	92	92	92	92	4
50	61	102	107	107	107	4
65	77	121	127	127	127	4
80	90	134	142	142	142	4
100	115	162	162	162	168	4
125	141	192	192	192	195	4
150	169	218	218	218	225	4
175	195	248	248	248	255	4
200	220	273	273	273	285	4
250	274	328	328	330	342	4
300	325	378	378	385	402	4
350	368	438	438	445	458	4
400	420	490	490	497	515	4
450	470	540	540	557	565	8
500	520	590	595	618	625	8
600	620	690	695	735	730	8
700	720	800	810	805	830	8
800	820	900	915	910	940	8
900	920	1010	1015	1010	1040	8
1000	1020	1110	1120	1125	1150	8
1200	1220	1310	1340	1340	1360	8
1400	1420	1510	1545	1540	1575	8
1600	1620	1710	1770	1760	1795	8
1800	1820	1910	1970	1960	2000	8
2000	2020	2110	2180	2165	2230	8
2200	2220	2310	2380	2375	-	8
2400	2420	2510	2590	2585	-	8
2600	2620	2710	2790	2785	-	8
2800	2820	2910	3010	-	-	8
3000	3020	3110	3225	-	-	8

Other sizes available on request. Gaskets for PN6 flanges available on request. Dimensions in mm

### Works standard 183 for flanges in accordance with ANSI/ASME B 16.5 (Class 150 to Class 300)

Ordering example:

Profile WS, NBR/1.4541, NPS 1, Class 150,

#### For ANSI/ASME B16.5 flanges

NPS	$d_3$		class 150	class 300	$s_1$
	$d_1$	$d_2$			
1/2	18	45	45	51	4
3/4	22	50	54	64	4
1	28	60	64	70	4
1 1/4	35	70	73	82	4
1 1/2	43	82	83	93	4
2	61	102	102	108	4
2 1/2	77	121	121	127	4
3	90	134	134	146	4
3 1/2	102	159	159	162	4
4	115	162	172	178	4
5	141	192	194	213	4
6	169	218	220	248	4
8	220	273	277	305	4
10	274	328	337	359	4
12	325	378	407	419	4
14	368	438	448	483	4
16	420	490	512	537	4
18	470	540	547	594	8
20	520	590	604	651	8
22	560	630	658	702	8
24	620	690	715	772	8

Dimensions in mm

## Rubber-steel gaskets

### Works standard 184 for flanges in accordance with ASME B 16.47 Series A<sup>1)</sup> (Class 150 to Class 300)

Injection-moulded gasket, vulcanised

Ordering example:

Profile WS, NBR/1.4541, NPS 26, Class 150,

#### For ASME B16.47 Series A flanges

NPS	d <sub>3</sub>				
	d <sub>1</sub>	d <sub>2</sub>	class 150	class 300	s <sub>1</sub>
26	665	745	771	832	8
28	720	800	829	895	8
30	770	850	880	949	8
32	820	900	937	1003	8
34	865	945	987	1054	8
36	920	1010	1045	1114	8
38	965	1045	1108	1051	8
40	1020	1110	1159	1111	8
42	1070	1160	1216	1162	8
44	1120	1210	1273	1216	8
46	1170	1260	1324	1270	8
48	1220	1310	1381	1321	8
50	1270	1360	1432	1375	8
52	1320	1410	1489	1425	8
54	1370	1460	1546	1489	8
56	1430	1520	1603	1540	8
58	1475	1565	1660	1590	8
60	1530	1620	1711	1641	8

Dimensions in mm

1) Previously MSS SP-44

#### Features:

- Easy to replace the rubber sealing rings, meaning the rubber-steel gasket Profile WS can be reused again and again
- Safe to use and easy to handle the rubber sealing material, even at large nominal sizes
- Special sizes can be produced without incurring additional costs, from an internal diameter of approx. 400 mm.

### Works standard 185 for flanges in accordance with ASME B16.47 Series B<sup>1)</sup> (Class 150 to Class 300)

Injection-moulded sealing ring, vulcanised

Ordering example:

Profile WS, NBR/1.4541, NPS 26, Class 150,

#### For ASME B16.47 Series B flanges

NPS	d <sub>3</sub>				
	d <sub>1</sub>	d <sub>2</sub>	class 150	class 300	s <sub>1</sub>
26	650	720	722	768	8
28	700	770	773	822	8
30	745	815	824	883	8
32	795	875	878	937	8
34	850	930	932	991	8
36	900	980	984	1045	8
38	950	1040	1041	1095	8
40	1000	1090	1092	1146	8
42	1050	1140	1143	1197	8
44	1100	1190	1194	1248	8
46	1150	1240	1252	1314	8
48	1200	1290	1303	1365	8
50	1250	1340	1354	1416	8
52	1300	1390	1405	1467	8
54	1350	1440	1460	1527	8
56	1400	1490	1511	1591	8
58	1450	1540	1576	1653	8
60	1500	1590	1627	1703	8

Dimensions in mm

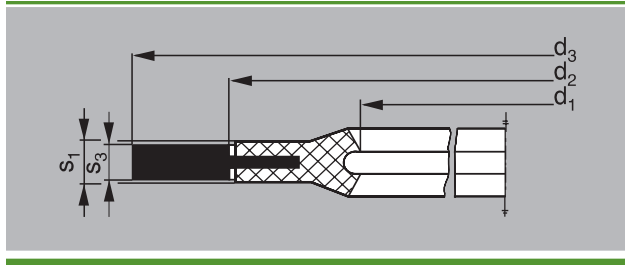
1) Previously API 605

Other sizes available on request

#### Typical field of application:

- Sealing tank flange connections
- Sealing special flanges
- Sealing cooling and condensate pipelines in power plants

## Rubber-steel gaskets



### Rubber-steel gaskets Profile WL

#### Metal-to-metal contact gasket

The rubber-steel gasket Profile WL in its standard form consists of a galvanised and chromated metal support ring and a rubber sealing ring with integrally moulded sealing lips. The support ring is also available in stainless steel or plastic. In contrast to traditional gaskets, the rubber sealing ring in the rubber-steel gasket Profile WL is in off load contact. This means that any forces that are too high for the rubber sealing ring are borne by the support ring.

Another advantage is that the rubber sealing ring is chambered outwards by the support ring. With the creation of a metal-to-metal seal, very high internal pressures and additional forces from the pipeline system can be permitted. The rubber-steel gasket Profile WL combines all the advantages of a rubber gasket with those of a metal gasket.

#### Features:

- impossible to over load the rubber sealing ring
- seal is secure, even with large fluctuations or surges in pressure
- impervious to additional pipelines forces
- easy and safe installation, reduces the risk of installation errors caused by applying too high or uneven bolt tightening torques (the most common reason for the failure of a rubber-steel gasket)
- simple replacement of the rubber sealing ring, making it reusable
- Special sizes can be produced without incurring additional costs, from an internal diameter of approx. 400 mm.
- can be used for a range of applications due to the very large range of surface pressure limits.

#### Typical field of application:

- High pressure lines such as e.g. gas distribution pipelines, gas pressure control systems
- Pipeline construction such as e.g. in underground pipelines
- flue gas cleaning systems and power plant cooling circuits
- Pipeline and apparatus construction with partly-rubber flange sealing surfaces.

In order to determine the flange recess required for the rubber coating we would be happy to provide our design recommendations..

# Rubber-steel gaskets

## Works standard 178 for DIN/EN flanges (PN 10 to PN 160)

Ordering example:

Profile WL, NBR/ST37 galvanised and chromated, DN 200, PN 63, Works standard 178

### For DIN/EN flanges

DN	PN		d <sub>3</sub>								s <sub>1</sub>	s <sub>3</sub>
	d <sub>1</sub>	d <sub>2</sub>	10	16	25	40	63	100	160			
10	18	37	45	45	45	45	56	56	56	4	3	
15	22	39	50	50	50	50	61	61	61	4	3	
20	28	45	60	60	60	60	-	-	-	4	3	
25	35	55	70	70	70	70	82	82	82	4	3	
32	43	63	82	82	82	82	-	-	-	4	3	
40	49	75	92	92	92	92	103	103	103	4	3	
50	61	82	107	107	107	107	113	119	119	4	3	
65	77	97	127	127	127	127	137	143	143	4	3	
80	90	115	142	142	142	142	148	154	154	4	3	
100	115	149	162	162	168	168	174	180	180	4	3	
125	141	175	192	192	195	195	210	217	217	4	3	
150	169	205	218	218	225	225	247	257	257	4	3	
175	195	235	248	248	255	267	277	287	284	4	3	
200	220	260	273	273	285	292	309	-	324	4	3	
250	274	309	328	330	342	353	364	391	388	4	3	
300	325	360	378	385	402	418	424	458	458	4	3	
350	368	400	438	445	458	475	486	512	-	4	3	
400	420	460	490	497	515	547	543	572	-	4	3	
450	470	515	540	557	565	572	-	-	-	8	6	
500	520	565	595	618	625	628	657	704	-	8	6	
600	620	665	695	735	730	745	764	813	-	8	6	
700	720	775	810	805	830	850	879	950	-	8	6	
800	820	875	915	910	940	970	988	-	-	8	6	
900	920	985	1015	1010	1040	1080	1108	-	-	8	6	
1000	1020	1085	1120	1125	1150	1190	1220	-	-	8	6	
1200	1220	1295	1340	1340	1360	1395	1452	-	-	8	6	
1400	1420	1495	1545	1540	1575	1615	-	-	-	8	6	
1600	1620	1705	1770	1760	1795	1830	-	-	-	8	6	
1800	1820	1905	1970	1960	2000	-	-	-	-	8	6	
2000	2020	2105	2180	2165	2230	-	-	-	-	8	6	
2200	2220	2305	2380	2375	-	-	-	-	-	8	6	
2400	2420	2505	2590	2585	-	-	-	-	-	8	6	
2600	2620	2705	2790	2785	-	-	-	-	-	8	6	
2800	2820	2905	3010	-	-	-	-	-	-	8	6	
3000	3020	3105	3225	-	-	-	-	-	-	8	6	

Gaskets for PN6 flanges available on request

Dimensions in mm

## Works standard 179 for flanges in accordance with ANSI/ASME B 16.5 (Class 150 to Class 2500)

Ordering example:

Profile WL, NBR/1.4541, NPS 5, Class 150, Works standard 179

### For ANSI/ASME B16.5 flanges

NPS	class		d <sub>3</sub>							s <sub>1</sub>	s <sub>3</sub>
	d <sub>1</sub>	d <sub>2</sub>	150	300	400	600	900	1500	2500		
1/2	16	32	45	51	51	51	61	61	67	4	3
3/4	22	39	54	64	64	64	67	67	73	4	3
1	28	45	64	70	70	70	76	76	83	4	3
1 1/4	35	55	73	80	80	80	86	86	102	4	3
1 1/2	43	63	83	93	93	93	95	95	114	4	3
2	61	82	102	108	108	108	140	140	143	4	3
2 1/2	77	97	121	127	127	127	162	162	165	4	3
3	90	115	134	146	146	146	165	172	194	4	3
3 1/2	102	128	159	162	159	159	-	-	-	4	3
4	115	149	172	178	175	191	203	207	232	4	3
5	141	175	194	213	210	238	245	251	276	4	3
6	169	205	220	248	245	264	286	280	314	4	3
8	220	260	277	305	302	318	356	349	384	4	3
10	274	309	337	359	356	397	432	432	473	4	3
12	325	360	407	419	416	454	496	518	546	4	3
14	368	400	448	483	480	489	518	575	-	4	3
16	420	460	512	537	534	562	572	638	-	4	3
18	470	515	547	594	591	610	635	702	-	8	6
20	520	565	604	651	645	680	696	753	-	8	6
22	560	605	658	702	-	730	-	-	-	8	6
24	620	665	715	772	766	788	835	899	-	8	6

Dimensions in mm

## Rubber-steel gaskets

### Works standard 180 for flanges in accordance with ASME B 16.47 Series A<sup>1)</sup> (Class 150 to Class 900)

Ordering example:

Profile WL, NBR/1.4541, NPS 26, class 150, Works standard 180

#### For ASME B16.47 Series A flanges

NPS	class		d <sub>3</sub>					s <sub>1</sub>	s <sub>3</sub>
	d <sub>1</sub>	d <sub>2</sub>	150	300	400	600	900		
26	665	720	771	832	829	864	880	8	6
28	720	775	829	895	889	911	943	8	6
30	770	825	880	949	943	968	1006	8	6
32	820	875	937	1003	1000	1019	1070	8	6
34	865	920	987	1054	1051	1070	1133	8	6
36	920	975	1045	1114	1114	1127	1197	8	6
38	965	1020	1108	1051	1070	1102	1197	8	6
40	1020	1075	1159	1111	1124	1152	1248	8	6
42	1070	1125	1216	1162	1175	1216	1298	8	6
44	1120	1175	1273	1216	1229	1267	1365	8	6
46	1170	1225	1324	1270	1286	1324	1432	8	6
48	1220	1275	1381	1321	1343	1387	1483	8	6
50	1270	1325	1432	1375	1400	1445	-	8	6
52	1320	1375	1489	1425	1451	1495	-	8	6
54	1370	1425	1546	1489	1515	1552	-	8	6
56	1430	1485	1603	1540	1565	1610	-	8	6
58	1475	1530	1660	1590	1616	1660	-	8	6
60	1530	1585	1711	1641	1680	1730	-	8	6

1) Previously MSS SP-44

Dimensions in mm

### Works standard 181 for flanges in accordance with ASME B 16.47 Series B<sup>1)</sup> (Class 150 to Class 900)

Ordering example:

Profile WL, NBR/1.4541, NPS 26, class 150, Works standard 181

#### For ASME B16.47 Series B flanges

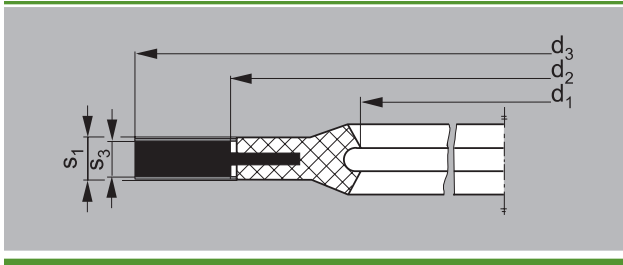
NPS	class		d <sub>3</sub>					s <sub>1</sub>	s <sub>3</sub>
	d <sub>1</sub>	d <sub>2</sub>	150	300	400	600	900		
26	650	695	722	768	743	762	835	8	6
28	700	745	773	822	797	816	899	8	6
30	745	790	824	883	854	876	956	8	6
32	795	840	878	937	908	930	1013	8	6
34	850	895	932	991	959	994	1070	8	6
36	900	945	984	1045	1019	1045	1121	8	6
38	950	1000	1041	1095	1070	1102	1197	8	6
40	1000	1050	1092	1146	1124	1152	1248	8	6
42	1050	1100	1143	1197	1175	1216	1298	8	6
44	1100	1150	1194	1248	1229	1267	1365	8	6
46	1150	1205	1252	1314	1286	1324	1432	8	6
48	1200	1255	1303	1365	1343	1387	1483	8	6
50	1250	1305	1354	1416	1400	1445	-	8	6
52	1300	1355	1405	1467	1451	1495	-	8	6
54	1350	1405	1460	1527	1515	1552	-	8	6
56	1400	1455	1511	1591	1565	1604	-	8	6
58	1450	1515	1576	1653	1616	1660	-	8	6
60	1500	1565	1627	1703	1680	1730	-	8	6

1) Previously API 605

Dimensions in mm



## Rubber-steel gaskets



### Rubber-steel gaskets Profile WL-HT

Metal-to-metal gasket, HTB (high thermal load) tested

The rubber-steel gasket Profile WL-HT is essentially designed in the same way as the gasket Profile WL, except that the support ring is made with layers of graphite. The rubber sealing lip is made of NBR 50219.0 (certified for use with gas and water supplies) and the support ring is made of galvanised and chromated metal. In normal use the rubber sealing lip forms the primary seal. Under extreme thermal loads, such as during a fire, the support ring with graphite layers provides the seal.

#### For DIN/EN flanges

DN	$d_3$						
	$d_1$	$d_2$	PN16	PN40	$d_4$	$S_1$	$S_3$
25	35	57	70	70	44	4,7	3,7
32	43	68	82	82	52	4,7	3,7
40	49	75	92	92	58	4,7	3,7
50	61	90	107	107	71	4,7	3,7
80	90	121	142	142	100	4,7	3,7
100	111	142	162	168	124	4,7	3,7
150	163	195	218	225	176	4,7	3,7
200	212	248	273	-	225	4,7	3,7

Other sizes available on request.

Dimensions in mm

#### Features:

- certified and tested under high thermal loads at 650°C, 30 minutes by the DVGW research centre, Karlsruhe for conformity with DVGW-VP 401 (01.10.98) for flange connections in accordance with DIN EN 1092-1.
- has all the features of the rubber-steel gasket Profile WL
- Easy to replace the rubber sealing rings and graphite layers, meaning the rubber-steel gasket Profile WLHT can be reused again and again

#### Typical field of application:

- Domestic gas supplies with flanged house connection combinations, pressure regulators and gas meters
- Gas stations
- Drinking water pipelines with associated fire fighting systems in accordance with DIN 1988-6.

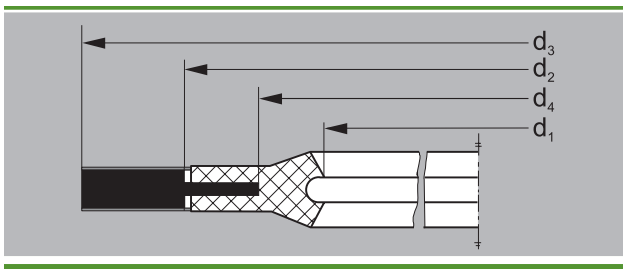
# Rubber-steel gaskets

## Gasket characteristic values, calculations, rubber qualities

### Main load gaskets:

Profile	Material	Description	Unit	Temp. $\vartheta$ in the gasket area	
				0°C	100°C
WG WG2 WS	NBR, NR*, EPDM,	$\sigma_v$	N/mm <sup>2</sup>	2	2
		$\sigma_\theta$	N/mm <sup>2</sup>	15	6
WG WG2 WS	FKM	$\sigma_v$	N/mm <sup>2</sup>	2	2
		$\sigma_\theta$	N/mm <sup>2</sup>	15	7

\* only to 80°C



\*  $d_4$  on request measured

For the steel part in the main-load, range $d_2$ and $d_3$					
Profile	Material	Description	Unit	Temp. $\vartheta$ in the gasket area	
				20°C	100°C
WL	Steel St 37 corrosion-resistant	$\sigma_v$	N/mm <sup>2</sup>	12	12
		$\sigma_\theta$	N/mm <sup>2</sup>	450	450
WL-HT	stainless steel	$\sigma_v$	N/mm <sup>2</sup>	12	12
		$\sigma_\theta$	N/mm <sup>2</sup>	120	120

For the rubber part in the off-load, range $d_4$ and $d_2$					
Profile	Material	Description	Unit	Temp. $\vartheta$ in the gasket area	
				20°C	100°C
WL WL-HT	NBR, EPDM, NR*	$\sigma_v$	N/mm <sup>2</sup>	12	12
		$\sigma_\theta$	N/mm <sup>2</sup>	12	12
WL WL-HT	FKM	$\sigma_v$	N/mm <sup>2</sup>	12	12
		$\sigma_\theta$	N/mm <sup>2</sup>	12	12

\* only to 80°C

### Rubber qualities for rubber-steel gaskets:

Quality	Temperature range in °C	
NBR	50224*	-30 to 100
NR	Natural rubber	-50 to 80
EPDM	e.g. Buna AP	-40 to 110
EPDM	Peroxide vulkansisation**	-40 to 130
FKM	e.g. Viton	-20 to 200

The thermal resistance relates to air.

\* NBR 50224 is certified for use with gas and drinking water supplies

- no need for double storage
- no danger of mixing parts up

Certified in accordance with:

- DVGW-DIN/EN 682 (Gas supply distribution pipelines)
- KTW recommendation Part 1.3.13 Area D1+D2 (test for adverse physiological effects)



\*\* EPDM 50323.0 Peroxide is permitted according to the KTW recommendation Part 1.03.13 Areas D1+D2

All permits and tests can be found at [www.kempchen.de](http://www.kempchen.de)